



Contact Information

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Due to the nature of new products, some items in this catalog may not be available for immediate purchase. Some items may not be available for purchase in all countries. Contact your local Bio-Rad sales representative for more information.

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New Products

Antibodies

PrecisionAb[™] Validated Western Blotting Antibodies

Rigorous validation using 12 different whole-cell lysates expressing endogenous levels of the target proteins makes the PrecisionAb line of primary antibodies optimally suited for generating dependable data in western blotting applications. With stringent quality control, trial-size availability for assessing performance, inclusion of a positive control lysate that allows benchmarking target bands for identification, complete validation data, and detailed protocols, the PrecisionAb line of antibodies provide high specificity and sensitivity and offer overall ease of use with minimal trial and error. **Page 277.**



DNA Amplification/PCR

Droplet Digital[™] PCR System Reagents

ddPCR[™] Residual DNA Quantification Supermix and Kits

ddPCR residual DNA quantification supermix and kits enable precise quantification of low levels of Chinese hamster ovary (CHO), *Escherichia coli*, yeast, human, and mouse DNA for residual host cell DNA monitoring. DNA can be quantified directly from various sample matrices without DNA purification. **Page 352**.

One-Step RT-ddPCR Advanced Kit for Probes

One-step RT-ddPCR advanced kit for probes offers improved efficiency, specificity, and sensitivity for precise RNA target quantification. The optimized enzyme blend enables partitioning of RNA samples into droplets while keeping the enzymes inactive until the reverse transcription reaction is performed, ensuring full enzyme activation for primer-mediated cDNA conversion. The supermix contains an RNase inhibitor that protects the RNA throughout the entire workflow. **Page 353.**

ddPCR Mutation Screening Kits

ddPCR mutation screening kits are designed for rapid screening of several key cancer mutations in a single reaction with a limit of detection of 0.5% or better. These kits are ideal for use with DNA extracted from formalin-fixed, paraffin-embedded (FFPE) samples, liquid biopsy, fresh/frozen tissue, and samples with low yield or inhibitory substances. Assays for each of the mutations detected by the kit can also be ordered individually. **Page 356.**

Reverse Transcription Reagents

iScript[™] gDNA Clear cDNA Synthesis Kit

The iScript gDNA clear cDNA synthesis kit integrates an effective DNase digestion step with fast and sensitive first-strand cDNA synthesis to generate accurate quantitative PCR data in an easy workflow. **Page 383**.







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Biotechnology Explorer[™]

Photosynthesis and Cellular Respiration Kit

This ThiNQ![™] investigation kit facilitates inquiry-based learning and teaches photosynthesis and cellular respiration concepts using easy-to-handle algae beads and a simple colorimetric assay. The kit is aligned with AP Biology learning objectives and it encourages and supports inquiry in its teacher and student manuals. **Page 418.**



Chromatography

ChromLab[™] Software, User Management Edition

The User Management Edition of ChromLab software enables multiple system control from a single PC and the ability to save all methods, runs, and analyses to a central database. Data can be shared among ChromLab computers and NGC[™] chromatography systems. **Page 121.**





Sample Preparation

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Protein Sample Preparation

Magnetic Beads and Racks for Immunoprecipitation

See Also

Antibodies: page 276. Western blotting: page 221. Chemiluminescence detection: page 238.

SureBeads[™] Magnetic Beads System

SureBeads magnetic beads are designed for bioseparation techniques like immunoprecipitation (IP), co-immunoprecipitation (co-IP), and protein pull-down assays. SureBeads beads are superparamagnetic beads with surface activated hydrophilic polymers and chemically conjugated protein A or protein G that specifically bind to the Fc region of immunoglobulin. This chemistry enables high IgG binding and low nonspecific binding from a variety of biological samples.

Product features include:

- Faster IP yes to magnetization, no to centrifugation
- Easier IP ergonomically designed SureBeads magnetic rack magnetizes beads in seconds
- Use less antibody patented* surface chemistry enables proper antibody orientation for optimal antigen binding
- Reproducible consistent IgG binding capacity ensures accurate, reproducible results
- Low cost to go magnetic priced similarly to leading agarose beads, and the 16-tube magnetic rack is included in the IP starter kit with two 3 ml vials of beads



* U.S. patent 20100105879A1.

For More Information Web: bio-rad.com/immunoprecipitation Request or download bulletin: 6560

Catalog #	Description
1614011	SureBeads Protein A Magnetic Beads, 1 x 1 ml vial conjugated magnetic immunoprecipitation beads (10 mg beads/ml suspension)
1614013	SureBeads Protein A Magnetic Beads, 1 x 3 ml vial conjugated magnetic immunoprecipitation beads (10 mg beads/ml suspension)
1614021	SureBeads Protein G Magnetic Beads, 1 x 1 ml vial conjugated magnetic immunoprecipitation beads (10 mg beads/ml suspension)
1614023	SureBeads Protein G Magnetic Beads, 1 x 3 ml vial conjugated magnetic immunoprecipitation beads (10 mg beads/ml suspension)
1614916	16-Tube SureBeads Magnetic Rack, with separable magnets
1614811	SureBeads Trial Kit Protein A, 1 x 1 ml vial conjugated magnetic immunoprecipitation beads (10 mg beads/ml suspension), 4-tube magnetic rack
1614821	SureBeads Trial Kit Protein G, 1 x 1 ml vial conjugated magnetic immunoprecipitation beads (10 mg beads/ml suspension), 4-tube magnetic rack
1614833	SureBeads Starter Kit Protein A and G, 1 x 3 ml vial protein A and 1 x 3 ml vial protein G conjugated magnetic immunoprecipitation beads (10 mg beads/ml suspension), 16-tube magnetic rack
1614813	SureBeads Starter Kit Protein A, 2 x 3 ml vials protein A conjugated magnetic immunoprecipitation beads (10 mg beads/ml suspension), 16-tube magnetic rack
1614823	SureBeads Starter Kit Protein G, 2 x 3 ml vials protein G conjugated magnetic immunoprecipitation beads (10 mg beads/ml suspension), 16-tube magnetic rack

Protein Extraction

Protein extraction tools such as cell lysis and extraction kits, as well as mini grinders, are available for extracting proteins from cultured cells and tissues.

ReadyPrep[™] Protein Extraction Kit

The ReadyPrep protein extraction kit (total protein) provides a simple, rapid, and reproducible method for preparation of total cellular protein extracts from a wide variety of biological samples. Use of this kit generates protein samples that can be applied directly to a variety of applications, including IEF and 2-D gel electrophoresis.

For More Information

Web: bio-rad.com/proteinextraction

Description

Ordering Information

Catalog # 1632086

ReadyPrep Protein Extraction Kit (Total Protein), 20 preps

Kits for Cell Lysis

Cell Lysis Kits

These kits offer a gentle nondetergent solution to cell disruption and generate total protein samples that are ready to be applied to SDS-PAGE, IEF, and 2-D gel electrophoresis. The kits are based on a chaotropic protein solubilization buffer (PSB), which contains nondetergent sulfobetaine 201 (NDSB 201) along with urea, thiourea, and CHAPS for particularly effective solubilization (Vuillard et al. 1995). Cell lysis and extraction protocols are tailored for mammalian, plant, yeast, or bacterial samples.

Bio-Plex® Cell Lysis Kit

This cell lysis kit is used to prepare cell lysates for western blot analysis. Its protein extraction procedure yields western blotting results similar to those generated by routine cell lysis and protein extraction protocols.

For More Information

Web: bio-rad.com/proteinextraction and /bioplexcelllysis Request or download bulletins: 3033, 3034, and 5517







See Also

Protein assays: page 20.

Protein Sample Preparation

Protein Sample Cleanup

bio-rad.com/proteinsampleprep

See Also Protein assays: page 20.

ReadyPrep[™] Mini Grinders

For grinding small biological samples for high recovery of proteins (and nucleic acids), each mini grinder includes a 1.5 ml grinding tube containing a grinding resin and a matching pestle. The grinding resin is a neutral abrasive material made of high tensile strength microparticles that do not bind to proteins or nucleic acids. ReadyPrep mini grinders are disposable and are nuclease- and protease-free. They are a component of the MicroRotofor[™] lysis kit (mammal) and are also sold separately as a pack of 20. The mini grinder tubes fit conveniently in most benchtop centrifuges.



For More Information Web: bio-rad.com/proteinextraction

Ordering Inf	formation	
Catalog #	Description	
1632141	Mammalian Cell Lysis Kit, 15 preps, includes 50 ml protein solubilization buffer (PSB), ReadyPrep mini grinders (2 packs of 10 each)	
1632142	Plant Cell Lysis Kit, 10 preps, includes 50 ml protein solubilization buffer (PSB), ReadyPrep 2-D cleanup kit (50 reaction size)	
1632143	Yeast Cell Lysis Kit, 15 preps, includes 50 ml protein solubilization buffer (PSB), 15 ml yeast suspension buffer, 2 x 0.5 ml lyticase (1.5 U/µl)	
1632144	Bacterial Cell Lysis Kit, 15 preps, includes 50 ml protein solubilization buffer (PSB), 25 ml bacteria suspension buffer, 1 ml lysozyme (1,500 U/µl)	
Cell Lysis Kit	t Components	
1632145	Protein Solubilization Buffer (PSB), makes 50 ml of solution	
1632146	ReadyPrep Mini Grinders, includes 20 mini grinders, sufficient for twenty 100 mg extractions	
Bio-Plex Cel	I Lysis Kits	
171304011	Bio-Plex Cell Lysis Kit, 1 x 96-well, includes cell lysis and wash buffers, factor 1 and factor 2	
171304012	Bio-Plex Cell Lysis Kit, 10 x 96-well, includes cell lysis and wash buffers, factor 1 and factor 2	

Protein Sample Cleanup

General-purpose cleanup kits and columns are available for the removal of salts and other contaminants.

Protein Sample Cleanup Kit Selection Guide

Kit Type and Catalog Number	Applications	Procedure	Preparation Time	Number of Preps
Salt Removal				
ReadyPrep 2-D cleanup kits (#1632130, #1632140)	Cleanup of protein samples for 1-D and 2-D applications	TCA-like precipitation to remove salts, detergents, lipids, phenolic compounds	<1 hr	50
	Reduction of streaking on 2-D gels Concentration of dilute samples			
Micro Bio-Spin [™] 6 columns (see pages 16–17)	Removal of salts and other contaminants	Size exclusion chromatography	5 min	25, 100
Removal of Other Contamina	ants			
ReadyPrep 2-D cleanup kits (#1632130, #1632140)	Reduction of streaking on 2-D gels Concentration of dilute samples	TCA-like precipitation to remove salts, detergents, lipids, phenolic compounds	<1 hr	50
Reduction and Alkylation				
ReadyPrep reduction- alkylation kit (#1632090)	Reduction of streaking on 2-D gels Improved resolution of basic proteins	Reduction, then alkylation of sample to remove disulfide bonds and prevent their re-formation	<2 hr	100

For More Information

Web: bio-rad.com/proteincleanup Request or download bulletins: 2934 and 2961

bio-rad.com/proteinsampleprep

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Protein Fractionation

Ordering In	Ordering Information	
Catalog #	Description	
ReadyPrep	Kits	
1632130	ReadyPrep 2-D Cleanup Kit, 50 preps	
1632140	ReadyPrep 2-D Cleanup Kit, 5 preps	
1632105	ReadyPrep 2-D Starter Kit, includes protein sample and reagents sufficient to rehydrate, focus, and transfer	
	to second-dimension gels; six 17 cm, ten 11 cm, or sixteen 7 cm ReadyStrip IPG strips (ReadyStrip IPG	
	strips*, precast SDS-PAGE gels, and gel stains not included in kit)	
1632090	ReadyPrep Reduction-Alkylation Kit, 100 preps	
ReadyPrep	Kit Components and Related Products	
1632091	ReadyPrep Proteomics Grade Water, 500 ml	
1632083	ReadyPrep 2-D Rehydration/Sample Buffer 1, 10 ml, 7 M urea, 2 M thiourea, 1% ASB-14, 40 mM Tris,	
	0.001% bromophenol blue	
1632106	ReadyPrep 2-D Starter Kit Rehydration/Sample Buffer, 10 ml, 8 M urea, 2% CHAPS, 50 mM DTT, 0.2%	
	Bio-Lyte 3/10 ampholyte, 0.001% bromophenol blue	
Reducing an	nd Alkylating Agents	
1610611	Dithiothreitol (DTT), 5 g	
1632101	Tributylphosphine (TBP), 200 mM, 0.6 ml	
1632109	lodoacetamide, 30 g	
* See the pre	packed Bio-Spin and Micro Bio-Spin gel filtration columns on pages 16–17.	

Protein Fractionation

Fractionation kits reduce sample complexity, helping to identify low-abundance proteins. Fractionation kits can be subdivided into three groups that fractionate based on differential solubility, cellular location of the proteins of interest, and protein charge.

Fractionation by Solubility

Fractionation Using Differential Protein Solubility

The ReadyPrep sequential extraction kit and the ReadyPrep protein extraction kit (soluble/insoluble) both reduce sample complexity using differential solubilization. The two kits can be used independently, or the rehydration/sample buffer from the soluble/insoluble kit can be used with the sequential extraction kit to create a fourth fraction for even better resolution.

 ReadyPrep sequential extraction kit — enables the isolation of 3 different fractions of increasing solubility. These fractions are isolated sequentially, allowing the visualization of proteins that might not otherwise be seen. Increasing solubilization strength is provided through the use of stronger detergents for each subsequent fraction

 ReadyPrep protein extraction kit (soluble/insoluble) uses a single fractionation step

ReadyPrep Kit Components and Related Products

Individual ReadyPrep kit components and related products such as reducing agents are also available. See ordering information on pages 4–5.

For More Information Web: bio-rad.com/proteinfractionation Request or download bulletins: 2934 and 2961

Ordering Information

Catalog #	Description
ReadyPrep K	lits
1632100	ReadyPrep Sequential Extraction Kit, 15 preps
1632085	ReadyPrep Protein Extraction Kit (Soluble/Insoluble), 20 preps
ReadyPrep K	Cit Components and Related Products
1632102	ReadyPrep Sequential Extraction Kit Reagent 1, 50 ml, 40 mM Tris base
1632103	ReadyPrep Sequential Extraction Kit Reagent 2, 10 ml, 8 M urea, 4% CHAPS, 40 mM Tris base, 0.2% Bio-Lyte 3/10 ampholyte
1632104	ReadyPrep Sequential Extraction Kit Reagent 3, 10 ml, 5 M urea, 2 M thiourea, 2% CHAPS, 2% SB 3–10, 40 mM Tris base, 0.2% Bio-Lyte 3/10 ampholyte
1632083	ReadyPrep 2-D Rehydration/Sample Buffer 1

See Also Bio-Spin gel filtration columns: page 16. Micro Bio-Spin gel filtration columns: page 16.

Fractionation by Cellular Location

Fractionation by Cellular Location

ReadyPrep[™] protein extraction kits facilitate fractionation of proteins from different cellular locations such as the membrane, nucleus, or cytoplasm.

- ReadyPrep protein extraction kit (cytoplasmic/ nuclear) — prepares fractions enriched in cytoplasmic or nuclear proteins from eukaryotic samples
- ReadyPrep protein extraction kit (membrane I) offers a quick and effective protocol for isolating most membrane proteins. It does not require ultracentrifugation or preparation of density gradients
- ReadyPrep protein extraction kit (membrane II) offers a protocol for isolating more complex membrane proteins
- ReadyPrep protein extraction kit (signal) for isolating proteins involved in intracellular membrane trafficking and signaling pathways. These include GPIanchored proteins, caveolin and associated proteins, acylated tyrosine kinases, and G proteins

For More Information

Web: bio-rad.com/proteinfractionation Request or download bulletins: 2934 and 2961

Ordering In	Ordering Information	
Catalog #	Description	
ReadyPrep I	Kits	
1632089	ReadyPrep Protein Extraction Kit (Cytoplasmic/Nuclear), 50 preps	
1632088	ReadyPrep Protein Extraction Kit (Membrane I), 50 preps	
1632084	ReadyPrep Protein Extraction Kit (Membrane II), 10 preps	
1632087	ReadyPrep Protein Extraction Kit (Signal), 50 preps	
Related Pro	ducts	
1632083	ReadyPrep 2-D Rehydration/Sample Buffer 1	
1632085	ReadyPrep Protein Extraction Kit (Soluble/Insoluble), 20 preps	

Fractionation by Charge

Aurum[™] ion exchange (AEX or CEX) mini columns allow selective purification of acidic or basic proteins, respectively. Also available in easy-to-use kits, these mini columns selectively enrich either acidic or basic proteins and can be used with a variety of starting samples.

For More Information

Web: bio-rad.com/proteinfractionation Request or download bulletin: 2928



Ordering Information

Cata	llog #	Description
7326	6703	Aurum CEX Mini Columns, 25 pack
7326	6706	Aurum AEX Mini Columns, 25 pack

bio-rad.com/proteinsampleprep

Protein Depletion

Complex samples often require depletion of high-abundance proteins to allow the detection of the low-abundance ones. Bio-Rad offers two different methodologies for protein depletion — the ProteoMiner[™] protein enrichment system (which utilizes hexapeptide libraries) and Aurum[™] serum and Affi-Gel[®] Blue products (which utilize resins).

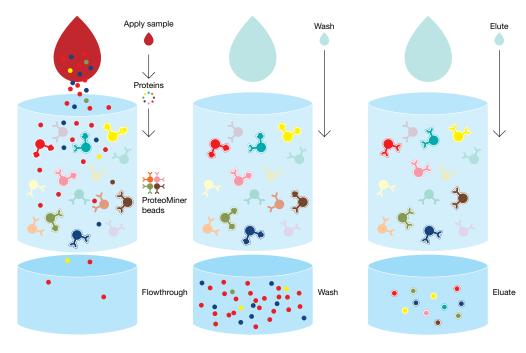
ProteoMiner[™] Protein Enrichment System

The ProteoMiner protein enrichment system is a novel sample preparation tool for reducing the dynamic range of protein concentrations in complex biological samples. The ProteoMiner system:

- Enriches and concentrates low-abundance proteins that cannot be detected through traditional methods
- Works with a variety of sample types (serum, plasma, urine, bile, cell lysates, tissues, and platelets) and is not limited by the species' origin
- Utilizes a combinatorial library of hexapeptides rather than immunodepletion, minimizing dependence on available antibodies and preventing the codepletion of low-abundance proteins

ProteoMiner Protein Enrichment Kits — these kits can be used with a variety of biological samples and are compatible with all major downstream proteomics applications. Small- and large-capacity kits are available for processing two or ten samples.

ProteoMiner Sequential Elution Kits — these kits utilize multiple elution reagents to sequentially elute proteins based on different properties.



ProteoMiner technology is based on the interaction of complex protein samples with a large, highly diverse library of hexapeptides bound to chromatographic supports. In theory, each unique hexapeptide binds to a unique protein sequence. Because the bead capacity limits binding capacity, high-abundance proteins quickly saturate their ligands (red and yellow beads) and excess protein is washed out during the procedure. In contrast, low-abundance proteins are concentrated on their specific ligands (pink and teal beads), thereby decreasing the dynamic range of proteins in the sample. When analyzed in downstream applications, the number of proteins detected is dramatically increased.

Protein Depletion

bio-rad.com/proteinsampleprep

ProteoMiner Small- and Large-Capacity Kits

ProteoMiner kits for protein enrichment are now offered in formats optimized for varying starting amounts of sample protein.

- Small-capacity kits optimized for use with limited sample material (minimum 10 mg of protein is recommended)
- Large-capacity kits optimized for use with samples in which at least 50 mg of protein is available

For More Information Web: bio-rad.com/proteominer Request or download bulletins: 5632, 5635, and 5841

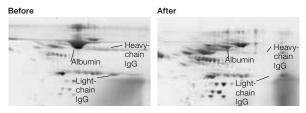
Catalog #	Description	
1633006	ProteoMiner Protein Enrichment Small-Capacity Kit, 10 preps, for processing 10 mg of total protein, includes 10 spin columns, wash buffer, elution reagents, collection tubes	
1633007	ProteoMiner Protein Enrichment Large-Capacity Kit, 10 preps, for processing 50 mg of total protein, includes 10 spin columns, wash buffer, elution reagents, collection tubes	
1633008	ProteoMiner Protein Enrichment Introductory Small-Capacity Kit, 2 preps, for processing 10 mg of total protein, includes 2 spin columns, wash buffer, elution reagents, collection tubes	
1633009	ProteoMiner Protein Enrichment Introductory Large-Capacity Kit, 2 preps, for processing 50 mg of total protein, includes 2 spin columns, wash buffer, elution reagents, collection tubes	
ProteoMine	r Sequential Elution Kits	
1633010	ProteoMiner Sequential Elution Small-Capacity Kit, 10 preps, for processing 10 mg of total protein, includes 10 spin columns, wash buffer, 4 sequential elution reagents, collection tubes	
1633011	ProteoMiner Sequential Elution Large-Capacity Kit , 10 preps, for processing 50 mg of total protein, includes 10 spin columns, wash buffer, 4 sequential elution reagents, collection tubes	
ProteoMine	r Kit Accessories	
1633003	ProteoMiner Sequential Elution Reagents, 10 preps, includes reagents only (columns not included), to be used with #1633006 or #1633007	

Aurum[™] Kits and Columns

The Aurum[™] Affi-Gel[®] Blue and Aurum serum kits and columns use affinity chromatography to reduce albumin and IgG, which improves analysis of lower abundance proteins. These products utilize a quick and easy spin-column format and provide eluted proteins ready for analysis.

For More Information Web: bio-rad.com/proteindepletion

Request or download bulletin: 2823



Removal of albumin and IgG from serum using the Aurum serum protein mini kit. Total protein (1.32 mg) was purified on an Aurum serum protein mini column. Left, untreated serum; right, serum treated with the Aurum kit.

Ordering Inf	Ordering Information	
Catalog #	Description	
7326701 7326708	Aurum Serum Protein Mini Kit, 10 pack, includes columns and buffers Aurum Affi-Gel Blue Mini Columns, 25 pack	

Nucleic Acid Sample Preparation

RNA Isolation

Bio-Rad offers a broad range of sample preparation products for RNA isolation. Scalable and high-throughput products are available.

RNA Isolation Product Selection Guide

	Aurum [™] Total RNA Kits			PureZOL [™] RNA	
	Mini Kit	Fatty and Fibrous Tissue Kit	96 Kit	Isolation Reagent	
Format	Mini column filtration (vacuum or spin)	Mini column filtration (vacuum or spin)	96-well plate filtration (vacuum or spin)	Single solution organic extraction	
Maximum starting material amounts					
Cultured cells	2 x 10 ⁶	1 x 10 ⁷	1 x 10 ⁶	1 x 10 ⁷	
Bacterial cells	2.4 x 10 ⁹	2.4 x 10 ⁹	8 x 10 ⁸	2.4 x 10 ⁹	
Yeast cells Hard animal tissue	3 x 10 ⁷ 20 mg	3 x 10 ⁷ 100 mg	2 x 10 ⁷	3 x 10 ⁷	
Soft to moderately hard animal tissue	40 mg	100 mg	_	100 mg 100 mg	
Plant tissue	40 mg	100 mg	_	100 mg	
Isolation method	Silica membrane	Lysis with PureZOL reagent, purification on silica membrane	Silica membrane	Organic extraction	
Number of preps	50	50	192 (2 x 96-well plate)	50 or 100 (1 ml/prep)	
Number of washes	3	3	3	-	
DNase I included*	Yes	Yes	Yes	No	
DNase I digest time	15 min (animal tissue, 25 min)	15 min	10 min	-	
Total preparation time**	<50–80 min (with DNase I digest)	<50–80 min (with DNase I digest)	<60 min (with DNase I digest)	<60 min	
Binding capacity	>100 µg	>100 µg	>40 µg	_	
Maximum elution volume	80 µl (2 x 40 µl elutions)	2 x 40 µl	80 µl	30–100 µl	
Yield***	20–30 µg/2 x 10 ⁶ NIH 3T3 cells 20–40 µg/2 x 10 ⁶ HeLa cells 15–20 µg/40 mg brain 30–55 µg/20 mg thymus 15–30 µg/40 mg spleen 8–15 µg/40 mg liver 15–20 µg/40 mg kidney 8–15 µg/40 mg potato 20–30 µg/3 x 10 ⁷ <i>S. cerevisiae</i> cells 35–55 µg/2.4 x 10 ⁹ <i>E. coli</i> cells	140–150 μg/1 x 10 ⁷ 293H cells 90–100 μg/100 mg brain 50–60 μg/100 mg breast 80–90 μg/100 mg heart 60–70 μg/100 mg skin 50–60 μg/100 mg cartilage 20–30 μg/2.4 x 10 ⁹ <i>E. coli</i> cells 60–65 μg/3 x 10 ⁷ <i>S. cerevisiae</i> cells 90–100 μg/100 mg potato 5–10 μg/100 mg <i>Arabidopsis</i> 10–15 μg/50 mg <i>A. niger</i>	10 μg/1 x 10 ⁶ NIH 3T3 cells 17 μg/1 x 10 ⁶ HeLa cells 11 μg/2 x 10 ⁷ <i>S. cerevisiae</i> cells 5 μg/8 x 10 ⁸ <i>E. coli</i> cells 5 μg/8 x 10 ⁸ <i>B. cereus</i> cells	1.37 μ g/1 x 10 ⁵ 293H cells 1.15 μ g/mg brain 1.37 μ g/mg fat 1.2 μ g/mg heart 0.66 μ g/mg cartilage 1.2 μ g/mg skin 1.0 μ g/mg potato 0.1 μ g/mg <i>Arabidopsis</i> 0.38 μ g/mg <i>A. niger</i> 0.63 μ g/2.4 x 10 ⁵ <i>E. coli</i> cells 0.31 μ g/3 x 10 ⁵	
Purity	A ₂₆₀ /A ₂₈₀ of 1.9–2.1	A ₂₆₀ /A ₂₈₀ of 1.9–2.1	A ₂₆₀ /A ₂₈₀ of 1.9–2.1	A ₂₆₀ /A ₂₈₀ of 1.9–2.1	

* Removal not required.

** Total preparation time will vary depending on the tissue or cell type and on which format is used (vacuum or spin).

*** Yields will vary depending on the developmental stage, tissue type or cell line, and growth conditions used.

electrophoresis system: pages 267–272.

See Also PCR reagents: pages 372–385. Real-time PCR systems: pages 361–366. Experion automated

DNA amplification/PCR pages 349–402.

Nucleic Acid Sample Preparation

RNA Isolation

See Also

PureZOL reagent: page 11. Lipid transfection reagents: pages 337–338. DNA amplification/PCR: pages 349–402.

Aurum[™] Total RNA Kits

Aurum total RNA kits are designed and formulated to assist in the isolation of highly pure and intact RNA from a variety of starting materials. Isolated RNA is compatible with downstream applications including real-time qPCR, northern blotting, microarray analysis, and cDNA library construction.

- Isolate high yields of RNA from a wide range of sample types in less than 60 min
- DNase treatment ensures genomic DNA removal
- Produce ready-to-use RNA suitable for the most demanding downstream applications

Aurum total RNA kits offer streamlined processing using a choice of vacuum- or spin-mediated protocols. If vacuum-mediated purification is preferred, the protocol may be performed with a vacuum manifold.*

For More Information

Web: bio-rad.com/rna-isolation Request or download bulletins: 2919, 2920, and 5282

Aurum Total RNA Mini Kit

The Aurum total RNA mini kit produces DNA-free total RNA from a wide range of starting materials, including cultured cells, bacteria, and yeast, as well as animal and plant tissues. The kit utilizes a stringent reagent composed of guanidine isothiocyanate and β -mercaptoethanol for efficient sample lysis and quick RNase inactivation, followed by purification on silica membrane in a spin-column format using a spin- or vacuum-mediated protocol. The kit can also be used for RNA cleanup and desalting.

Aurum Total RNA Fatty and Fibrous Tissue Kit

The Aurum total RNA fatty and fibrous tissue kit isolates total RNA from samples that are difficult to disrupt. The kit is effective for purifications involving fatty and fibrous tissues or samples, such as fungi, that are rich in RNases. The kit utilizes PureZOL[™] RNA reagent, a potent phenol-based reagent, which effectively lyses tissues and cells. The kit includes spin columns that can be processed using a choice of vacuum- or spin-mediated protocols.

* The Aurum vacuum manifold is no longer available. Please contact Bio-Rad Technical Support for information on alternative products.



Aurum Total RNA Fatty and Fibrous Tissue Kit

Aurum Total RNA 96 Kit

The Aurum total RNA 96 kit reproducibly isolates DNA-free total RNA from cultured cells, bacteria, and yeast in under 60 minutes in a 96-well format for high-throughput total RNA isolation. The total RNA binding plate is designed for use on the Aurum vacuum manifold.*

Consumables and Accessories

The reagents and plasticware used in the Aurum RNA kits are available as refill orders. These products can be ordered separately from the Aurum total RNA kits.

bio-rad.com/nasampleprep

RNA Isolation

Catalog #	Description
7326820	Aurum Total RNA Mini Kit, 50 preps, includes 50 RNA binding columns, 50 capless collection tubes (2.0 ml), 100 capped sample tubes (2.0 ml), 50 capped sample tubes (1.5 ml), 1 vial lyophilized DNase I, RNase-free reagents
7326830	Aurum Total RNA Fatty and Fibrous Tissue Kit, 50 preps, includes #7326870, 50 ml PureZOL RNA isolation reagent
7326870*	Aurum Total RNA Fatty and Fibrous Tissue Module, 50 preps, includes 50 RNA binding columns, 50 capless collection tubes (2.0 ml), 100 capped sample tubes (2.0 ml), 50 capped sample tubes (1.5 ml), 1 vial lyophilized DNase I, RNase-free reagents, and plasticware
7326800	Aurum Total RNA 96 Kit, 2 x 96-well preps, includes 2 grow blocks, sealing tape, 2 RNA binding plates, 2 collection microplates, 2 vials lyophilized DNase I, RNase-free reagents
Aurum Cons	umables and Accessories
7326828	DNase I, RNase-free, lyophilized, 1 vial
7326801	Aurum Total RNA Elution Solution, RNase-free, 20 ml
7326802	Aurum Total RNA Lysis Solution, RNase-free, 85 ml
7326803	Aurum Total RNA Wash High-Stringency Solution, RNase-free, 150 ml
7326804	Aurum Total RNA Wash Low-Stringency Solution, 60 ml
7326805	Aurum DNase Dilution Solution, 20 ml
7326826	Aurum RNA Binding Mini Columns, 50

* Does not include PureZOL RNA isolation reagent (see catalog #7326880 or #7326890 to order separately).

PureZOL[™] RNA Isolation Reagent

The PureZOL RNA isolation reagent protocol is an improvement over the rapid, widely used, and proven method of RNA isolation developed by Chomczynski and Sacchi (1987). PureZOL RNA isolation reagent is a potent monophasic combination of phenol and the chaotropic agent guanidine isothiocyanate, which effectively lyses cells and tissues, deproteinates RNA, and inactivates endogenous nucleases in a single step. DNA and protein are efficiently removed from the RNA following phase separation.

The ready-to-use PureZOL RNA isolation reagent is a versatile and efficient means of isolating high yields of RNA from a variety of sources including cultured cells, animal and plant tissue, yeast, virus, and bacteria samples. The single-solution format permits recovery of RNA from small quantities of tissues or cells, making it ideally suited for gene expression analysis or whenever sample quantities are limited. Total RNA isolated using PureZOL RNA isolation reagent is free of



DNA and protein and can be used for northern blot analysis, in vitro translation, poly(A)+ selection, RNase protection assays, RT-PCR, and molecular cloning. Since no spin columns are used in the protocol, the protocol is scalable to accommodate a wide range of sample sizes.

For More Information Web: bio-rad.com/purezol

Ordering Information

Catalog #	Description
7326880	PureZOL RNA Isolation Reagent, 50 ml
7326890	PureZOL RNA Isolation Reagent, 100 ml

See Also

Aurum total RNA kits: pages 10–11.

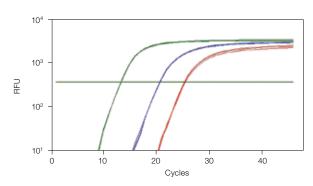
iScript[™] RT-qPCR Sample Preparation Reagent

iScript RT-qPCR sample preparation reagent enables efficient cell lysis and RNA stabilization for sensitive quantitative gene expression analysis without RNA purification. This unique reagent accelerates and streamlines RT-qPCR analysis of cultured cells by eliminating the need to purify RNA. Reverse transcription and real-time PCR (qPCR) can be performed directly from cell lysates. This reagent is ideal for rapid, high-throughput gene expression analysis such as validation of siRNA-mediated gene knockdown.

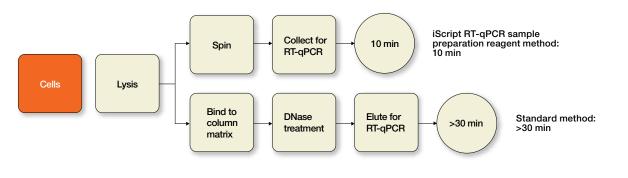
- Rapid protocol (5–10 min) efficiently stabilizes RNA
- Sensitive detection of high-, medium-, and low-copy number gene targets directly from cell lysates
- Reagent enables multiplex qPCR detection of up to 4 targets from as few as 10 cells

For More Information Web: bio-rad.com/iscript-sampleprep

Request or download bulletin: 5736



iScript RT-qPCR sample preparation reagent provides rapid yet sensitive gene expression results for high-, medium-, and low-copy number gene targets. HeLa cells were treated with iScript RT-qPCR sample preparation reagent at 125 cells/µl and the expression levels of three different genes were assessed. 18S rRNA (-), β-tubulin (-), and CMYC (-) expression levels were determined by performing reverse transcription (iScript cDNA synthesis kit) and qPCR (iQ[™] SYBR[®] Green supermix) directly from cell lysate preparations. RFU, relative fluorescence units.



Ordering Inf	formation
Catalog #	Description
1708898	iScript RT-qPCR Sample Preparation Reagent, 100 reactions, 10 ml, contains RNase inhibitors and RNA stabilizers
1708899	iScript RT-qPCR Sample Preparation Reagent, 500 reactions, 5 x 10 ml, contains RNase inhibitors and RNA stabilizers

DNA Isolation

DNA Isolation Kit Selection Guide

Kit		DNA Yield	Preparation Time	Bacterial Culture Volume	Purification Format	Binding Matrix	Growth Media
Quantum Prep [®] plasmid miniprep	I	≤40 µg	<15 min	1–10 ml	Spin	Diatomaceous earth	Enriched or standard
Quantum Prep plasmid midiprep	Ţ	≤400 µg	45 min	20–40 ml	Spin	Diatomaceous earth	Enriched or standard
Aurum [™] plasmid mini	8	≤20 µg	<10 min	1–5 ml	Vacuum* and spin	Silica membrane	Standard

* Using the Aurum vacuum manifold. This product is no longer available. Please contact Bio-Rad Technical Support for information on alternative products.

Quantum Prep® Plasmid Kits

Quantum Prep Plasmid Miniprep Kit

The Quantum Prep miniprep kit offers high quality and yield in an easy spin-based procedure that takes less than 15 minutes from cell culture to purified plasmid. Plasmid DNA is recovered in water or TE for immediate use in all downstream molecular biology applications.

Quantum Prep Plasmid Midiprep Kit

The Quantum Prep plasmid midiprep kit uses a simple spin-column procedure that significantly reduces the time required to generate the large quantities of plasmid DNA needed to support applications such as transfection, subcloning, and other enzymatic manipulations.

For More Information Web: bio-rad.com/quantum-prep

Request or download bulletin: 2325



Ordering Information

Catalog #	Description
7326100	Quantum Prep Plasmid Miniprep Kit, 100 preps, includes 25 ml cell resuspension solution, 25 ml cell lysis
	solution, 25 ml neutralization solution, 20 ml Quantum Prep matrix, 63 ml wash solution, 100 spin columns
7326120	Quantum Prep Plasmid Midiprep Kit, 20 preps, includes 110 ml cell resuspension solution, 110 ml cell lysis
	solution, 110 ml neutralization solution, 20 ml Quantum Prep matrix, 125 ml wash solution, 20 midi spin columns

DNA Isolation

See Also

Lipid transfection reagents: pages 337–338. DNA amplification/PCR: pages 349–402.

Aurum[™] Plasmid Mini Kit

The easy-to-use Aurum plasmid mini kit improves the efficiency and throughput of plasmid purifications with a simple bind-wash-elute protocol using silica membranes, all in less than 10 minutes. Spin- and vacuum-mediated protocols are available. The purified plasmid DNA can be immediately used in any downstream molecular biology application.

The Aurum plasmid mini kit delivers high yields of reproducible plasmid DNA preparations for:

- Automated fluorescence-based sequencing
- Restriction digestion
- Ligation and transformation
- Transfection
- PCR

For More Information

Web: bio-rad.com/aurum-plasmid Request or download bulletin: 2664



Ordering Infor	mation
Catalog #	Description
7326400	Aurum Plasmid Mini Kit, 100 preps, includes plasmid-binding mini columns, 100 capless collection tubes, reagents, protocol overview

See Also

Molecular biology and biotechnology grade resins: page 64.

InstaGene[™] Matrix

InstaGene matrix is designed for rapid isolation of small amounts of genomic DNA of sufficient purity for PCR in under an hour. The specially formulated 6% w/v Chelex[®] resin adsorbs cell lysis products that interfere with PCR, leaving genomic DNA template in the supernatant where it is immediately available for PCR reactions.

For More Information

Web: bio-rad.com/instagene-matrix Request or download bulletin: 2074

InstaGene Protocol







Add InstaGene matrix and incubate at 56°C for 30 min.

Vortex and incubate at 100°C for 8 min.



Spin; use supernatant for PCR.

Ordering Infor	mation
Catalog #	Description
7326030	InstaGene Matrix, 20 ml, sufficient for 100 extractions

Nucleic Acid Sample Preparation

DNA Cleanup

bio-rad.com/nasampleprep

Chelex[®] 100 Molecular Biology Grade Resin

Nuclease and ligase inhibitor-free, this pipettable, small-

For More Information Web: bio-rad.com/dna-isolation

See Also

Molecular biology and biotechnology grade resins: page 64.

scale resin is certified not to inhibit PCR and ensures complete removal of PCR inhibitors and metal ions.

Request or download bulletin: 2074

Catalog # Description 1421253 Chelex 100 Resin, molecular biology grade, 50 g, sodium, 200-400 dry mesh, 75-150 µm wet bead

Ordering Information

DNA Cleanup

Bio-Rad offers a variety of sample preparation and cleanup columns; many are also suitable for DNA fragment purification.

2

3 4 5

6

1,000 bp

200

100

Freeze 'N Squeeze[™] DNA Gel Extraction Spin Columns

Freeze 'N Squeeze spin columns offer a filtration-based purification method, which provides a quick and effective alternative to chemical extraction and electroelution methods. The Freeze 'N Squeeze method uses centrifugation to draw 50-23,000 bp DNA out of agarose gel slices that have been guickly frozen and thawed. Features include:

- No solutions to prepare save time and avoid using toxic chaotropic materials
- DNA immediately available for PCR, subcloning, ligations, and sequencing reactions
- Less than 1 min of hands-on time

For More Information

Web: bio-rad.com/freeze-n-squeeze

Freeze 'N Squeeze Method



Cut out gel slice







Transfer to spin column and freeze for 5 min.

-20°C for 5 min



Spin for 3 min.



See Also

Agarose gel system: page 252. DNA ladders: pages 262-263.

Recovery of DNA fragments using Freeze 'N Squeeze spin columns. Extracted fragments were rerun on a

ReadyAgarose[™] 1% TAE gel. Lane 1, precision molecular mass ruler; lane 7, EZ Load[™] 100 bp PCR molecular ruler.



ordering	mormation	
Catalog #	Description	

outdiog "	Description
7326165	Freeze 'N Squeeze DNA Gel Extraction Spin Columns, 25 columns
7326166	Freeze 'N Squeeze DNA Gel Extraction Spin Columns, 100 columns

Prepacked Spin Columns

Prepacked size exclusion spin columns allow easy cleanup and purification of DNA and proteins from lower MW contaminants. Bio-Spin[®], Micro Bio-Spin[™], and PCR Kleen[™] columns clean up DNA or protein samples quickly and easily using size exclusion chromatography. These columns are available in multiple sizes and offer multiple MW exclusion limits to accommodate a variety of needs. Use the chart below to choose the column that best meets your needs.

Prepacked Spin Column Selection Guide

	Bio-Spin 6	Micro Bio-Spin 6	Bio-Spin 30	Micro Bio-Spin 30	PCR Kleen
Packed support	Special grade Bio-Gel [®] P-6 gel	Special grade Bio-Gel P-6 gel	Special grade Bio-Gel P-30 gel	Special grade Bio-Gel P-30 gel	Special grade size exclusion gel
Equilibration buffer	10 mM Tris, pH 7.4, or SSC buffer*	10 mM Tris, pH 7.4, or SSC buffer*	10 mM Tris, pH 7.4, or SSC buffer*	10 mM Tris, pH 7.4, or SSC buffer*	10 mM Tris, 1 mM EDTA, pH 7.0
Applications Desalting of oligonucleotides >20 bases	•	•	-	-	-
Labeling reactions: removal of unincorporated nucleotides >20 bases or bp from DNA	_	_	•	•	_
Removal of primers and primer-dimers from PCR products >200 bp	-	_	_	_	•
Buffer exchange (restriction fragments, PCR products, enzyme reactions, sequencing templates)	•	•	_	•	_
DNA sequencing reaction mixture cleanup**	-	-	•	•	-
Riboprobe cleanup***	-	_	_	•	_
Desalting of antibody, enzyme, and protein solutions	•	•	_	•	-
Purification of proteins of molecular weight >6,000	•	•	_	_	-
Purification of proteins of molecular weight >40,000	-	-	•	•	-
Bed volume	1.1 ml	0.7 ml	1.1 ml	0.7 ml	0.6 ml
Retention and recovery	90% recovery of 20 bases or bp, 99% retention of salts	90% recovery of 20 bases or bp, 99% retention of salts	95% recovery of 22 bases or bp, 98% retention of ddNTPs	95% recovery of 22 bases or bp, 98% retention of ddNTPs	85% recovery of ≥700 bp, 95% retention of primers and primer-dimers
Molecular weight exclusion limit, globular proteins	6,000	6,000	40,000	40,000	8,000,000
Sample volume	50–100 µl	10–75 µl	50–100 µl	10–75 µl	25–100 µl
Centrifuge type	Swinging bucket	Microcentrifuge	Swinging bucket	Microcentrifuge	Microcentrifuge
Autoclavability	Yes	Yes	Yes	Yes	Yes

* 150 mM NaCl, 17.5 mM sodium citrate, pH 7.0.

** In Tris buffer.

*** In RNase-free Tris buffer.

bio-rad.com/nasampleprep

Nucleic Acid Sample Preparation

DNA Cleanup

See Also

Bio-Spin,

page 103.

Mini Bio-Spin

empty columns:

Empty columns:

pages 103-110.

Bio-Gel P resin: page 85.

Micro Bio-Spin, and

Prepacked Bio-Spin and Micro Bio-Spin Columns

Bio-Spin and Micro Bio-Spin columns clean up and remove salts, nucleotides, dye terminators, and small molecules from DNA, RNA, and protein samples in 10 minutes. Filled with specially sized Bio-Gel[®] P gels, these columns are shipped fully hydrated in Tris or SSC buffer. They yield 95% recovery of DNA >22 bp and allow sample loads of 10–100 µl. For safe riboprobe preparation use RNase-free Micro Bio-Spin P-30 Tris spin columns.

For More Information

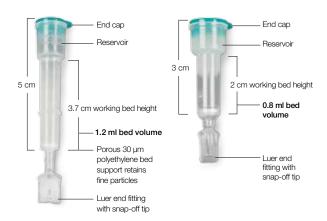
Web: bio-rad.com/dna-cleanup and /protein-cleanup

PCR Kleen Spin Columns

PCR Kleen columns are prepacked spin columns for purifying PCR products and other DNA molecules >200 bp directly from reaction mixtures. A simple 4-minute spin effectively removes salts, nucleotides, enzymes, primers, and primer-dimers. Purified DNA fragments are immediately available for secondary PCR, subcloning, restriction digests, ligations, sequencing, and other enzymatic manipulations.

For More Information

Web: bio-rad.com/dna-cleanup Request or download bulletin: 2311



Prepacked Bio-Spin and Micro Bio-Spin Columns



PCR Kleen Spin Columns

Catalog #	Description	
Micro Bio-S	pin Columns with Bio-Gel P-6 in Tris Buffer	
7326221	Micro Bio-Spin 6 Columns, includes 25 columns in Tris buffer, 50 collection tubes	
7326222	Micro Bio-Spin 6 Columns, includes 100 columns in Tris buffer, 200 collection tubes	
Micro Bio-S	pin Columns with Bio-Gel P-30 in Tris Buffer	
7326223	Micro Bio-Spin 30 Columns, includes 25 columns in Tris buffer, 50 collection tubes	
7326224	Micro Bio-Spin 30 Columns, includes 100 columns in Tris buffer, 200 collection tubes	
7326250	Micro Bio-Spin 30 Columns, includes 25 columns in Tris buffer, 50 collection tubes, RNase-free	
7326251	Micro Bio-Spin 30 Columns, includes 100 columns in Tris buffer, 200 collection tubes, RNase-free	
Micro Bio-S	pin Columns with Bio-Gel P-6 in SSC Buffer	
7326200	Micro Bio-Spin 6 Columns, includes 25 columns in SSC buffer, 50 collection tubes	
7326201	Micro Bio-Spin 6 Columns, includes 100 columns in SSC buffer, 200 collection tubes	
Micro Bio-S	pin Columns with Bio-Gel P-30 in SSC Buffer	
7326202	Micro Bio-Spin 30 Columns, includes 25 columns in SSC buffer, 50 collection tubes	
7326203	Micro Bio-Spin 30 Columns, includes 100 columns in SSC buffer, 200 collection tubes	
Bio-Spin Co	lumns with Bio-Gel P-6 in Tris Buffer	
7326227	Bio-Spin 6 Columns, includes 25 columns in Tris buffer, 50 collection tubes	
7326228	Bio-Spin 6 Columns, includes 100 columns in Tris buffer, 200 collection tubes	
Bio-Spin Co	lumns with Bio-Gel P-30 in Tris Buffer	
7326231	Bio-Spin 30 Columns, includes 25 columns in Tris buffer, 50 collection tubes	
7326232	Bio-Spin 30 Columns, includes 100 columns in Tris buffer, 200 collection tubes	
Bio-Spin Co	lumns with Bio-Gel P-6 in SSC Buffer	
7326002	Bio-Spin 6 Columns, includes 25 columns in SSC buffer, 50 collection tubes	
Bio-Spin Co	lumns with Bio-Gel P-30 in SSC Buffer	
7326006	Bio-Spin 30 Columns, includes 25 columns in SSC buffer, 50 collection tubes	
PCR Kleen S	Spin Columns	
7326300	PCR Kleen Spin Columns, 25	

Sample Preparation Subject Index

Subject Index

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Sample Quantitation

Protein Assay Kits	20
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Protein Assay Kits

See Also

SmartSpec Plus spectrophotometer: page 23. Microplate readers: page 330. Cuvettes: page 25. Determining the concentration of protein samples is critical for many experiments, and most protein samples can be quantitated by a colorimetric assay. In a typical protein assay, a chemical reagent is added to a protein sample solution, producing a color change that is measured with a spectrophotometer or microplate reader and compared to a standard curve of known protein concentrations. Bio-Rad offers four protein assays, each with a unique set of advantages. All assays can be easily automated for large numbers of samples.

Bio-Rad offers four protein assays:

- Quick Start[™] Bradford protein assay the single-step method for determining protein concentration in solution
- Bio-Rad protein assay for quantitating most proteins and polypeptides with MWs >3,000
- *DC*[™] protein assay for use with samples containing detergent
- RC DC[™] protein assay for complex sample solutions containing reducing agents and detergents

For More Information Web: bio-rad.com/proteinassays Request or download bulletin: 1069

Protein Assay Selection Guide*

Frotein Assay Selection duide				
	Quick Start Bradford	Bio-Rad	DC	RC DC
Application	Single-step method	Quantitates most proteins	For samples with detergent	For complex samples with reductants and detergents
Method adapted from	Bradford (1976)	Bradford (1976)	Lowry et al. (1951)	Lowry et al. (1951)
Standard-concentration assay Sample volume Linear range	100 μl 0.125–1.5 mg/ml	100 μl 0.125–1.5 mg/ml	100 µl 0.125–1.5 mg/ml	100 μl 0.2–1.5 mg/ml
Low-concentration assay Sample volume Linear range	1 ml 1.25–25 µg/ml	800 μl 1.25–25 μg/ml	200 μl 5–250 μg/ml	200 μl 5–250 μg/ml
Microplate assay sample volume	5 µl	10 µl	5 µl	**
Minimum incubation time	5 min	5 min	15 min	15 min
Assay wavelength	595 nm	595 nm	650–750 nm	650–750 nm

* Standard-concentration assay is designed for smaller sample volumes of higher protein concentration, while the low-concentration assay is designed for larger sample volumes of lower protein concentration.

** To adapt the *RC DC* assay to a microplate format, follow the micro test tube (microfuge tube) assay protocol in the *RC DC* protein assay instruction manual up to the centrifugation step where the supernatant is discarded. The pellet can then be transferred to the microplate, and the microplate assay protocol in the *DC* protein assay instruction manual can be followed.

Quick Start[™] Bradford Protein Assay

The Quick Start Bradford protein assay is a streamlined, accurate procedure for determining the concentration of protein in solution. Ready-to-use dye reagent and prediluted protein standards allow one-step determination of protein concentration.

Quick Start Bradford kits offer either bovine serum albumin or bovine γ -globulin standard sets. Each kit contains two aliquots each of seven concentrations (0.125, 0.25, 0.5, 0.75, 1.0, 1.5, and 2.0 mg/ml) conveniently packaged in screwcap vials, eliminating ampoules and ensuring protein stability for one year when stored at 4°C. Standards are also available in five 2 mg/ml aliquots for creating your own dilutions.

The 1x dye reagent can be used for performing 1 and 5 ml standard assays, microplate assays, or microassays.



For More Information Web: bio-rad.com/quickstart Request or download bulletins: 1069 and 2969

bio-rad.com/proteinassays

Ordering Information		
Catalog #	Description	
5000201	Quick Start Bradford Protein Assay Kit 1, includes 1x dye reagent (1 L), bovine serum albumin standard (5 x 2 mg/ml); sufficient for 200 standard assays or 4,000 microplate assays	
5000202	Quick Start Bradford Protein Assay Kit 2, includes 1x dye reagent (1 L), bovine serum albumin standard set (2 sets of 7 concentration standards, 0.125–2.0 mg/ml, 2 ml)	
5000203	Quick Start Bradford Protein Assay Kit 3, includes 1x dye reagent (1 L), bovine γ-globulin standard (5 x 2 mg/ml)	
5000204	Quick Start Bradford Protein Assay Kit 4, includes 1x dye reagent (1 L), bovine γ-globulin standard set (2 sets of 7 concentration standards, 0.125–2.0 mg/ml, 2 ml)	
Reagents		
5000205	Quick Start Bradford 1x Dye Reagent, 1 L	
Accessories		
5000206	Quick Start Bovine Serum Albumin Standard, 5 x 2 ml vials of 2 mg/ml	
5000207	Quick Start Bovine Serum Albumin Standard Set, 2 sets of 7 concentration standards, 0.125–2.0 mg/ml	
5000208	Quick Start Bovine γ -Globulin Standard, 5 x 2 ml vials of 2 mg/ml	
5000209	Quick Start Bovine γ-Globulin Standard Set, 2 sets of 7 concentration standards, 0.125–2.0 mg/ml	

Bio-Rad Protein Assay

The Bio-Rad protein assay is a simple colorimetric assay for determining total protein concentration. It is easy to adapt the assay from the standard-concentration range to a low-concentration microassay or for use in 96-well microplates for rapid determinations.

The Bio-Rad protein assay is based on the Bradford dyebinding procedure (Bradford 1976), which measures the color change of Coomassie Brilliant Blue G-250 dye when it binds to protein (primarily to basic and aromatic amino acid residues). The assay quantitates most proteins and polypeptides with MWs >3,000. Some detergents and basic buffers interfere with the assay.

For More Information Web: bio-rad.com/BRprotein Request or download bulletins: 1069 and 1123

Ordering Information



er der mig mite	
Catalog #	Description
5000001	Bio-Rad Protein Assay Kit I, includes 450 ml dye reagent concentrate, bovine γ-globulin standard; sufficient for 440 standard assays or 2,200 microplate assays
500002	Bio-Rad Protein Assay Kit II, includes 450 ml dye reagent concentrate, bovine serum albumin standard; sufficient for 440 standard assays or 2,200 microplate assays
Reagents	
5000006	Bio-Rad Protein Assay Dye Reagent Concentrate, 450 ml
Accessories	
5000005	Protein Standard I, bovine γ-globulin, reconstituted volume 20 ml
5000007	Protein Standard II, bovine serum albumin, reconstituted volume 20 ml

bio-rad.com/proteinassays

DC[™] Protein Assay

The *DC* (detergent compatible) protein assay is a colorimetric assay for protein determination of samples that contain detergents. The reaction is similar to the well-documented Lowry assay (Lowry et al. 1951), but has been modified to save time. The *DC* protein assay requires only a single 15 minute incubation, and the absorbance readings are stable for at least 2 hours.

For More Information Web: bio-rad.com/DCprotein Request or download bulletins: 1069, 1731, 1770, and 1909



Ordering Information	
Catalog #	Description
5000111	DC Protein Assay Kit I , includes 250 ml alkaline copper tartrate solution, 2 L dilute Folin reagent, 5 ml surfactant solution, bovine γ-globulin standard; sufficient for 450 standard assays
5000112	DC Protein Assay Kit II , includes 250 ml alkaline copper tartrate solution, 2 L dilute Folin reagent, 5 ml surfactant solution, bovine serum albumin standard; sufficient for 450 standard assays
Reagents	
5000113	Protein Assay Reagent A, 250 ml, alkaline copper tartrate solution
5000114	Protein Assay Reagent B, 1 L, dilute Folin reagent
5000115	Protein Assay Reagent S, 5 ml, surfactant solution
5000116	DC Protein Assay Reagents Package, includes 250 ml alkaline copper tartrate solution,
	2 L dilute Folin reagent, 5 ml surfactant solution; sufficient for 450 standard assays
Accessories	
5000005	Protein Standard I, bovine γ -globulin, lyophilized (reconstituted volume 20 ml)
5000007	Protein Standard II, bovine serum albumin, lyophilized (reconstituted volume 20 ml)

See Also

Protein sample preparation: page 2. Cuvettes: page 25.

RC DC[™] Protein Assay

The *RC DC* (reducing agent and detergent compatible) protein assay is a colorimetric assay for protein determination in the presence of reducing agents and detergents. The *RC DC* protein assay, based on the Lowry protocol (Lowry et al. 1951), includes the features of the original *DC* protein assay. Its compatibility with a broader range of reagents allows simplified protein quantitation directly in complex sample solutions.

For More Information Web: bio-rad.com/RCDCprotein Request or download bulletins: 1069 and 2610



bio-rad.com/spectrophotometry

Ordering Info	rmation
Catalog #	Description
5000121	RC DC Protein Assay Kit I, includes RC reagents package, DC protein assay reagents package, bovine γ-globulin standard; sufficient for 450 standard assays
5000122	RC DC Protein Assay Kit II , includes RC reagents package, <i>D</i> C protein assay reagents package, bovine serum albumin standard; sufficient for 450 standard assays
Reagents	
5000113	Protein Assay Reagent A, 250 ml, alkaline copper tartrate solution
5000114	Protein Assay Reagent B, 1 L, dilute Folin reagent
5000115	Protein Assay Reagent S, 5 ml, surfactant solution
5000116	DC Protein Assay Reagents Package, includes 250 ml alkaline copper tartrate solution, 2 L dilute Folin reagent, 5 ml surfactant solution; sufficient for 450 standard assays
5000120	RC DC Protein Assay Reagents Package, includes RC reagents package and DC protein assay reagents package; sufficient for 450 standard assays
5000119	RC Reagents Package, includes RC reagent I (250 ml) and RC reagent II (250 ml); sufficient for 500 standard assays
5000117	RC Reagent I, 250 ml
5000118	RC Reagent II, 250 ml
Accessories	
5000005	Protein Standard Ι, bovine γ-globulin, lyophilized (reconstituted volume 20 ml)
5000007	Protein Standard II, bovine serum albumin, lyophilized (reconstituted volume 20 ml)

Spectrophotometry

SmartSpec[™] Plus Spectrophotometer

The SmartSpec Plus spectrophotometer has a more complete range of features and functions than many other benchtop spectrophotometers, offering affordable performance, stability, and functionality.

The SmartSpec Plus is a UV/visible spectrophotometer with a working wavelength range of 200–800 nm. For routine work with nucleic acid and protein samples, the SmartSpec Plus spectrophotometer provides you with an instrument for:

- Quantitation of DNA, RNA, oligonucleotides, and proteins
- Monitoring cell culture growth
- Simple kinetics assays
- Wavelength scans with peak detection

A simple, menu-driven interface simplifies assays and provides common sample computations at the touch of a button. Conversion factors can be stored and modified. The SmartSpec Plus instrument can automatically provide results such as:

- A_{260}/A_{280} ratio for nucleic acid purity
- Quantitation that takes dilution factors into account



- Sample concentration in µg/ml (additionally in pmol/µl for oligonucleotides)
- Molar extinction coefficient and MW of oligonucleotides

At the end of an assay, a report can be printed that shows the user, date, and results.

See Also

Protein assay kits: page 20. Cuvettes: page 25.

bio-rad.com/spectrophotometry

See Also

Protein assay kits: page 20. SmartSpec Plus spectrophotometer: page 23.

Nucleic Acid Quantitation

The SmartSpec Plus spectrophotometer offers a complete solution for the quantitation of dsDNA, ssDNA, or RNA by either using the preprogrammed conversion factors or entering a value that is best for the sample being assayed. The SmartSpec Plus instrument will provide absorbance, concentration, and purity values so you can proceed confidently with downstream experiments.

Protein Quantitation

The SmartSpec Plus instrument has preprogrammed methods for the quantitation of proteins by the Bradford, Lowry, and BCA methods. Features built into each assay method facilitate data collection and present a complete analysis of assay results.

- Standards can be analyzed in groups of up to nine replicates
- Up to 10 standard curves can be stored under user-assigned names
- Mean and standard deviation values are automatically calculated for each replicate group
- Printable report includes a standard curve with r² value

Other Benefits

- Built-in thermal printer
- Xenon flash lamp extends lamp life and reduces maintenance costs
- User interface enables choice of six different languages: English, French, German, Italian, Japanese, and Spanish
- Compact, space-saving design

Cuvettes

Bio-Rad offers compatible quartz and UV-transparent plastic cuvettes.

For More Information

Web: bio-rad.com/spectrophotometry Request or download bulletin: 2826

* This product may not be available in all regions. Please check availability with your Bio-Rad Sales Representative.

Spectrophotometer Cuvette Selection Guide

Min. Volume, µl	Max. Volume, µl	Cuvette Type	Pathlength, mm	Catalog #
1,000	3,500	Standard cuvette, quartz	10	1702502
500	1,400	Semimicrovolume cuvette, quartz	10	1702503
200	700	Microvolume cuvette, quartz	10	1702504
80	100	Submicrovolume cuvette, quartz	10	1702505
50	1,500	trUView™ cuvettes	10	1702510, 1702511

Ordering Information

Catalog #	Description	
SmartSpec	Plus Spectrophotometer	
1702525	SmartSpec Plus Spectrophotometer	
Accessories	s	
1702502	Standard Cuvette, 1–3.5 ml, quartz	
1702503	Semimicrovolume Cuvette, 0.5–1.4 ml, quartz	
1702504	Microvolume Cuvette, 200–700 µl, quartz	
1702505	Submicrovolume Cuvette, 80–100 µl, quartz	
1702506	SmartSpec Printer Paper, 5 pack	
1702507	Spring, cuvette holder	

Cuvettes

trUView[™] Cuvettes

These disposable cuvettes are suitable for most UV and visible spectroscopic assays. Highly transparent trUView cuvettes allow accurate and precise quantitation of DNA, RNA, and protein. Individually packaged trUView cuvettes are free of contaminants and guaranteed DNase, RNase, and pyrogen free. Features of trUView cuvettes include:

- Low volume requirement (≥50 µl) that conserves limited samples
- Individual packaging to prevent scratching and contamination
- Up to 70% light transmission at 260 nm, ensuring accurate nucleic acid quantitation

trUView vs. Quartz Cuvettes

trUView cuvettes provide several advantages over traditional quartz cuvettes for quantitative UV applications, having characteristics that can supplement or replace the use of quartz cuvettes. trUView cuvettes are:

- Ready to use without lengthy sterilization procedures
- Disposable and less expensive to replace

For More Information

Web: bio-rad.com/spectrophotometry

Ordering Information

Catalog #	Description
1702510	trUView Cuvettes, pack of 50
1702511	trUView Cuvettes, pack of 100



Cuvettes

See Also

Protein assay kits: page 20. SmartSpec Plus spectrophotometer: page 23.

Standard and Semimicrovolume Cuvettes

Standard 3.5 ml cuvettes are ideal for use with protein assays (pags 20–22). They adsorb less Coomassie Blue dye than glass or quartz cuvettes. Assays can be mixed directly in the cuvette. The volume of reagents can be reduced, yielding more assays per kit. Semimicrovolume 1.5 ml cuvettes are ideal for precise quantitation of small volume samples. Both standard and semimicrovolume cuvettes are sized to fit most spectrophotometers. The cuvettes offer smooth optical surfaces for consistent and accurate readings.

Bio-Rad also offers other cuvettes for specialized applications, including quartz and disposable cuvettes for SmartSpec[™] spectrophotometers and disposable trUView[™] cuvettes for precise quantitation of small samples of DNA, RNA, and proteins.

For More Information Web: bio-rad.com/spectrophotometry



Cuvette Racks

Ordering Information		
Catalog #	Description	
Disposable F	Polystyrene Cuvettes	
2239950	Standard Disposable Polystyrene Cuvettes, 3.5 ml, 100	
2239955	Semimicrovolume Disposable Polystyrene Cuvettes, 1.5 ml, 100	
Quartz Cuve	ttes	
1702502	Standard Cuvette, 1–3.5 ml, quartz, for use with the SmartSpec Plus spectrophotometer	
1702503	Semimicrovolume Cuvette, 0.5–1.4 ml, quartz, for use with the SmartSpec Plus spectrophotometer	
1702504	Microvolume Cuvette, 200–700 µl, quartz, for use with the SmartSpec Plus spectrophotometer	
1702505	Submicrovolume Cuvette, 80–100 μ l, quartz, for use with the SmartSpec Plus spectrophotometer	
VersaFluor D	Disposable Cuvettes and Cuvette Racks	
1702415	Standard Cuvettes, 12.5 x 12.5 mm (outside dimensions), 4-sided, optically clear polystyrene, 3.5 ml, 100	
1702416	Microcuvettes, 3.0 x 3.0 mm (outside dimensions), 4-sided, optically clear polystyrene, 150–350 µl, 100	
1660485	Cuvette Racks, hold 12 cuvettes each, set of 5	

Sample Quantitation Subject Index

Subject Index

Bio-Rad Protein Assay, 21 *DC*[™] Protein Assay, 22 Quick Start[™] Bradford Protein Assay, 20 *RC DC*[™] Protein Assay, 22 SmartSpec[™] Plus Spectrophotometer, 23 Standard and Semimicrovolume Cuvettes, 26 trUView[™] Cuvettes, 25



Cell Counting

Automated Cell Counting System

30

Automated Cell Counting System

TC20[™] Automated Cell Counter

With its innovative auto-focus and sophisticated cell counting algorithm, the TC20 automated cell counter eliminates subjectivity while delivering reliable counts of mammalian cells in 30 seconds.

- Compatible with a broad range of cell sizes and types counts cell lines, primary cells (from tissue or blood), and stem cells
- Innovative auto-focus technology removes the variation associated with manual focusing and leads to precise cell counts in 30 sec
- Cell size gates user selects a population of interest in complex samples, such as primary cells, or lets the cell counting algorithm do all the work
- Cell viability analyzes cells accurately using multifocal plane analysis
- Easy to archive and analyze stores up to 100 counts in the onboard memory for access any time, or use the optional TC20 data analyzer software on your PC to further analyze exported cell images

Upon insertion of a counting slide, the TC20 provides a total cell count with or without staining and assesses cell viability via trypan blue exclusion. To determine if a cell is viable, the TC20 counter analyzes each cell on images acquired from multiple focal planes during the focusing step. Auto-focus and multifocal plane analysis reduce counting bias associated with manual focusing.

Accuracy is comparable to results obtained with a hemocytometer. The TC20 counter can count cells with a 6–50 μ m cell diameter and within a broad concentration range of 5 x 10⁴–1 x 10⁷ cells/ml, which eliminates the need to dilute cells, thus reducing the errors associated with sample dilutions prior to counting.

For complex samples composed of multiple cell populations, such as primary cells, the position of cell size gates can be adjusted to define the population of interest.

Results from 100 previous counts are stored in the TC20 cell counter and can be exported via the USB port. Images of cells can be further analyzed on a computer using the TC20 data analyzer software.

For More Information Web: bio-rad.com/TC20 Request or download bulletins: 6282 and 6283

Learn More about the Technology Web: bio-rad.com/tech/cellcounting





TC20 Automated Cell Counter, Counting Slides, and Trypan Blue

Catalog #	Description	
TC20 Automa	ated Cell Counter	
1450102	TC20 Automated Cell Counter, 120–240 V, includes instrument, power supply, USB flash drive,	
	30 dual-chamber counting slides (60 counts), 1.5 ml trypan blue	
1450103	TC20 Automated Cell Counter with Thermal Label Printer, 120–240 V, includes instrument,	
	power supply, USB flash drive, USB cable, thermal label printer, 1 roll of 500 labels, 30 dual-chamber	
	counting slides (60 counts), 1.5 ml trypan blue	
Kits and Rea	agents*	
1450003	Counting Kit, includes 30 dual-chamber counting slides (60 counts), 1.5 ml trypan blue	
1450013	Trypan Blue, 0.4% in 0.81% sodium chloride and 0.06% potassium phosphate dibasic solution,	
	sterile filtered, sufficient for 150 counts (10 μ l/count), 1 x 1.5 ml	
1450021	Trypan Blue, 0.4% in 0.81% sodium chloride and 0.06% potassium phosphate dibasic solution,	
	sterile filtered, sufficient for 750 counts (10 μl/count), 5 x 1.5 ml	
1450022	Trypan Blue, 0.4% in 0.81% sodium chloride and 0.06% potassium phosphate dibasic solution,	
	sterile filtered, sufficient for 1,500 counts (10 μ /count), 10 x 1.5 ml	
1450015	Counting Slides, 150 dual-chamber counting slides (300 counts)	
1450016	Counting Slides, 300 dual-chamber counting slides (600 counts)	
1450017	Counting Slides, 600 dual-chamber counting slides (1,200 counts)	
1450018	Counting Slides, 900 dual-chamber counting slides (1,800 counts)	
1450019	Counting Slides, 1,200 dual-chamber counting slides (2,400 counts)	
1450020	Counting Slides, 2,400 dual-chamber counting slides (4,800 counts)	
1450014	System Test Kit, includes verification slide, instructions	
Accessories [®]	*	
1450005	Thermal Label Printer, 120–240 V, includes thermal label printer, USB cable, 1 roll of 500 labels	
1450007	Thermal Printer Labels, 1 roll of 500 labels, for thermal label printer	

* Compatible with TC20 and TC10 automated cell counters.



Flow Cytometry

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Antibody Labeling Kits Cell Viability Assays	41 42

Cell Sorting

Cell sorting provides a method to sort or isolate a homogenous population of cells from a heterogeneous mixture of cells based on intracellular and/or extracellular properties, typically using fluorescence. Expressed fluorescent proteins, such as green fluorescent protein (GFP), or fluorophores conjugated to antibodies bind to markers of interest, which allows for a starting population to be sorted to greater than 99% purity. While cell sorting is commonly used in fields such as immunology, cancer biology, and stem cell biology, it is quickly becoming a useful tool in broader research studies from microbiology to neuroscience. Cell sorting can also be used as an upstream tool for proteomic or genomic experiments to achieve more specific results by reducing background noise or false positives.

Instruments

See Also

S3e Biosafety System Class I: page 37. Cell sorting consumables: page 38. Flow cytometry reagents: page 41. Cell counting: page 30.

S3e[™] Cell Sorter

The S3e cell sorter is the first truly walk-away automated cell sorter available to scientists. The S3e is a compact cell sorter equipped with one or two lasers and up to four fluorescence detectors plus forward and side scatter detection. The cell sorter utilizes established jet-in-air technology in which cells are analyzed directly within the stream before being sorted. Samples can be sorted at high speeds while sensitivity and purity are maintained.

Expertly engineered ProDrop[™] technology automates the drop delay calculation and droplet break-off monitoring, thereby simplifying one of the most complex and error-prone aspects of cell sorting. The drop delay is calculated through direct counting of bead events, ensuring extraordinarily high accuracy and precision.

The S3e features the AutoGimbal[™] system, a highly sophisticated system combining five picomotor controllers, imaging, and software algorithms to enable a hands-free automated process for nozzle tip and stream to optics alignment. The AutoGimbal system provides the added confidence and reproducibility in the sort setup to achieve the best sort results day to day.

The S3e cell sorter is an easy-to-use benchtop sorter for both flow cores and cell biology laboratories. Affordable without compromising performance, this full-featured cell sorter provides researchers access to cell sorting without the need for a dedicated operator.



Features include:

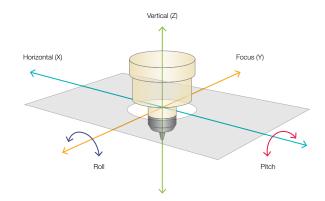
- Simplified instrument setup automated drop delay calculation and droplet break-off monitoring enable precise 1–4 color sorting with minimal training
- Hands-free nozzle tip alignment features AutoGimbal system for fully automatic and walk-away setup
- Compact design only 70 x 65 x 65 cm (2.3 x 2.1 x 2.1 ft) in dimension, it includes an onboard fluidics and temperature control system
- High speed and high purity sorts cells fast while maintaining high sensitivity and purity
- 2-way cell sorting sorts samples into 2 different defined populations at the same time
- Intuitive interface features user-friendly ProSort[™] software for effortless instrument control and sort logic definition

bio-rad.com/cellsorter

Core capabilities of the AutoGimbal system are:

- High-resolution automated alignment driven by software
- Software controlled using image processing and algorithms
- Precise positioning of the nozzle and stream trajectory are fine-tuned with 5-axis piezo-driven submicron motion control
- 3 axes (x, y, and z) for optimal positioning of the nozzle stream at the intersection of the lasers and detectors
- 2 axes (roll and pitch) for adjusting the stream trajectory necessary for accurate drop delay determination and stream alignment
- Reproducible and reliable mechanism with full nozzle accessibility

S3e Cell Sorter System



For More Information

Web: bio-rad.com/cellsorter

Request or download bulletins: 6614 and #10032007

Features		
Performance	Droplet frequency	37–43 kHz
	Sorting type	True jet-in-air for high-performance sorting
	Sorting rate	No hardware limitations for sort rate, limited only by droplet frequency and application
	Sorting purity	>99% pure
	Sensitivity	<125 MESF for FITC and PE
	Temperature control	Sample and collection temperature control from 4–37°C using Peltier solid-state system
Lasers/Optics	One-laser system	Primary: 488 nm 100 mW
	Two-laser system	Primary: 488 nm 100 mW Secondary: 561 nm 100 mW or 640 nm 100 mW
	Detectors	Forward scatter (FSC) with photomultiplier tube (PMT) Side scatter (SSC) with PMT 2 fluorescence detectors with PMT (one laser) 4 fluorescence detectors with PMT (two lasers)
	Filters (488 laser)	Long pass: 495DLP, 560DLP, 540LP Band pass: 488/6, 525/30
	Filters (488/561 lasers)	Long pass: 495DLP, 560DLP, 593DLP, 655LP Band pass: 488/6, 525/30, 615/25, 586/25
	Filters (488/640 lasers)	Long pass: 495DLP, 560DLP, 640DLP, 700LP Band pass: 488/6, 526/48, 593/40, 670/30, 700LP
Fluidics	Nozzle	100 µm fixed
	Pressure	30 psi fixed
	Sheath	Onboard dilution of 8x sheath fluid or direct use of 1x sheath fluid
	Minimum sample loading	200 µl
Sorting	Directions	Two way
	Mode	Single, purity, enrichment
	Collection	Up to 5 x 5 ml sample tubes each direction Up to 5 x 1.5 ml tubes each direction Microscope slides 8-well strip each direction
Physical	Dimensions (W x D x H)	70 x 65 x 65 cm (instrument only)
Specifications	Weight	90 kg (instrument only)

See Also

ProLine rainbow beads: page 38. ProFlow sort grade 8x sheath fluid: page 39. S3e fluidic container: page 40.

Ordering Inf	ormation
Catalog #	Description
S3e Cell Sort	ler
1451005	S3e Cell Sorter (488 nm), 488 nm 100 mW laser, includes 2 fluorescence detectors with filters,
	AutoGimbal system, ProSort software
1451006	S3e Cell Sorter (488/561 nm), 488 nm and 561 nm 100 mW lasers, includes 4 fluorescence
	detectors with filters, AutoGimbal system, ProSort software
1451008	S3e Cell Sorter (488/640 nm), 488 nm and 640 nm 100 mW lasers, includes 4 fluorescence
	detectors with filters, AutoGimbal system, ProSort software
1451078	S3e Biosafety System Class I
1451029	S3e Cell Sorter (488 nm) with S3e Biosafety System Class I
1451030	S3e Cell Sorter (488/561 nm) with S3e Biosafety System Class I
1451032	S3e Cell Sorter (488/640 nm) with S3e Biosafety System Class I
Accessories	
1441001	S3e Sheath Cap Assembly, white
1441002	S3e DI Water Cap Assembly, blue
1441003	S3e Waste Cap Assembly, red
1441005	S3e Filter Block A, empty with 2 dichroic filter holders
1441006	S3e Filter Block B, empty with 2 dichroic filter holders
1441007	S3e Individual Filter Holder, black, empty
1441008	Neutral Density Filter, optical density 1.0
1441009	S3e Nozzle Tip, 100 µm
1441010	S3e Nozzle O-Ring with Alignment Disk, pkg of 2
1441011	S3e Collection Adaptor Set
1441012	Hex Driver, 2 mm
1441013	S3e Individual Dichroic Filter Holder, empty
1451076	S3e Power Conditioner, international
1451077	S3e Power Conditioner, U.S.
1451065	S3e Cell Sorter Accessory Kit , includes 100 μm nozzle tip, 2 nozzle O-rings, 2 nozzle alignment disks, 1 ml syringe, 2 neutral density filters (1.0), 2 mm hex driver, spanner wrench
1451086	ProLine Universal Calibration Beads , includes 3 x 5 ml bottles of ready-to-use beads for alignment verification and drop delay determination on the S3e cell sorter
1451082	ProFlow Sort Grade 8x Sheath Fluid , includes 5 x 4 L ready-to-use, sterile, preservative-free phosphate buffered saline (PBS) solutions in gamma-irradiated S3e fluidic containers
1451083	ProFlow Sort Grade Water , includes 5 x 4 L sterile, endotoxin-free water in gamma-irradiated S3e fluidic containers
1451084	S3e Fluidic Container, 3 x 4 L gamma-irradiated sterile containers for use on the S3 or S3e cell sorter
1451085	ProLine Rainbow Beads , includes a 5 ml bottle containing a mixture of beads dyed with 8 different fluorescence intensities for excitation at wavelengths between 365–650 nm

S3e[™] Biosafety System Class I

The S3e Biosafety System Class I is an aerosol containment hood custom designed for the S3 or S3e cell sorter, which provides users and the environment protection from aerosols created during the cell sorting process. It is an affordable alternative to traditional large and expensive biosafety hoods commonly offered for cell sorters.

The S3e Biosafety System Class I sits directly on the benchtop and contains the compact S3 or S3e[™] cell sorter. Its easy-to-open, magnetically attached vinyl walls provide ready access to all sides of the cell sorter during operation, cleaning and maintenance, or service.

Fully integrated with and monitored by the S3 or S3e cell sorter's ProSort[™] software, users have real-time information about HEPA filter life and the temperature of the system inside. Fan speed is determined based on the cell sorter operation mode — sorting or idle. The HEPA filter provides protection at 99.997% for 0.3 µm particles. The system is able to perform a 100% air exchange six to eight times per minute around the S3 or S3e cell sorter.

The system adheres to the biosafety requirements of the International Society for Advancement of Cytometry (ISAC) for aerosol containment.



Product features include:

- Compact and affordable small footprint for an economical alternative to large and expensive traditional biosafety hoods
- Software controlled full integration with ProSort software for fan speed regulation and temperature monitoring in real time
- Fully accessible easily opened vinyl walls are magnetically attached, allowing access to all 4 sides of the cell sorter for cleaning and maintenance
- Quiet and energy efficient generates low vibration and sound pressure levels; specialized fans and low backpressure from the HEPA filter reduce energy consumption

For More Information Web: bio-rad.com/S3eBiosafetyMore Request or download bulletins: 6404 and 6503

Ordering Information

Catalog #	Description	
1451005	S3e Cell Sorter (488 nm), 488 nm 100 mW laser, includes 2 fluorescence detectors with filters, 2 fluidic containers with connectors, software	
1451006	S3e Cell Sorter (488/561 nm), 488 nm and 561 nm 100 mW lasers, includes 4 fluorescence detectors with filters, 2 fluidic containers with connectors, software	
1451008	S3e Cell Sorter (488/640 nm), 488 nm and 640 nm 100 mW lasers, includes 4 fluorescence detectors with filters, AutoGimbal system, ProSort software	
1451078	S3e Biosafety System Class I	
1451029	S3e Cell Sorter (488 nm) with S3e Biosafety System Class I	
1451030	S3e Cell Sorter (488/561 nm) with S3e Biosafety System Class I	
1451032	S3e Cell Sorter (488/640 nm) with S3e Biosafety System Class I	
1451076	S3e Power Conditioner, international	
1451077	S3e Power Conditioner, U.S.	

Consumables

ProLine[™] Universal Calibration Beads

ProLine universal calibration beads are designed to verify the alignment performance and determine the drop delay on any S3[™] or S3e[™] cell sorter with a 488, 488/561, or 488/640 nm laser configuration. Each bottle contains a single population of ready-to-use fluorescent beads for a total of 30 quality control (QC) tests.

Product features include:

- Ready-to-use fluorescent beads do not require dilution
- Alignment and drop delay can be performed with 1 reagent in less than 7 min
- Pass/fail performance result with ProSort[™] software
- Trending QC information in ProSort software for tracking the performance of your S3 or S3e cell sorter

For More Information

Web: bio-rad.com/prolineuniversal Request or download bulletins: 6614 and #10041517



ProLine[™] Rainbow Beads

ProFlow sort grade 8x sheath fluid: page 39. ProFlow sort grade water: page 40. S3e fluidic container: page 40.

See Also

ProLine rainbow beads are designed for instrument performance monitoring on the S3 or S3e cell sorter. Each bottle contains 3.0–3.4 µm beads with eight different fluorescence intensities. Beads can be excited with

wavelengths between 365–650 nm.

- Easily check the sensitivity and linearity of your S3 or S3e cell sorter with 1 set of beads
- Track fluorescence fluctuations with bead lots validated on the S3 or S3e cell sorter to ensure accurate baselines
- Use on other flow cytometry and cell sorter instruments

For More Information Web: bio-rad.com/s3emore Request or download bulletin: 6614

 Ordering Information

 Catalog #
 Description

 1451085
 ProLine Rainbow Beads, includes a 5 ml bottle containing a mixture of beads dyed with 8 different fluorescence intensities for excitation at wavelengths between 365–650 nm

 1451086
 ProLine Universal Calibration Beads, 15 ml (3 x 5 ml)

ProFlow[™] Sort Grade 8x Sheath Fluid

ProFlow sort grade 8x sheath fluid is a ready-to-use, sterile, endotoxin- and preservative-free phosphate buffered saline solution. Each lot is tested for cytotoxicity and particulates and is bottled in gamma-irradiated containers to ensure sterility. Up to 5 weeks of run time is available per case when it is used on the S3[™] or S3e[™] cell sorter. The S3 or S3e cell sorter employs its internal fluidics system to automatically dilute ProFlow sort grade 8x sheath fluid and creates 32 L of 1x sheath solution from each container, generating 160 L per case.

Product features include:

- No manual dilution required the S3 and S3e cell sorters' unique internal fluidics chamber automatically generates a 1x solution, ensuring accurate dilution and minimizing potential contamination
- Easy container swapping prepackaged, sterile S3e fluidic container bypasses the need to fill a new container during a sort, minimizing the risk of contamination
- Minimum storage requirements one 20 L case creates 160 L of 1x sheath solution, freeing your storage space for other purposes

For More Information

Web: bio-rad.com/sheath Request or download bulletins: 6614 and #10030825

Ordering Information

 Catalog #
 Description

 1451082
 ProFlow Sort Grade 8x Sheath Fluid, 20 L (5 x 4 L)



See Also

ProLine universal calibration beads: page 38. ProLine rainbow beads: page 38. ProFlow sort grade water: page 40. S3e fluidic container: page 40.

bio-rad.com/cellsorter

See Also

ProLine universal calibration beads: page 38. ProLine rainbow beads: page 38. ProFlow sort grade 8x sheath fluid: page 39.

ProFlow[™] Sort Grade Water

ProFlow sort grade water is a sterile, endotoxin-free solution designed to give the best sort results when combined with ProFlow sort grade 8x sheath fluid on the S3[™] or S3e[™] cell sorter system. Each lot is prepared by reverse osmosis, passed through fine carbon, deionized through two resin beds, serially filtered twice through 0.1 µm positively charged membranes, and dispensed into gamma-irradiated S3e fluidic containers.

For More Information

Web: bio-rad.com/s3emore Request or download bulletin: 6614



Ordering Information

Catalog # 1451083

ProFlow Sort Grade Water, includes 5 x 4 L sterile, endotoxin-free water in gamm	na-irradiated
S3e fluidic containers	

S3e[™] Fluidic Container

S3e fluidic containers are specifically designed for use on the S3 or S3e cell sorter. Easily store your solutions in the S3e fluidic containers for quick container swaps during a run. Each 4 L container is gamma irradiated to ensure sterility.

Description

For More Information Web: bio-rad.com/s3emore Request or download bulletin: 6614



Ordering In	Ordering Information	
Catalog #	Description	
1451084	S3e Fluidic Container , 3 x 4 L gamma-irradiated sterile containers for use on the S3 or S3e cell sorter	

Flow Cytometry Reagents

Antibody Labeling Kits

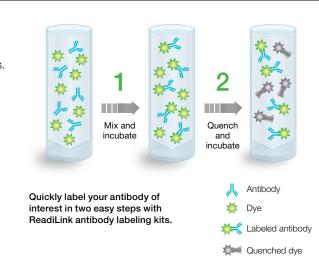
Antibody Labeling Kits

For More Information Web: bio-rad.com/readilink1

O

ReadiLink antibody labeling kits offer easy fluorescence conjugation in microscale volumes. Each kit provides all the essential components to perform two 50 µg conjugation reactions with monoclonal/polyclonal antibodies. Available across a wide range of excitation and emission wavelength combinations, the ReadiLink kits can be used to easily conjugate any antibody of interest for use in multicolor flow cytometry experiments.

- Efficiently labels microscale volumes of antibodies in 2 easy steps
- Forms a stable carboxamide bond with proprietary fluorescent dye
- Eliminates background fluorescence interference from free labeling dye with proprietary quench buffer



See Also

Cell sorting consumables: page 38. Cell counting: page 30.

Catalog #	Description
1351001	ReadiLink 350/440 Antibody Labeling Kit, includes 2 vials of labeling dye, reaction buffer,
	and dye quench buffer for labeling 2 x 50 μ g of antibodies
1351002	ReadiLink 492/516 Antibody Labeling Kit, includes 2 vials of labeling dye, reaction buffer,
	and dye quench buffer for labeling 2 x 50 μ g of antibodies
1351003	ReadiLink 555/570 Antibody Labeling Kit, includes 2 vials of labeling dye, reaction buffer,
	and dye quench buffer for labeling 2 x 50 μ g of antibodies
1351004	ReadiLink 594/610 Antibody Labeling Kit, includes 2 vials of labeling dye, reaction buffer,
	and dye quench buffer for labeling 2 x 50 μ g of antibodies
1351005	ReadiLink 633/655 Antibody Labeling Kit, includes 2 vials of labeling dye, reaction buffer,
	and dye quench buffer for labeling 2 x 50 μ g of antibodies
1351006	ReadiLink 647/674 Antibody Labeling Kit, includes 2 vials of labeling dye, reaction buffer,
	and dye quench buffer for labeling 2 x 50 μ g of antibodies
1351007	ReadiLink 680/701 Antibody Labeling Kit, includes 2 vials of labeling dye, reaction buffer,
1051000	and dye quench buffer for labeling 2 x 50 µg of antibodies
1351008	ReadiLink 700/713 Antibody Labeling Kit, includes 2 vials of labeling dye, reaction buffer,
1051000	and dye quench buffer for labeling $2 \times 50 \mu g$ of antibodies
1351009	ReadiLink 750/780 Antibody Labeling Kit, includes 2 vials of labeling dye, reaction buffer, and dye guench buffer for labeling 2 x 50 µg of antibodies
1351010	, , , , , , , , , , , , , , , , , , , ,
1351010	ReadiLink 790/811 Antibody Labeling Kit , includes 2 vials of labeling dye, reaction buffer, and dye guench buffer for labeling 2 x 50 µg of antibodies
1351011	ReadiLink 405/454 Antibody Labeling Kit, includes 2 vials of labeling dye, reaction buffer,
1331011	and dye quench buffer for labeling 2 x 50 µg of antibodies
1351012	ReadiLink 405/508 Antibody Labeling Kit, includes 2 vials of labeling dye, reaction buffer,
1001012	and dye quench buffer for labeling 2 x 50 μ g of antibodies
1351013	ReadiLink 405/537 Antibody Labeling Kit, includes 2 vials of labeling dye, reaction buffer,
1001010	and dye quench buffer for labeling $2 \times 50 \ \mu g$ of antibodies

bio-rad.com/vivafix

Cell Viability Assays

VivaFix[™] Cell Viability Assay

Bio-Rad's VivaFix cell viability assays provide a sensitive method for determining the viability of mammalian cells by flow cytometry, cell sorting, and microscopy.

Taking advantage of an array of proprietary amine reactive dyes, VivaFix cell viability assays enable researchers to distinguish between live and dead cells, providing at least a 100-fold difference in fluorescence intensity between the two populations. The brightness of VivaFix dyes is preserved upon treatment with fixative agents and can be used with biohazardous samples to track cell viability after fixation.

Product features include:

- Optimal discrimination between dead and live cell populations
- Compatible with cell fixation
- 8 different excitation/emission wavelength combinations to fit most multicolor experiments

For More Information Web: bio-rad.com/vivafix

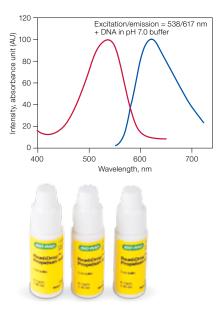
Request or download bulletins: 6559 and #10041645

Catalog #	Description
1351111	VivaFix 353/442 Cell Viability Assay, pkg of 1, kit includes 4 x 50 test vials and 250 µl of DMSO, for running 200 assays
1351112	VivaFix 410/450 Cell Viability Assay, pkg of 1, kit includes 4 x 50 test vials and 250 µl of DMSO, for running 200 assays
1351113	VivaFix 408/512 Cell Viability Assay, pkg of 1, kit includes 4 x 50 test vials and 250 µl of DMSO, for running 200 assays
1351114	VivaFix 398/550 Cell Viability Assay, pkg of 1, kit includes 4 x 50 test vials and 250 µl of DMSO, for running 200 assays
1351115	VivaFix 498/521 Cell Viability Assay, pkg of 1, kit includes 4 x 50 test vials and 250 µl of DMSO, for running 200 assays
1351116	VivaFix 547/573 Cell Viability Assay, pkg of 1, kit includes 4 x 50 test vials and 250 µl of DMSO, for running 200 assays
1351117	VivaFix 583/603 Cell Viability Assay, pkg of 1, kit includes 4 x 50 test vials and 250 µl of DMSO, for running 200 assays
1351118	VivaFix 649/660 Cell Viability Assay, pkg of 1, kit includes 4 x 50 test vials and 250 µl of DMSO, for running 200 assays

Flow Cytometry Reagents

ReadiDrop[™] Cell Viability Assays

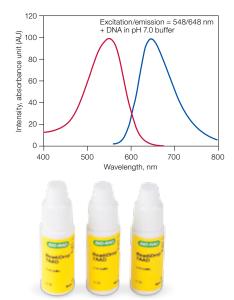
Designed for ease of use in cell sorting and flow cytometry applications, ReadiDrop[™] cell viability assays remove the traditional manual weighing, pipetting, and dilution steps required with commonly available cell viability dyes. Simply add one or two drops to assess the health of your cells.



ReadiDrop Propidium Iodide

- Cell impermeant nucleic acid–binding dye that enhances fluorescence 20- to 30-fold after binding to doublestranded DNA/RNA
- Ready-to-use formulation in PBS without preservatives
- Stable at room temperature
- Maximum excitation: 535 nm
- Maximum emission: 617 nm

Ordering Information



ReadiDrop 7-AAD

- Cell impermeant DNA binding dye with a high affinity for GC-rich regions of double-stranded DNA
- Ready-to-use formulation in PBS without preservatives
- Stable at room temperature
- Maximum excitation: 546 nm
- Maximum emission: 647 nm

For More Information Web: bio-rad.com/readidrop1

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Catalog #	Description
1351101	ReadiDrop Propidium lodide, includes 3 x 3 ml bottles of ready-to-use ultra-pure grade propidium iodide suspended in PBS for dead cell exclusion in cell sorting and flow cytometry applications
1351102	ReadiDrop 7-AAD , includes 3 x 3 ml bottles of ready-to-use 7-aminoactinomycin D (7-AAD) suspended in PBS for dead cell exclusion in cell sorting and flow cytometry applications

Cell Proliferation Assays

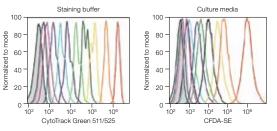
CytoTrack[™] Cell Proliferation Assay

CytoTrack cell proliferation assays are designed to efficiently stain live cells for excellent resolution of each generation in a population of dividing cells. Using a proprietary chemistry, the CytoTrack dye reacts with intracellular proteins and is effectively retained in the cell without efflux, allowing resolution of up to ten cell divisions. As cell division occurs, the dye is successively halved and the different generations can be determined based on the decrease in fluorescence intensity.

- Save time by using the dyes directly in your cell culture media
- Fix and permeabilize your cells for intracellular analysis using standard formaldehyde-containing fixatives and saponin-based permeabilization buffers
- Easily combine CytoTrack dyes with fluorescent proteins or antibody-labeled fluorophores for multicolor cell analysis

Elorescence boder Marked Buorophore

Consisting of three components, CytoTrack dyes efficiently label live cells for visualizing up to ten cell divisions.



For More Information Web: bio-rad.com/cytotrack

Resolve up to ten cell divisions in staining buffer or culture media.

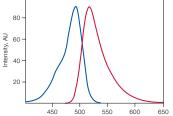
Ordering Information		
Catalog #	Description	
1351202	CytoTrack Blue 403/454, pkg of 1, kit includes 4 vials blue dye and 1 vial DMSO for 200 cell proliferation tests	
1351203	CytoTrack Green 511/525, pkg of 1, kit includes 4 vials green dye and 1 vial DMSO for 200 cell proliferation tests	
1351204	CytoTrack Yellow 542/556, pkg of 1, kit includes 4 vials yellow dye and 1 vial DMSO for 200 cell proliferation tests	
1351205	CytoTrack Red 628/660, pkg of 1, kit includes 4 vials red dye and 1 vial DMSO for 200 cell proliferation tests	

100

CFDA-SE Cell Proliferation Assay

CFDA-SE cell proliferation assay provides carboxyfluorescein diacetate succinimidyl ester (CFDA-SE) in a convenient and easy-to-use format. CFDA-SE is a cell-permeable dye that fluoresces after the acetate groups are cleaved by intracellular esterases, creating carboxyfluorescein succinimidyl ester (CFSE). As the succinimidyl ester group reacts with primary amines of intracellular proteins, CFSE is retained in the cell and is successively halved during cell divisions.

- Visualize up to 8 cell divisions
- Minimize contamination and reduce dilution steps with smaller vial size



Wavelength, nm

For More Information Web: bio-rad.com/cytotrack1 CFDA-SE excitation/ emission is 492/517 nm in 0.1 M NaOH. Excitation wavelength (—); emission wavelength (—). AU, absorbance unit.

Ordering Information

Catalo	g #	Description
135120)1	CFDA-SE Cell Proliferation Assay, includes 5 x 100 µg vials 5(6)-carboxyfluorescein diacetate succinimidyl ester, CFDA-SE

Flow Cytometry Subject Index

Subject Index

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Cell Imaging

Cell Imaging

48

Cell Imaging

Bio-Rad's suite of tools for fluorescence microscopy and cell imaging includes the ZOE fluorescent cell imager and nuclear dyes.

See Also

PureBlu Hoechst 33342 nuclear staining dye: page 49. PureBlu DAPI nuclear staining dye: page 50. ReadiLink antibody labeling kits: page 41. VivaFix cell viability assays: page 42. Cell proliferation assay: page 44.

ZOE[™] Fluorescent Cell Imager

The ZOE fluorescent cell imager is a complete imaging system that is suitable for routine cell culture and imaging applications. It eliminates the complexities of cell imaging by combining the ease of use of a personal tablet with the power of an inverted microscope. An intuitive Androidbased touch-screen interface is used to control brightfield, three fluorescence channels, and the integrated digital camera.

As a fully integrated system with long-life light-emitting diodes (LEDs), the ZOE cell imager is a robust imaging device ready for intensive daily use. There are no timeconsuming setup and hardware adjustments to perform (optical and illumination alignment, changing filter sets or objective lenses) or parts with a limited life span that could result in costly maintenance (replacing mercury arc lamps).

The ZOE cell imager uses high-quality hard-coated filter sets that provide higher light transmission and long life. Its 20x plan achromatic objective lens is mounted in a proprietary manner, resulting in a wide field of view (0.70 mm^2) that is ~180% greater than that of a traditionally mounted 20x objective lens. When zoomed out it is approximately equivalent to that of a 4x objective. When needed, use the pinch-to-zoom gesture to magnify up to 20x by digital zoom while retaining resolution (1 µm).

Product features include:

- Simplified cell imaging the intuitive touch-screen interface allows users to view cells, capture images, and create multichannel merges
- Flexible system brightfield and three fluorescence channels enable use for routine cell culture applications as well as more sophisticated imaging applications
- Fluorescence at your bench an integrated light shield permits fluorescence imaging in ambient light



ZOE Fluorescent Cell Imager

- **Robust construction** fully integrated system with long-life LEDs is ready for intensive daily use
- LED light sources thousands of hours of illumination that are instantly ready after power on
- Large field of view the motorized stage and large field of view allow you to see more of your sample, faster
- Small footprint compact size accommodates crowded laboratory benches

For More Information Web: bio-rad.com/ZOE Request or download bulletin: 6585

Ordering Infor	mation
Catalog #	Description
1450031	ZOE Fluorescent Cell Imager, 120–240 V, includes instrument, power supply, USB flash drive

Kits and Reagents for Cell Imaging

Bio-Rad offers a variety of kits and reagents for use with the ZOE fluorescent cell imager.

Ordering Information

Catalog # Description

Galalog #	Description
Nuclear Stai	ining Dyes
1351303	PureBlu DAPI Nuclear Staining Dye , pkg of 1, includes 5 x 50 μg vials of DAPI powder
1351304	PureBlu Hoechst 33342 Nuclear Staining Dye, pkg of 1, includes 5 x 56 µg vials of Hoechst 33342 powder
Antibody La	beling Kits
1351001	ReadiLink 350/440 Antibody Labeling Kit, includes 2 vials of labeling dye, reaction buffer, and dyed quench buffer for labeling $2 \times 50 \mu g$ of antibodies
1351002	ReadiLink 492/516 Antibody Labeling Kit , includes 2 vials of labeling dye, reaction buffer, and dyed quench buffer for labeling $2 \times 50 \mu g$ of antibodies
1351003	ReadiLink 555/570 Antibody Labeling Kit , includes 2 vials of labeling dye, reaction buffer, and dyed quench buffer for labeling 2 x 50 μ g of antibodies
1351004	ReadiLink 594/610 Antibody Labeling Kit, includes 2 vials of labeling dye, reaction buffer, and dyed quench buffer for labeling 2 x 50 μ g of antibodiess
Fixable Viab	ility Dyes
1351111	VivaFix 353/442 Cell Viability Assay, pkg of 1, kit includes 4 x 50 assay vials and 250 µl of DMSO, for running 200 assays
1351115	VivaFix 498/521 Cell Viability Assay , pkg of 1, kit includes 4 x 50 assay vials and 250 µl of DMSO, for running 200 assays
1351116	VivaFix 547/573 Cell Viability Assay, pkg of 1, kit includes 4 x 50 assay vials and 250 µl of DMSO, for running 200 assays
1351117	VivaFix 583/603 Cell Viability Assay , pkg of 1, kit includes 4 x 50 assay vials and 250 µl of DMSO, for running 200 assays

PureBlu[™] Hoechst 33342 Nuclear Staining Dye

PureBlu Hoechst 33342 nuclear staining dye is a highly pure formulation of Hoechst 33342 fluorescent dye. It is available in a user-friendly format that allows easy preparation of the working solution without any weighing step and with a single dilution after resuspension. PureBlu Hoechst 33342 dye permeates cell membranes and binds double-stranded DNA, which enables identification of nuclei within cells. It has a maximum excitation wavelength of 350 nm in the ultraviolet range and can be optimally detected in the blue channel with a maximum emission wavelength of 461 nm.

Product features include:

- Easy to reconstitute without any weighing step
- Only 1-step dilution after resuspension
- Compatible with multicolor experiments



For More Information Web: bio-rad.com/PureBluHoechst33342 Request or download bulletins: #10043283 and 6607

Ordering Information

Catalog #	Description
1351304	PureBlu Hoechst 33342 Nuclear Staining Dye , pkg of 1, includes 5 x 56 μg vials of Hoechst 33342 powder

See Also

ReadiLink antibody labeling kits: page 41. VivaFix cell viability assays: page 42. Cell proliferation assay: page 44.

bio-rad.com/ZOE

PureBlu[™] DAPI Nuclear Staining Dye

PureBlu DAPI nuclear staining dye is a highly pure formulation of 4',6-diamidino-2-phenylindole dihydrochloride (DAPI) fluorescent dye. It is available in a user-friendly format that allows easy preparation of the working solution without any weighing step and with a single dilution after resuspension. PureBlu DAPI dye permeates cell membranes and binds double-stranded DNA, which enables identification of nuclei within cells. It has a maximum excitation wavelength of 359 nm in the ultraviolet range and can be optimally detected in the blue channel with a maximum emission wavelength of 461 nm.



Product features include:

- Easy to reconstitute without any weighing step
- Only 1-step dilution after resuspension
- Compatible with multicolor experiments

For More Information Web: bio-rad.com/PureBluDAPI Request or download bulletins: #10043282 and 6607

Ordering Inform	mation
Catalog #	Description
1351303	PureBlu DAPI Nuclear Staining Dye, pkg of 1, includes 5 x 50 µg vials of DAPI powder

Cell Imaging Subject Index

Subject Index

Kits and Reagents for Cell Imaging, 49 PureBlu[™] DAPI Nuclear Staining Dye, 50 PureBlu[™] Hoechst 33342 Nuclear Staining Dye, 49 ZOE[™] Fluorescent Cell Imager, 48

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Chromatography Overview

A Range of Options

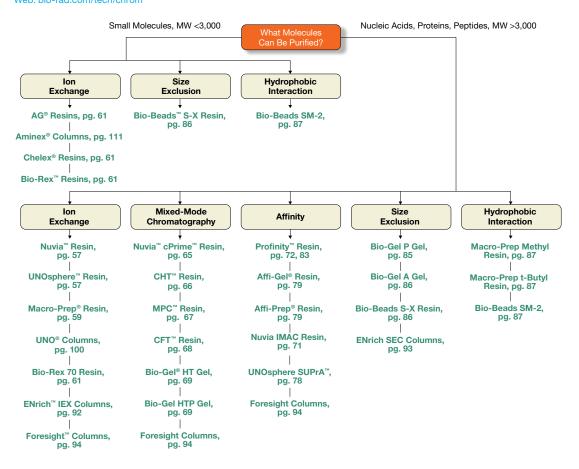
Bio-Rad offers a wide selection of chromatography tools for the life scientist involved in analytical, preparative, or process chromatography. We have become known as a quality provider of chromatography resins for reagent cleanup and biomolecule purification, manufacturing flexible and intuitive instrumentation and software and prepacked and empty columns for sample separations.

Throughput, capacity, selectivity, resolution, and process economics are among the considerations when selecting any chromatography resin, column, or instrument. We offer products for each phase of purification and manufacture resins for any scale from nanograms to kilograms.

Bio-Rad offers a wide range of lab and process chromatography resins for ion exchange, hydroxyapatite, affinity, size exclusion, and hydrophobic interaction chromatography as well as chromatography standards. For convenient sample preparation products, see page 2. Bio-Rad's process chromatography resins are used worldwide to manufacture registered biotherapeutics and diagnostics. All chromatography resins are manufactured in an ISO 9001 registered manufacturing facility. The manufacturing processes are audited and registered by National Quality Assurance Limited against the provisions of ANSI/ISO/ASQ 9001:2000.

Development, Application, and Validation Support

Bio-Rad provides development and application support for large-scale separations. We also offer regulatory assistance and regulatory support files to help validate the chromatography resins used in your processes. These files contain information essential to validation, including general product information, specification test procedures, identification tests, and biological safety data.



Learn More about the Technology Web: bio-rad.com/tech/chrom

Chromatography Resins/Media

Bio-Rad offers process-scale developers a selection of resins (media) for protein separation using ion exchange, hydroxyapatite and fluoroapatite, affinity, size exclusion (gel filtration), and hydrophobic interaction chromatography. These resins (media) offer high binding capacity, base stability, high flow rates, and are available in multi-liter quantities.

For More Information

Request or download bulletin: 6713

Chromatography Resin/Media Selection Guide

		Suitability**							
Resin	Packaging Format*	Analytical Scale	Pilot/ Preparative Scale	Process Scale	Application	Pag			
Anion Exchange)								
AG [®] 1	B, GC	++++	++++	++++	Strong exchanger. Separation of low MW peptides, nucleotides, inorganic ions using different cross-linkages; high selectivity for anions such as chloride; gravity or low-pressure use	61			
AG MP-1M	B, GC	++++	++	+	Strong exchanger. Macroporous, equivalent to AG 1 for MW >1,000,000; gravity or low-pressure use	61			
Bio-Rex [™] 5 and AG 4-X4	B, GC	++++	++		Weak exchanger. Used to remove organic acids from sugars; adsorption of mineral acids; gravity or low-pressure use	61			
UNO [®] Q	MPC	++++			Strong exchanger. High-resolution biomolecule separation at high flow rates; pH stability 2–12	100			
High Q all Macro-Prep 25 Q B ++++ hi hi		+++	Strong exchanger. High-capacity biomolecule separation; unique surface chemis allows contaminant removal; pH stability 1–10						
Macro-Prep 25 Q	В	++++	++++	+	Strong exchanger. Similar to Macro-Prep High Q but 25 µm particle size allows higher-resolution separation; unique surface chemistry allows contaminant removal; pH stability 1–10	59			
Macro-Prep DEAE	B, C	+++	++++	+++	Weak exchanger. High-capacity biomolecule separation; unique surface chemistry allows contaminant removal; pH stability 1–10	59			
UNOsphere [™] Q	Osphere [™] Q B, C, F ++++ ++++ ++++ Strong exchanger. High-productivity, high-capacity biomolecule separation; pH stability 1–14		57						
Aminex®	Aminex [®] HPLC ++++			High-pressure separation of carbohydrates, sugars, and small organic molecules; delivers industry-standard performance (U.S. Pharmacopeia)					
Nuvia [™] Q	B, F	++++	++++	++++	Strong exchanger. Similar to UNOsphere Q but surface modification allows extremely high-capacity biomolecule separation; pH stability 1–14	57			
Cation Exchange	e								
AG 50W	B, GC	++++	++++	++++	Strong exchanger. Lower cross-linkages useful for peptide and nucleotide separation; higher cross-linkages useful for small peptide and metals separation and removal of cations; gravity or low-pressure use	61			
AG MP-50	B, GC	++++	++	+	Strong exchanger. Macroporous equivalent to AG 50W for MW >1,000,000; gravity or low-pressure use	61			
Bio-Rex 70	В	++++	++	++	Weak exchanger. High capacity for high MW (>1,000,000) solutes; can be used for purification and fractionation of peptides, proteins, enzymes, and other cationic molecules. Amenable to large-scale purification	61			
Chelex [®] 100	B, GC	++++	++++	++++	Weak exchanger. Chelating resin removes metals and is suitable for PCR applications; can also be used for ultrapurification of buffers and ionic reagents; gravity or low- pressure use. Available in molecular biology and biotechnology grades	61			
UNO [®] S	MPC	++++			Strong exchanger. High-resolution biomolecule separation at high flow rates; pH stability 2–12	100			
Macro-Prep 25 S	В	++++	++++	+	Strong exchanger. Similar to Macro-Prep High S, but 25 µm particle size allows higher-resolution separation; unique surface chemistry allows contaminant removal; pH stability 1–10	59			
Macro-Prep High S	B, C	+++	++++	+++	Strong exchanger. High-capacity biomolecule separation; unique surface chemistry allows contaminant removal; pH stability 1–10	59			
Macro-Prep CM	В	+++	++++	+++	Weak exchanger. High-capacity biomolecule separation; unique surface chemistry allows contaminant removal; pH stability 1–10	59			
UNOsphere S	B, C, F	++++	++++	++++	Strong exchanger. High-capacity biomolecule separation; pH stability 1–14	57			
Nuvia S	B, C, F	++++	++++	++++	Strong exchanger. Similar to UNOsphere S but surface modification allows extremely high-capacity biomolecule separation; pH stability 1–14	57			
Nuvia HR-S	B, C, F	++++	++++	++++	Strong exchanger. Similar to UNOsphere Rapid S but smaller particle size for high resolution	57			

* B, bottle; C, cartridge (1 or 5 ml); GC, gravity column; SC, spin column; HPLC, high-pressure column; MPC, medium-pressure column; F, Foresight prepacked plates and columns. ** +, low suitability; ++, moderate suitability; +++, suitable; ++++, high suitability.

Chromatography Resin/Media Selection Guide (cont.)

			Suitability** Pilot/			
Resin	Packaging Format*	Analytical Scale	Preparative Scale	Process Scale	Application	Page
Specialty Ion Exe	change					
AG 11 A8	В	++++	++	++	lon retardation — contains cation and anion exchange sites that weakly interact with mobile ions; can be used for desalting of nonionic molecules with water elution, such as removal of SDS from protein and adsorption of mineral acids	61
AG 501-X8	В	++++	+++	+++	Mixed bed, consists of equivalent amounts of AG 1-X8 and AG 50W-X8. May be used to deionize impure water, urea, formamide, and acrylamide to provide extremely pure reagents	61
Bio-Rex MSZ 501	В	++++	++	++	Mixed bed, consists of equivalent amounts of Bio-Rex MSZ 1 and Bio-Rex MSZ 50 resin. Monosized ion exchange; desalting of water and nonelectrolytes. Ideal for large-scale industrial applications	61
Size Exclusion (O	Gel Filtration	1)			0	
Bio-Gel [®] P	B, C, SC, GC	++++	++++		Separation of molecules by size; desalting and buffer exchange; several particle size ranges available with MW exclusion limits ranging from 100–100,000 D; pH stability 2–10	85
Bio-Beads [™] S-X	В	++++	++++	++	Fractionation of low MW organic polymers and other hydrophobic substances in nonpolar solvents from 400–14,000 D	86
Affinity						
UNOsphere SUPrA™	B, C, F	++++	++++	++++	Antibody purification; Fc-fusion purification from large volumes of feed/cell culture; development and commercial-scale mAb purification process applications	78
Affi-Gel [®] Protein A	B, C, GC	++++	++++		IgG purification from ascites, serum, and culture fluid; low-pressure resin	79
Affi-Prep [®] Protein A	Prep® Protein A B, C ++++ ++++ ++ IgG purification from ascites, serum, and culture fluid; pressure-stable resin		79			
Affi-Gel Blue	B, C, SC	++++ ++++ Albumin removal and enzyme purification; Cibacron Blue F3GA dye covalently attached; purification of proteins with dinucleotide fold		80		
DEAE Affi-Gel Blue	B, C, GC	++++	++++		Albumin and protease removal for IgG purification; Cibacron Blue F3GA dye covalently attached to DEAE Bio-Gel A	80
CM Affi-Gel Blue	В	++++	++++		Albumin and protease removal for IgG purification; Cibacron Blue F3GA dye covalently attached to CM Bio-Gel A	
Affi-Gel heparin	В	++++	++++		Purification of coagulation factors, plasma proteins, and enzymes including nucleases, lipases, and proteases; binding specific to a variety of enzymes and other proteins	82
Nuvia IMAC	B, C	++++	++++	++	Purification of recombinant histidine-tagged proteins; can be charged with other transition metals	71
Profinity [™] IMAC	B, C	++++	++++	++	Histidine-tagged protein purification	72
Profinity GST	С	++++	++++	++	GST-tagged protein purification	73
Profinity eXact [™]	B, C, SC	++++	++++	++	One-step affinity tag purification and on-column cleavage	73
Affi-Prep polymyxin	В	++++	++++	++++	Removal of endotoxins; pressure-stable resin capable of sanitization procedures with NaOH	82
Affi-Gel boronate	В	++++	++		Affinity for low MW molecules containing <i>cis</i> hydroxyl (cis-diol) groups; separation of AMP from cyclic AMP	81
Profinity epoxide	В	++++	++++	++++	Affinity coupling; coupling of nucleophiles such as hydroxy (–OH), amino (–NH ₂), or thiol (–SH) groups; based on UNOsphere base matrix for superb pressure flow characteristics	83
Affi-Gel 10	В	++++	++++		Affinity coupling; immobilization of ligands with –NH ₂ groups, coupling of proteins with pl 6.5–11; low-pressure resin	83
Affi-Gel 15	В	++++	++++		Affinity coupling; immobilization of ligands with $-NH_2$ groups, coupling of proteins with pl <6.5; low-pressure resin	83
Affi-Gel Hz	В	++++	++++		Affinity coupling; immobilization of IgG molecules via their Fc region	84
Affi-Gel 102	В	++++	++++		Affinity coupling of ligands with –COOH groups via EDAC coupling chemistry	84
Mixed-Mode Res	sins and Me	dia			· · · · ·	
Nuvia [™] cPrime [™]	B, C, F	++++	++++	++++	Recombinant protein purification. Uses hydrophobic and weak cation exchange modes	65
CHT™ Type I	B, C, MPC, F	++++	++++	++++	Antibody purification (higher capacity than Type II); virus purification/removal; DNA purification/removal; aggregate and endotoxin removal	66
CHT Type II	B, C, F	++++	++++	++++	Antibody purification; removal of albumin from feedstream; vaccine/VLP purification	66
MPC [™] Type I	B, F	++++	++++	++++	Antibody purification; virus purification/removal; DNA purification/removal; aggregate and endotoxin removal; exhibits greater stability during pH excursions inherent in buffer exchanges	67
CFT™ Type II	В	++++	++++	++++	Similar properties to CHT but exhibits greater stability in the lower pH range (5.5)	68
Bio-Gel HT	В	++++	++++		Purification of proteins, nucleic acids, and other biomolecules; crystalline hydroxyapatite not as mechanically stable as CHT (ceramic hydroxyapatite)	69
Bio-Gel HTP	В	++++	+++		Similar to Bio-Gel HT but in powder form	69
DNA grade Bio-Gel HTP	B	++++	+++		Similar to Bio-Gel HTP with smaller particle size; selectivity for dsDNA; separation of ss- and dsDNA	69
Hydrophobic Inte	oraction					
Macro-Prep methyl		++++	++++	++	Separation of proteins based on relative hydrophobicity; pH stability 1–10	87
Macro-Prep t-butyl		++++	++++	++	Separation of proteins based on relative hydrophobicity; pH stability 1–10	87
	2					<u> </u>

F, Foresight™ prepacked plates and columns. ** +, low suitability; ++, moderate suitability; +++, suitable; ++++, high suitability.

Ion Exchange Resins

UNOsphere[™] and Nuvia[™] Ion Exchange Resins/Media

Bio-Rad's ion exchange resins are scalable and fast. They are designed to meet the needs of the biopharmaceutical industry for capture, intermediate, and polishing stages of purification. UNOsphere and Nuvia resins are bioprocess compatible and may also be used at laboratory scales for high-performance applications. Benefits include:

- Efficient capture from crude feedstreams
- Optimization to operate under 2 bar at 1,200 cm/hr
- Large-pore design results in ultra-high binding capacities at fast linear velocities
- Fully supported for regulatory information

UNOsphere Q and S Resins

UNOsphere Q and S resins are strong anion and cation exchange resins, respectively, and may be used at any stage of the purification process.

For More Information

Web: bio-rad.com/unosphere Request or download bulletins: UNOsphere Q resin - 2724 and

2729; UNOsphere S resin - 2669 and 2678

Nuvia Ion Exchange Resins

Nuvia ion exchange resins are a family of next-generation ion exchange products built on an industry-proven proprietary base matrix technology. Nuvia resins provide very high capture and exceptional flow properties designed to meet current and future process needs. Nuvia Q and S resins are flexible alternatives that may be used as capture and/or polishing solutions. Nuvia HR-S is a high-resolution cation exchanger designed for intermediate and final polish applications.

- Use less resin to purify a given amount of product
- Reduce cycle time and increase productivity by operating at higher flow rates
- Reduce cost and space requirements by decreasing buffer consumption
- Reduce capital and operating expenses by using smaller columns
- Chemical stability for repetitive clean-in-place cycles
- Flexibility for capture or polish steps
- Fully supported for regulatory submission

For More Information

Web: bio-rad.com/nuvia Request or download bulletins: 5984, 5987, 6129, 6128, 6448, and 6241

Properties of UNOsphere and Nuvia

Property	UNOsphere Q	UNOsphere S	Nuvia Q	Nuvia S	Nuvia HR-S
Type of ion exchanger	Strong anion	Strong cation	Strong anion	Strong cation	Strong cation
Functional group	-N+(CH ₃) ₃	-SO3-	-N(CH ₃) ₃ +	-SO3-	-SO3-
Total ionic capacity	75–163 µeq/ml	219–315 µeq/ml	100–170 µeq/ml	90–150 µeq/ml	100–180 µeq/ml
Particle size	120 ± 15 µm	80 ± 10 µm	85 ± 15 μm	85 ± 15 μm	$50 \pm 10 \mu m$
Dynamic binding capacity* At 150 cm/hr At 300 cm/hr At 600 cm/hr Recommended linear flow rate range	180 mg BSA/ml – 125 mg BSA/ml 50–1,200 cm/hr	60 mg lgG/ml 30 mg lgG/ml 50–1,200 cm/hr	– >170 mg/ml – 50–600 cm/hr		 ≥70 mg/ml 50–200 cm/hr
pH stability (accelerated, 60°C)	1–14	1–14 —	2–14 short term 4–12 long term	2–14 short term 4–13 long term	2–14 short term 4–13 long term
Sanitization	0.5–1.0 M NaOH	0.5–1.0 M NaOH	0.5–1.0 M NaOH	0.5–1.0 M NaOH	0.5–1.0 M NaOH

* 10% breakthrough capacity determined with a 5.0 mg/ml human IgG and 5.0 mg/ml BSA in a 1.1 x 20 cm column.

Chromatography systems:

See Also

page 111. Prepacked columns: page 91. AEX and CEX standards: page 89. Sample preparation products: page 2. Resin sampler packs: page 88. Bio-Scale Mini cartridges: page 95.

Ion Exchange Resins

atalog #	ormation Description				
1560311	Nuvia S Media, 25 ml		Ultra-	high capacity strong catio	on process media
1560313	Nuvia S Media, 100 ml				
1560315	Nuvia S Media, 500 ml				
56-0317	Nuvia S Media, 10 L				
1560511	Nuvia HR-S Media, 25 n		High-	resolution strong cation p	process media
560513	Nuvia HR-S Media, 100				
1560515	Nuvia HR-S Media, 500	ml			
560517	Nuvia HR-S Media, 10 L				
1560411	Nuvia Q Media, 25 ml		Ultra-	high capacity strong anic	n process media
560413	Nuvia Q Media, 100 ml				
560415	Nuvia Q Media, 500 ml				
56-0417	Nuvia Q Media, 10 L				
560101	UNOsphere Q Media, 2	5 ml	High-	capacity strong anion me	dia
1560103	UNOsphere Q Media, 1	00 ml			
1560105	UNOsphere Q Media, 5	00 ml			
56-0107	UNOsphere Q Media, 1) L			
1560111	UNOsphere S Media, 25	5 ml	High-	capacity strong cation m	edia
1560113	UNOsphere S Media, 10	00 ml			
560115	UNOsphere S Media, 50)0 ml			
156-0117	UNOsphere S Media, 10) L			
Description		1 x 1 ml	5 x 1 ml	1 x 5 ml	5 x 5 ml
Prepacked B	io-Scale Mini Cartridges				
Vuvia S Media	•	7324420	7324421	7324422	7324423
JNOsphere Q		_	7324100	7324102	7324104
JNOsphere S		_	7324110	7324112	7324114
	epacked Plates and Colum	ns			
oresight Pla					
7324714	Foresight UNOsphere Q	•			
/324710	Foresight UNOsphere S,	20 µi			
7324703	Foresight Nuvia Q, 20 µl				
7324701 7324707	Foresight Nuvia S, 20 µl) l			
324707	Foresight Nuvia HR-S, 20	μ			
oresight Co	lumns		1 ml	5 ml	
oresight UN	Osphere Q		7324732	7324752	
oresight UN	Osphere S		7324730	7324750	
oresight Nu	via Q		7324721	7324741	
oresight Nu	via S		7324720	7324740	
oresight Nuv	via HR-S		7324723	7324743	
oresight Ro	boColumn Units		200 µl	600 µl	
oresight UN	Osphere Q RoboColumn Un	ts	7324819	7324820	
	Osphere S RoboColumn Uni		7324813	7324814	
-	via Q RoboColumn Units		7324804	7324805	
-	via S RoboColumn Units		7324801	7324802	
-	via HR-S RoboColumn Unit	5	7324831	7324832	
	ngs for Bio-Scale Mini Car				
320111	-	-	M6 fittings to connect 1 c	artridge to an FPLC system	
7320112	Luer to 10-32 Adaptor I	•	•	nect 1 cartridge to an HPL	
2000112	or NGC system		4/4 00 6		
320113				and 1/4-28 female to fema	ale
	luer to connect 1 cartridge	to a BioLogic DuoFlow	v system		
885010	•	•		0-32 fitting to connect ma	

Macro-Prep[®] Ion Exchange Resin/Media

Macro-Prep ion exchange resins are designed to provide high resolution and high capacity for preparative separations. The rigid methacrylate beads exhibit little shrinkage or swelling, making them suitable for both lowand medium-pressure chromatography. The macroporous resin allows both small and large molecules to access exchange sites located throughout the chromatography bed. The physical structure of the resin permits high flow rates at low backpressure. Depending on the resin, pH conditions, and samples, the products can display mixed-mode behavior.

Benefits include:

- High capacity for biomolecules
- High resolution of complex biological mixtures
- Rigid methacrylate polymer matrix that allows high flow rates at modest pressures

Macro-Prep High Q, DEAE, High S, and CM Resins

For maximum flexibility, the product offerings include Macro-Prep High Q strong anion exchange resin, Macro-Prep DEAE weak anion exchange resin, Macro-Prep High S strong cation exchange resin, and Macro-Prep CM weak cation exchange resin.

For More Information

Web: bio-rad.com/macroprep

Request or download bulletins: Macro-Prep DEAE resin - 1942; High S and High Q resins - 5643 and 5644

Properties of Macro-Prep



Macro-Prep Resins

Bio-Scale[™] Mini Macro-Prep Cartridges

Macro-Prep 25 Q and S Resins

Macro-Prep 25 Q strong anion exchange resin and Macro-Prep 25 S strong cation exchange resin offer high-resolution separations at high flow rates with medium pressures. Both resins possess the same rigid, macroporous, and hydrophilic properties of 50 μ m Macro-Prep High Q and High S resins, but in a 25 μ m bead that offers higher resolution.

For More Information

Web: bio-rad.com/macroprepSandQ Request or download bulletin: 2292

Property	High Q	DEAE	High S	СМ	25 Q*	25 S
Type of resin	Strong anion	Weak anion	Strong cation	Weak cation	Strong anion	Strong cation
Functional ligand	-N+ (CH ₃) ₃	$-N^{+}(C_{2}H_{5})_{2}$	-SO3-	-COO-	-N+(CH ₃) ₃	-SO3-
lonic capacity	400 ± 75 µeq/ml	175 ± 75 µeq/ml	160 ± 40 µeq/ml	210 ± 40 µeq/ml	220 ± 40 µeq/ml	110 ± 30 µeq/ml
Typical binding capacity	40 mg BSA/ml	35 mg BSA/ml	70 mg lgG/ml	25 mg hemoglobin/ml	>30 mg/ml BSA	>40 mg/ml BSA
Counter ion	C⊢	C⊢	Na+	Na ⁺	CI-	Na+
Nominal particle size	50 µm	50 µm	50 µm	50 µm	25 µm	25 µm
Nominal pore size	1,000 Å	1,000 Å	1,000 Å	1,000 Å	725 Å	725 Å
Recommended linear flow rate range	_	-	-	-	50–300 cm/hr	50–300 cm/hr
Maximum recommended linear flow rate	3,000 cm/hr	3,000 cm/hr	3,000 cm/hr	3,000 cm/hr	3,000 cm/hr	3,000 cm/hr
Chemical stability 1% SDS, 24 hr	•	•	•	•	•	•
6 M guanidine-HCl, 24 hr	•	•	•	•	•	•
Volume changes pH 4–10	<1%	<1%	<3%	<1%	<1%	<1%
0.1–1.0 M NaCl	<5%	<5%	<9%	<4%	<5%	<5%
Autoclavability (121°C, 80 min	ı) •	•	•	•	•	•
pH stability	1–10**	1–10**	1–10**	1–12	1–10**	1–10**
Storage conditions	20% ethanol	20% ethanol	20% ethanol	20% ethanol	20% ethanol	20% ethanol

* Do not autoclave the OH⁻ form.

** The use of basic reagents greater than pH 10 should be evaluated for each application.

; change resin and

P-6 cartridges: pages 95–96.

See Also

Macro-Prep High Q and S, affinity,

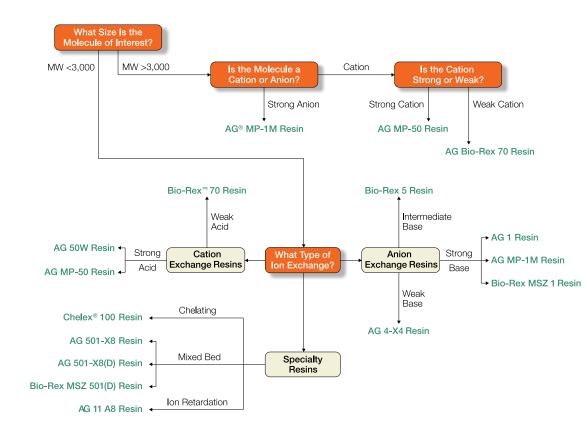
Bio-Scale Mini, UNOsphere Q and S,

Ion Exchange Resins

bio-rad.com/ionexchange

atalog #	Description						
Jacro-Pren	High Q Resin/Media						
1580040	Macro-Prep High Q Media, 25 ml		High-capacity strong anion exchange	e media:			
1560040	Macro-Prep High Q Media, 100 ml		very high flow rates and resolution				
1560040	Macro-Prep High Q Media, 500 ml						
156-0042	Macro-Prep High Q Media, 5 L						
156-0043	Macro-Prep High Q Media, 10 L						
1580020	DEAE Resin/Media		High apposity weak apien evolution	modio			
	Macro-Prep DEAE Media, 25 ml		High-capacity weak anion exchange high flow rates and resolution	media; very			
1560020	Macro-Prep DEAE Media, 100 ml		high new rates and resolution				
1560021	Macro-Prep DEAE Media, 500 ml						
156-0022	Macro-Prep DEAE Media, 5 L						
156-0023	Macro-Prep DEAE Media, 10 L						
-	High S Resin/Media						
1580030	Macro-Prep High S Media, 25 ml		High-capacity strong cation exchang	e media;			
1560030	Macro-Prep High S Media, 100 ml						
1560031	Macro-Prep High S Media, 500 ml						
156-0032	Macro-Prep High S Media, 5 L						
156-0033	Macro-Prep High S Media, 10 L						
Macro-Prep	CM Resin/Media						
1580070	Macro-Prep CM Media, 25 ml		High-capacity weak cation exchange	e media;			
1560070	Macro-Prep CM Media, 100 ml		high flow rates and resolution				
1560071	Macro-Prep CM Media, 500 ml						
156-0073	Macro-Prep CM Media, 10 L						
Macro-Prep	25 Q Resin/Media						
1530021	Macro-Prep 25 Q Media, 50 ml		Strong anion exchange media; 25 µr	n bead that offers			
1530022	Macro-Prep 25 Q Media, 200 ml		higher resolution				
153-0023	Macro-Prep 25 Q Media, 1 L		v				
153-0024	Macro-Prep 25 Q Media, 5 L						
	25 S Resin/Media						
1530031	Macro-Prep 25 S Media, 50 ml		Strong cation exchange media; 25 µ	m bead that offers			
1530032	Macro-Prep 25 S Media, 200 ml		higher resolution				
153-0033	Macro-Prep 25 S Media, 1 L						
153-0034	Macro-Prep 25 S Media, 5 L						
Description		5 x 1 ml	1 x 5 ml	5 x 5 ml			
-	Bio-Scale Mini Cartridges						
	High Q Media	7324120	7324122	7324124			
•	High S Media	7324130	7324132	7324134			
Macro-Prep	DEAE Media	7324140	7324142	7324144			
Adaptor Fitti	ngs for Bio-Scale Mini Cartridges						
7320111		des luer to M6	fittings to connect 1 cartridge to an FPL	Cisvistem			
7320112			o 10-32 fittings to connect 1 cartridge to				
	or NGC system						
7320113		includes 1/4-	28 female to male luer and 1/4-28 femal	e to female luer			
	to connect 1 cartridge to a BioLogic Du						
7885010			le slip luer to female 10-32 to connect i	male end of luer			

Larger volumes and special packaging for industrial applications are available on request.



Analytical Grade Ion Exchange Resins

AG[®], Bio-Rex[™], and Chelex[®] Resins

AG (analytical grade) resins — AG resins are primarily used for the separation of low MW compounds such as inorganic ions, organic acids, nucleic acids, or carbohydrates. They are available as both strong and weak cation and anion exchangers and as mixed-bed ion exchangers. Many are available in several ionic forms and can be converted from one form to another

- AG 50W-X8 strong cation exchanger resins particularly useful for the removal of ethidium bromide and propidium iodide from DNA samples
- AG 501-X8 mixed-bed resins useful for deionization of water and nonelectrolyte solutions

Bio-Rex resin — available as weak anion and cation exchangers and as monosized mixed-bed ion exchangers. Bio-Rex 70 resins are macroreticular resins with a high capacity for high molecular weight compounds used for the purification and fractionation of proteins and peptides

Chelex resins — contain paired iminodiacetate ions coupled to a styrene divinylbenzene support. They are unique chelating resins that bind polyvalent cations with high selectivity and are used to remove metal ions from samples and buffers

Analytical Grade Resin Wet Mesh and Equivalent Diameters

		-									
Wet mesh (U.S. standard)	16	20	40	50	80	100	140	200	270	325	400
Diameter, µm	1,180	850	425	300	180	150	106	75	53	45	38

For More Information

Web: bio-rad.com/agresins

continues

See Also

Poly-Prep ion exchange columns: page 98.

			Dry Mesh	Wet Bead	Nominal Shipping %	
Catalog #	Description	Ionic Form	Size	Size, µm	Water	
AG Resins						
1401231	AG 1-X2 Resin, 500 g	Chloride	50–100	180-500	70–78	
1401241	AG 1-X2 Resin, 500 g	Chloride	100–200	106–250	70–78	
401251	AG 1-X2 Resin, 500 g	Chloride	200-400	75–180	70–78	
401253	AG 1-X2 Resin, 500 g	Acetate	200-400	75–180	70–78	
401331	AG 1-X4 Resin, 500 g	Chloride	50-100	180-425	59–65	
401341	AG 1-X4 Resin, 500 g	Chloride	100-200	106-250	59-65	
401351	AG 1-X4 Resin, 500 g	Chloride	200-400	63–150	59-65	
401421	AG 1-X8 Resin, 500 g	Chloride	20-50	300-1,180	39–45	
401431	AG 1-X8 Resin, 500 g	Chloride	50-100	180-425	39–45	
401441*	AG 1-X8 Resin, 500 g	Chloride	100-200	106–180	39–45	
401451*	AG 1-X8 Resin, 500 g	Chloride	200-400	45-106	39–45	
401422	AG 1-X8 Resin, 500 g	Hydroxide	20-50	300-1,180	39–45	
401443	AG 1-X8 Resin, 500 g	Acetate	100-200	106–180	39-45	
401453	AG 1-X8 Resin , 500 g	Acetate	200-400	45-106	39-45	
401444	AG 1-X8 Resin , 500 g	Formate	100-200	106–180	39-45	
401454	AG 1-X8 Resin, 500 g	Formate	200-400	45–106	39-45	
421231	AG 50W-X2 Resin, 500 g	Hydrogen	50-100	300-1,180	75–83	
421231	AG 50W-X2 Resin, 500 g	Hydrogen	100-200	106-300	75–83	
421251	AG 50W-X2 Resin, 500 g	Hydrogen	200-400	75–180	75–83	
421331	AG 50W-X2 Resin, 500 g	Hydrogen	50-100	180-425	64–72	
421331	AG 50W-X4 Resin, 500 g	Hydrogen	100-200	106-250	64–72	
	· · ·					
421351*	AG 50W-X4 Resin, 500 g	Hydrogen	200-400	63-150	64-72	
421421	AG 50W-X8 Resin, 500 g	Hydrogen	20-50	300-1,180	50-56	
421431	AG 50W-X8 Resin , 500 g	Hydrogen	50-100	180-425	50-56	
421441*,**	AG 50W-X8 Resin , 500 g	Hydrogen	100-200	106-250	50-56	
421451*,**	AG 50W-X8 Resin, 500 g	Hydrogen	200-400	63–150	50-56	
421641	AG 50W-X12 Resin, 500 g	Hydrogen	100-200	106-250	42-48	
421651	AG 50W-X12 Resin, 500 g	Hydrogen	200-400	53–106	42-48	
411831	AG MP-1M Resin , 500 g	Chloride	50–100	150-300	56-64	
411841	AG MP-1M Resin , 500 g	Chloride	100–200	75–150	56-64	
411851	AG MP-1M Resin , 500 g	Chloride	200–400	38–75	56-64	
430841	AG MP-50 Resin, 500 g	Hydrogen	100–200	75–150	46-52	
404341*	AG 4-X4 Resin, 500 g	Free base	100–200	75–150	_	
426424*,**,***	AG 501-X8 Resin, 500 g	H⁺ + OH⁻	20–50	300–1,180	43–55	
426425*,**	AG 501-X8(D) Resin , 500 g	H⁺ + OH⁻	20–50	300–1,180	43–55	
427834*	AG 11 A8 Resin, 500 g	Self-adsorbed	50–100	180-425	_	
io-Rex Resin	S					
407841	Bio-Rex 5 Resin, 500 g	Chloride	100–200	75–150	50–58	
407851	Bio-Rex 5 Resin, 500 g	Chloride	200-400	45-75	50-58	
425822	Bio-Rex 70 Resin , 500 g	Sodium	20-50	300–1,180	65–74	
425832*	Bio-Rex 70 Resin , 500 g	Sodium	50-100	150-300	65–74	
425842	Bio-Rex 70 Resin , 500 g	Sodium	100-200	75–150	65–74	
		Sodium			65–74	
425852* 427425*	Bio-Rex 70 Resin, 500 g		200–400 25–35	45–75 500–700	00-14	
	Bio-Rex MSZ 501(D) Resin, 500 g	H+ + OH-			-	
arger volumes	and special packaging for industri	al applications are av	vailable on requi	est.		
helex Resins						
422822	Chelex 100 Resin , 500 g	Sodium	50–100	300–1,180	68–76	
422832*	Chelex 100 Resin, 500 g	Sodium	100-200	150-300	68–76	
422842**	Chelex 100 Resin, 500 g	Sodium	200-400	75–150	68–76	
422825	Chelex 100 Resin, 300 g	Iron	100-200	150-300	00 10	
		IGH	100 200	100 000	_	
	e as biotechnology grade resin.					

	formation							
Catalog #	Description							
AG Resins in	Larger Volumes and Special Packa	iging for Industrial	Applications					
1401255	AG 1-X2 Resin, acetate, 200–400 mesh, 10 kg							
1401342	AG 1-X4 Resin, chloride, 100–200 mesh, 10 kg							
140-1445	AG 1-X8 Resin, chloride, 100–200 mesh, 10 kg							
140-1424	AG 1-X8 Resin, hydroxide, 20–50 r	AG 1-X8 Resin, hydroxide, 20–50 mesh, 10 kg						
140-2341	AG 4-X4 Resin, free base, 100-200	0 mesh, 5 kg						
142-1424	AG 50W-X8 Resin, ultrapure, hydro	AG 50W-X8 Resin, ultrapure, hydrogen, 20–50 mesh, 10 kg						
142-1423	AG 50W-X8 Resin, hydrogen, 20-8	50 mesh, 10 kg						
142-1442	AG 50W-X8 Resin, hydrogen, 100-	-200 mesh, 10 kg						
142-1254	AG 50W-X12 Resin, hydrogen, 200)–400 mesh, 1 kg						
141-1842	AG MP-1M Resin, chloride, 100-2	00 mesh, 10 kg						
141-1853	AG MP-1M Resin, nitrate, 200-400) mesh, 10 kg						
143-6427*	AG 501-X8(D) Resin , H⁺ + OH⁻, 20	–50 mesh, 10 kg						
Catalog #	Description	Particle Size, µm	Ionic Form	Application				
Duran a alva d D								
Prepacked P	Poly-Prep Ion Exchange Columns							
•	Poly-Prep Ion Exchange Columns Poly-Prep Columns, AG 1-X8	106–180	Chloride	Separation of low molecular weight				
•		106–180	Chloride	Separation of low molecular weight inorganic anions				
7316211	Poly-Prep Columns, AG 1-X8 resin, 100–200 mesh, 50 Poly-Prep Columns, AG 1-X8	106–180 45–106	Chloride Chloride	inorganic anions For high-resolution general purpose				
7316211 7316212	Poly-Prep Columns, AG 1-X8 resin, 100–200 mesh, 50 Poly-Prep Columns, AG 1-X8 resin, 200–400 mesh, 50	45–106	Chloride	inorganic anions For high-resolution general purpose separations				
7316211 7316212	Poly-Prep Columns, AG 1-X8 resin, 100–200 mesh, 50 Poly-Prep Columns, AG 1-X8 resin, 200–400 mesh, 50 Poly-Prep Columns, AG 1-X8			inorganic anions For high-resolution general purpose separations Separation of low molecular weight				
7316211 7316212	Poly-Prep Columns, AG 1-X8 resin, 100–200 mesh, 50 Poly-Prep Columns, AG 1-X8 resin, 200–400 mesh, 50	45–106	Chloride	inorganic anions For high-resolution general purpose separations Separation of low molecular weight biological compounds such as				
7316211 7316212 7316221	Poly-Prep Columns, AG 1-X8 resin, 100–200 mesh, 50 Poly-Prep Columns, AG 1-X8 resin, 200–400 mesh, 50 Poly-Prep Columns, AG 1-X8 resin, 200–400 mesh, 50	45–106 45–106	Chloride Formate	inorganic anions For high-resolution general purpose separations Separation of low molecular weight biological compounds such as carboxylic acids				
7316211 7316212 7316221	Poly-Prep Columns, AG 1-X8 resin, 100–200 mesh, 50 Poly-Prep Columns, AG 1-X8 resin, 200–400 mesh, 50 Poly-Prep Columns, AG 1-X8 resin, 200–400 mesh, 50 Poly-Prep Columns, AG 50W-X8	45–106 45–106	Chloride	inorganic anions For high-resolution general purpose separations Separation of low molecular weight biological compounds such as carboxylic acids Separation and concentration of low				
7316211 7316212 7316221 7316221 7316213	Poly-Prep Columns, AG 1-X8 resin, 100–200 mesh, 50 Poly-Prep Columns, AG 1-X8 resin, 200–400 mesh, 50 Poly-Prep Columns, AG 1-X8 resin, 200–400 mesh, 50	45–106 45–106	Chloride Formate	inorganic anions For high-resolution general purpose separations Separation of low molecular weight biological compounds such as carboxylic acids Separation and concentration of low molecular weight cations such as				
7316211 7316212 7316221 7316213	Poly-Prep Columns, AG 1-X8 resin, 100–200 mesh, 50 Poly-Prep Columns, AG 1-X8 resin, 200–400 mesh, 50 Poly-Prep Columns, AG 1-X8 resin, 200–400 mesh, 50 Poly-Prep Columns, AG 1-X8 resin, 200–400 mesh, 50 Poly-Prep Columns, AG 50W-X8 resin, 100–200 mesh, 50	45–106 45–106 106–250	Chloride Formate Hydrogen	inorganic anions For high-resolution general purpose separations Separation of low molecular weight biological compounds such as carboxylic acids Separation and concentration of low molecular weight cations such as small peptides and amino acids				
7316211 7316212 7316221	Poly-Prep Columns, AG 1-X8 resin, 100–200 mesh, 50 Poly-Prep Columns, AG 1-X8 resin, 200–400 mesh, 50 Poly-Prep Columns, AG 1-X8 resin, 200–400 mesh, 50 Poly-Prep Columns, AG 50W-X8	45–106 45–106 106–250	Chloride Formate	inorganic anions For high-resolution general purpose separations Separation of low molecular weight biological compounds such as carboxylic acids Separation and concentration of low molecular weight cations such as				

Technical and Reactor Grade Resins

Bio-Rad offers reactor grade Bio-Rex® RG 501-X8 resins for power plant deionization systems and large-scale cleanup of metals from waste water.

For More Information

Web: bio-rad.com/agresins

Ordering Inf	formation			
Catalog #	Description	Ionic Form	Dry Mesh Size	MW Exclusion
Technical an	d Reactor Grade Resins			
444-9998*	Bio-Rex RG 501-X8 Resin, 1 ft ³ , for water purification	H⁺ + OH⁻	20-50	1,000
4449999	Bio-Rex RG 501-X8 Resin, 500 g	H⁺ + OH⁻	20-50	1,000
* 1 ft ³ corresp	onds to approximately 20 kg. Larger volumes and special	packaging are a	vailable on request	t.

Molecular Biology and Biotechnology Grade Resins

Molecular biology grade resins, chemically identical to the equivalent analytical grade resins, are certified to be free of endo- and exonuclease activities and ligase inhibitors.

- Molecular biology grade resins offered in 200–400 mesh range for easy transfer after resuspension.
 Packaged in 100 and 50 g quantities for the small-scale reagent user and accompanied by a certificate of analysis
- Biotechnology grade resins undergo special processing and contain fewer than 100 microorganisms/gram

For More Information Web: bio-rad.com/agresins

Ordering Int	formation				
Catalog #	Description	Dry Mesh Ionic Form	Wet Bead Size	Size, µm	Application
Molecular Bi	iology Grade Resins				
1436424	AG 501-X8 Resin,	H⁺ + OH⁻	20-50	300–1,180	Deionization
	molecular biology grade, 100 g				
1436425	AG 501-X8(D) Resin,	H⁺ + OH⁻	20-50	300–1,180	~1,000 MW limit
	molecular biology grade, 100 g				
1421253	Chelex 100 Resin,	Sodium	200-400	75–150	DNA extraction for PCR
	molecular biology grade, 50 g				sample preparation
Biotechnolo	gy Grade Resins				
1431255	AG 1-X2 Resin,	Hydroxide	200-400	75–180	Separation of small peptides,
	biotechnology grade, 100 g				nucleotides, and large metal
					complexes
1431345	AG 1-X4 Resin,	Hydroxide	100–200	63–150	Separation of organic acids,
	biotechnology grade, 100 g				nucleotides, phosphoinositides,
1400445		L handbare de l	100,000	100, 100	and other anions
1432445	AG 1-X8 Resin,	Hydroxide	100–200	106–180	Separation of inorganic and
1400446	biotechnology grade, 100 g	Lludrovido	000 400	45 100	organic anions with MW <1,000
1432446	AG 1-X8 Resin, biotechnology grade, 100 g	Hydroxide	200–400	45–106	
1435241	AG 50W-X2 Resin,	Hydrogen	100–200	106–300	Separation of peptides,
1433241	biotechnology grade, 100 g	Hydrogen	100-200	100-300	nucleotides, and cations
1435341	AG 50W-X4 Resin,	Hydrogen	200–400	75–150	Separation of amino acids,
1400041	biotechnology grade, 100 g	riyarogen	200 400	10 100	nucleotides, and cations
1435441	AG 50W-X8 Resin.	Hydrogen	100-200	106-250	Separation of amino acids
1.00111	biotechnology grade, 100 g	, iyonogori	100 200	100 200	and cations
1435451	AG 50W-X8 Resin,	Hydrogen	200-400	63–150	
	biotechnology grade, 100 g	, 0			
1437834	AG 11 A8 Resin,	Self-	50–100	180-425	Removal of ionic compounds
	biotechnology grade, 100 g	adsorbed			·
1437424	AG 501-X8 Resin,	H⁺ + OH⁻	20-50	300–1,180	Deionization
	biotechnology grade, 100 g				
1437425	AG 501-X8(D) Resin,	$H^+ + OH^-$	20-50	300–1,180	
	biotechnology grade, 100 g				
1432832	Chelex 100 Resin,	Sodium	100–200	150–300	PCR sample preparation
	biotechnology grade, 100 g				
1435832	Bio-Rex 70 Resin,	Sodium	50–100	150–300	Separation of cationic proteins
	biotechnology grade, 100 g				and aminescz
1435852	Bio-Rex 70 Resin,	Sodium	200-400	45–75	
	biotechnology grade, 100 g				
1528920	Bio-Beads SM-2, 25 g	-	-	-	Detergent removal
1523920	Bio-Beads SM-2, 100 g	-	-	-	Detergent removal

Mixed-Mode Chromatography Resins/Media

Mixed-mode resins and media offer unique separation properties and unparalleled selectivity and resolution for a variety of molecules. These products can be used at any stage in a process from initial capture to final polishing.

Nuvia[™] cPrime[™] Mixed-Mode Resin

Nuvia cPrime hydrophobic cation exchange resin is a member of Bio-Rad's family of mixed-mode purification products. This resin is designed for process-scale purification of a wide variety of therapeutic proteins. Nuvia cPrime's unique selectivity allows method developers to use hydrophobic and cation exchange interaction modes to achieve effective purification. Importantly, the resin has a large design space for binding and elution, allowing for the development of highly robust methods in a commercial manufacturing setting. Nuvia cPrime is built on a rigid, mechanically and chemically stable macroporous base matrix with a particle size optimized to deliver exceptional flow properties, fast mass transfer, and stability.

Nuvia cPrime delivers value by providing:

- Unique selectivity
- Simple method development
- Large design space for capture and elution of a variety of biotherapeutic proteins
- High recovery of target protein
- Salt tolerance
- Mechanical and chemical stability

For More Information Web: bio-rad.com/nuvia

Request or download bulletins: 6241, 6242, and 6418

Ordering Information

•·•••	
Catalog #	Description
1563401	Nuvia cPrime Media, 25 ml
1563402	Nuvia cPrime Media, 100 ml
1563403	Nuvia cPrime Media, 500 ml
156-3404	Nuvia cPrime Media, 1 L
156-3405	Nuvia cPrime Media, 5 L
156-3406	Nuvia cPrime Media, 10 L
7324722	Foresight Nuvia cPrime Column, 1 ml
7324742	Foresight Nuvia cPrime Column, 5 ml
7324705	Foresight Nuvia cPrime Plates, 20 µl*
7324807	Foresight Nuvia cPrime RoboColumn Unit, 200 µl**
7324808	Foresight Nuvia cPrime RoboColumn Unit, 600 µl**

* Package size: 2 x 96-well plates.

** Package size: 1 row of 8 columns.

Property	Description
Functional group	Hydrophobic weak cation exchange
Base matrix composition	Macroporous highly cross-linked hydrophilic polymer
Particle size	70 ± 10 μm
Dynamic binding capacity* hlgG	≥40 mg/ml
Dynamic binding capacity* lactoferrin	>60 mgl/ml
Ligand density	110–150 µeq/ml
Recommended linear flow rate range	50–600 cm/hr
Pressure vs. flow performance**	Under 2 bar, flow rate of 600 cm/hr
pH stability	2–14 short term 3–13 long term
Chemical stability	8 M urea, 6 M Gu-HCl, 6 M KSCN, 3 M NaCl, 1% Triton X-100, 2% SDS + 0.25 M NaCl, 20% EtOH, 70% EtOH, 30% IPA
Shipping solution	20% ethanol, 30 mM Na ₂ SO ₃
Storage conditions	0.1 N NaOH
Shelf life***	5 years

* At 10% breakthrough hlgG.

** 20 x 20 cm packed bed (1.17 compression factor).

*** Stored at room temperature in 20% ethanol under

accelerated conditions.

Hydroxyapatite $(Ca_5(PO_4)_3OH)_2$ and fluoroapatite $Ca_{10}(PO_4)_6F_2$ are forms of calcium phosphate that offer unique selectivities and often separate biomolecules that appear homogeneous when other chromatographic and electrophoretic techniques are used. Hydroxyapatite and fluoroapatite chromatography can be used at any stage from initial capture to final polishing.

CHT[™] Ceramic Hydroxyapatite

See Also

Bio-Scale CHT Type I columns: page 99.

CHT ceramic hydroxyapatite (Ca₅(PO₄)₃OH)₂ is a spherical macroporous form of hydroxyapatite that overcomes the limitations of the crystalline material for use in processand laboratory-scale columns. Crystalline hydroxyapatite protocols can be transferred directly to the ceramic material with little or no modification. CHT retains the unique separation properties of crystalline hydroxyapatite, but it can be used reproducibly for hundreds of cycles at high flow rates and in large columns.

CHT is available as Type I, sintered at 400°C, and Type II, sintered at 700°C for durability. Type I has a high protein binding capacity and higher capacity for acidic proteins. Type II has a lower protein binding capacity and gives better resolution of nucleic acids and of proteins that elute early. Type II also has very low affinity for albumin, so it is often more suitable for purification of many species and classes of immunoglobulins. The three particle sizes, 20, 40, and 80 µm, make it easy to scale up from analytical to process-scale manufacturing. Prepacked Foresight™ plates, columns, and RoboColumn units are available for CHT Type I and CHT Type II.

Properties of CHT

Property	Types I and II			
Functional groups	Ca ²⁺ , PO ₄ ⁻³⁻ , OH ⁻			
Nominal mean particle size	20, 40, and 80 µm			
Recommended linear flow rate	50–1,000 cm/hr			
Operating pH range	6.5–14			
Chemical compatibility (>24 hr)	1 M NaOH, 8 M urea, 6 M guanidine-HCl, ethanol, methanol, 100% acetonitrile			
Autoclavability (bulk)	121°C, 20 min in phosphate buffer, pH 7			
Sanitization	1–2 M NaOH			
	Туре І	Type II		
Packing density, (g/ml packed bed)	0.63 g/ml	0.63 g/ml		
Dynamic binding capacity, lysozyme	≥25 mg/g	≥12.5 mg/g		
Typical IgG binding capacities at 500 cm/hr	25–60 mg/ml	15–25 mg/ml		
Maximum operating pressure	100 bar (1,500 psi)	100 bar (1,500 psi		
Nominal pore diameter	600–800 Å	800–1,000 Å		

For More Information Web: bio-rad.com/CHT Request or download bulletins: 2849, 2940, 5667, 5709, 5853, 6086, and 6549

Description	Type I	Type II	
CHT Ceramic Hydroxyapatite, 20 µm			
20 µm particle size, 10 g	1582000	1582200	
20 µm particle size, 100 g	1570020	1572000	
20 µm particle size, 1 kg (1.6 L)	157-0021	157-2100	
CHT Ceramic Hydroxyapatite, 40 µm			
40 µm particle size, 10 g	1584000	1584200	
40 µm particle size, 100 g	1570040	1574000	
40 µm particle size, 1 kg (1.6 L)	157-0041	157-4100	
40 µm particle size, 5 kg (7.9 L)	157-0045	157-4500	
CHT Ceramic Hydroxyapatite, 80 µm			
80 µm particle size, 10 g	1588000	1588200	
80 µm particle size, 100 g	1570080	1578000	
80 µm particle size, 1 kg (1.6 L)	157-0081	157-8100	
80 μm particle size, 5 kg (7.9 L)	157-0085	157-8500	
CHT Foresight Plates, Columns, and RoboColumn Units			
Foresight CHT Plate, 40 μm, 20 μl*	7324716	7324718	
Foresight CHT Column, 40 µm, 1 ml	7324735	7324736	
Foresight CHT Column, 40 µm, 5 ml	7324755	7324756	
Foresight CHT RoboColumn Unit, 40 µm, 200 µl**	7324822	7324825	
Foresight CHT RoboColumn Unit , 40 μm, 600 μl**	7324823	7324826	
* Package size: 2 x 96-well plates.			
** Package size: 1 row of 8 columns.			

bio-rad.com/mixedmode

Mixed-Mode Chromatography Resins/Media

Ordering Int	formation			
Description		1 x 5 ml	5 x 5 ml	
CHT Prepac	ked Bio-Scale Mini Cartridges			
CHT Type I C	Ceramic Hydroxyapatite	7324322	7324324	
CHT Type II (Ceramic Hydroxyapatite	7324332	7324334	
Catalog #	Description			
Bio-Scale P	urification Kits			
7324407	Bio-Scale Mini Apatite Purification Kit	CHT Type II cartridge, CFT Type II cartrid	dge, 1 x 5 ml each	
7324408	Bio-Scale Mini mAb Purification Kit , UNOsphere SUPrA affinity cartridge, UNOsphere Q cartridge, CHT Type I cartridge, 1 x 5 ml each			

Larger volumes and special packaging for industrial applications are available on request.

MPC[™] Ceramic Hydroxyfluoroapatite

MPC ceramic hydroxyfluoroapatite $Ca_{10}(PO_4)_6(OH)_{1.5}(F)_{0.5}$ is a complementary addition to our line of ceramic apatite mixed-mode chromatography media. MPC is secondgeneration CHT Type I, 40 µm. MPC is a composite of hydroxyapatite and fluoroapatite, which confers greater pH stability for the media to provide superior process economics to the biopharmaceutical scientist. MPC has the unique separation properties and unmatched selectivity and resolution of CHT.

Ca²⁺, PO₄, OH, F

600–800 Å

 $40 \pm 4 \,\mu m$

0.72 g/ml

≥25 mg Lys/g MPC

100 bar (1,500 psi)

Properties of MPC				
Property	Description			
Observed dynamic binding capacity IgG	25–50 mg lgG/ml MPC*			
Typical linear flow rate range	50–1,000 cm/hr			
pH stability	6.5–14 pH			
Base stability	At least 1 year in 0.1 N NaOH			
Regeneration	0.4–0.5 M sodium phosphate, pH 7–7.5, is generally sufficient. If higher concentrations are needed, use potassium phosphate			
Autoclavability (bulk)	121°C, 20 min in phosphate buffer, pH 7			
Sanitization	1–2 N NaOH			
Recommended column storage	0.1 N NaOH			

* 40 µm particles, 300 cm/hr, 5 mM sodium phosphate, 25 mM NaCl, pH 6.5.

For More Information

Web: bio-rad.com/MPC Request or download bulletins: 6432 and 6086

Specifications

Functional groups Observed dynamic binding

capacity lysozyme (Lys)

Nominal pore diameter

Tap-settled density*

(g/ml tap settled bed)

* Under ideal conditions.

Maximum backpressure

Nominal mean particle size

Ordering Information			
Туре I			
1580200			
1570200			
157-0201			
157-0205			
7324785			
7324737			
7324757			
7324828			
7324829			

CFT[™] Ceramic Fluoroapatite

CFT ceramic fluoroapatite $(Ca_{10}(PO_4)_6F_2)$ is a rigid spherical macroporous media used in the purification of biologically significant compounds. CFT is a composite of fluoroapatite and hydroxyapatite prepared by chemically converting hydroxyapatite nanocrystals to fluoroapatite with a fluorine reagent.

CFT possesses separation characteristics similar to those of CHT ceramic hydroxyapatite. However, when CFT is used, purification can be performed across a range of lower pH values to obtain optimal results for the targeted biomolecule. CFT Type II is available in a 40 µm size and is sintered at high temperatures to produce a physically and chemically stable media.

CFT can be used under stringent chromatography conditions to separate acidic proteins requiring buffered conditions as low as pH 5.6 with minimal compromise to the solubility or lifespan of the media. CFT has high binding capacity and may be used reproducibly over an extended number of chromatography runs. Its increased tensile strength, chemical durability, and density provide excellent throughput and consistent performance for all separations, including biopharmaceutical process-scale manufacturing.

Features of CFT include:

- Acidic protein separation for applications requiring pH as low as 5.6
- High-density particles for fast, simple column packing
- Sintering at high temperatures for heavy-duty, durable media
- Rigid particles for fast cleaning and equilibration
- Inorganic calcium phosphate for distinct selectivities

For More Information

Web: bio-rad.com/CFT Request or download bulletins: 3111 and 5853

Properties of CFT

Property	Description
Functional groups	Ca ²⁺ , PO ₄ ³⁻ , F ⁻
Particle sizes	40 ± 4 µm
Recommended linear flow rate	300 cm/hr
Operating pH range	5–14
Chemical compatibility	2 M NaOH, 6 M guanidine-HCl, 8 M urea, 0.1 M sodium acetate, pH 5.7
Regeneration	
Normal conditions	400 mM sodium phosphate, pH 7.4
Difficult conditions	400–1,000 mM sodium phosphate, pH 11–12
Sanitization	1–2 M NaOH or KOH
Autoclavability (121°C, 20 min)	Yes
Packing density (g/ml packed bed)	0.86 g/ml
Dynamic binding capacity lysozyme (Lys)	14–21.5 mg Lys/g
Typical IgG binding capacities at 300 cm/hr	33 mg/ml
Nominal pore diameter	600–800 Å
Maximum operating pressure	55 bar (800 psi)

Note: A small amount (up to 5 mM) of sodium phosphate should be added to all unbuffered solutions as a counterion.

Catalog #	Description			
Catalog #	Description			
CFT Cerami	c Fluoroapatite, 20 μm			
1585200	40 µm particle size, 10 g			
1575000	40 µm particle size, 100 g			
157-5100	40 µm particle size, 1 kg (1.2 L)			
157-5500	40 µm particle size, 5 kg (5.8 L)			
Description		1 x 5 ml	5 x 5 ml	
CFT Prepac	ked Bio-Scale Mini Cartridges			
CFT Type II C	eramic Fluoroapatite	7324405	7324406	
Catalog #	Description			
Bio-Scale M	lini Cartridge Kits			
7324407	Bio-Scale Mini Apatite Purification Kit, CH	IT Type II cartridge, CFT Type II cartric	lge, 1 x 5 ml each	
	408 Bio-Scale Mini mAb Purification Kit , UNOsphere SUPrA affinity cartridge, UNOsphere Q cartridge, CHT Type I cartridge, 1 x 5 ml each			

Bio-Gel[®] Hydroxyapatite HT and HTP

Hydroxyapatite $(Ca_5(PO_4)_3OH)_2$ is a form of calcium phosphate used in the chromatographic separation of biomolecules. Bio-Gel crystalline hydroxyapatite media is compatible with a wide range of aqueous buffers and organic modifiers and can be sanitized in up to 1 M NaOH. Typical pH tolerance is >6.8, however it can be used at 5.5 in single-use applications. Bio-Gel hydroxyapatite can be autoclaved in buffers that maintain a pH above 7 during the autoclaving cycle.

- Bio-Gel HT media shipped in 10 mM sodium phosphate, pH 6.8 buffer containing 0.02% NaN₃. The flow rate range is 25–100 cm/hr at 10 cm bed height gravitypacked column. Bio-Gel HT media has a shelf life of at least one year when stored at 4°C in the shipping buffer
- Bio-Gel HTP powder the dry form of Bio-Gel HT media.
 When hydrated, it should be stored similarly to Bio-Gel HT media; the flow rate range is similar to Bio-Gel HT media
- DNA grade Bio-Gel HTP powder a smaller particle size version of Bio-Gel HTP powder, it exhibits higher capacity for biomolecules. It is generally used for single- and double-stranded DNA separations. It has an increased capacity for RNA, making it useful for DNA-RNA hybridization studies. Its flow rate is limited in gravity feed columns, but it can be used in mediumpressure columns to enhance flow rate



For More Information Web: bio-rad.com/biogelHTandHTP Request or download bulletin: LIT217

See Also

CHT ceramic hydroxyapatite: page 66. Bio-Scale Mini CHT cartridges: page 95. Bio-Scale CHT Type I columns: page 99.

Properties of Bio-Gel HT and HTP

•			
Property	Bio-Gel HT	Bio-Gel HTP	Bio-Gel HTP (DNA Grade)
Flow rate*, cm/hr	>25	>25	>5
BSA adsorbed**, mg per dry gram	10	10	10
Calf thymus DNA adsorbed, µg per dry gram	>500	>500	>800
Hydrated volume	_	2–3 ml/g	2–3 ml/g

* Flow rate determined on a 1.5 x 10 cm column with 40 cm hydrostatic pressure.

** Batch-wise uptake.

Ordering Information

Catalog #	Description	
Bio-Gel Hyd	roxyapatite	
1300150	Bio-Gel HT Hydroxyapatite, hydrated, 250 ml	
1300151	Bio-Gel HT Hydroxyapatite, hydrated, 500 ml	
1300420	Bio-Gel HTP Hydroxyapatite, powder, 100 g	
130-0421	Bio-Gel HTP Hydroxyapatite, powder, 1 kg	
130-0425	Bio-Gel HTP Hydroxyapatite, powder, 5 kg	
1300520	Bio-Gel HTP Hydroxyapatite, DNA grade, 100 g	
Accessories		
7376201	Econo-Column Open-Ended Jacketed Chromatography Column, 1 x 30 cm, includes 2 flow adaptors for DNA hydroxyapatite chromatography, 25 ml	

Recombinant-Tagged Affinity Purification

Bio-Scale[™] Mini Nuvia[™] IMAC Columns

Bio-Scale Mini Nuvia IMAC cartridges are 5 ml Bio-Scale Mini cartridges filled with Nuvia Ni-charged IMAC resin. They are used for the purification of recombinant histidine (His)-tagged proteins by immobilized metal affinity chromatography (IMAC).

IMAC is a powerful purification technique that relies on the affinity that the histidine tag has for immobilized transition metals. Nuvia IMAC resins, based on Nuvia beads, contain nitrilotriacetic acid (NTA) as the chelating ligand for di- or trivalent metal ions. Its chemical structure allows highly selective binding of recombinant histidine-tagged proteins when charged with Ni²⁺ or other transition metals, such as Zn^{2+} or Cu^{2+} . Due to its superior mass transfer characteristics, Nuvia IMAC offers high capacity at high flow rates. It can be used under either nondenaturing or denaturing conditions.

Bio-Scale Mini cartridges have a double-wall cartridge design that provides extra durability and allows easy, reliable runs at pressures up to 45 psi with aqueous buffers most commonly used for protein separation. Convenient, disposable, and ready to use, these cartridges are designed for use with a peristaltic pump or the BioLogic[™], NGC[™], or other chromatography systems. For simple step elution, the cartridges can be used with a luer syringe. Fittings are available for connection to HPLC- and FPLC-type systems.



Product Features:

- Superior quality, reproducible separations
- High capacity, even at high flow rates
- Stable at pH 2–14
- Simple luer fittings for easy connection to any system
- Chemically compatible polypropylene parts
- Reusable/disposable format
- Excellent single-step purity by affinity chromatography
- Quick, efficient separation of biomolecules
- Contaminant removal
- Robust base matrix

For More Information Web: bio-rad.com/nuvialMAC

Ordering Info	Ordering Information	
Catalog #	Description	
7800811	Bio-Scale Mini Nuvia IMAC cartridges, 5 ml	
7800812	Bio-Scale Mini Nuvia IMAC cartridges, 5 x 5 ml	

Nuvia[™] IMAC Resin

Nuvia IMAC resin is an ultra high capacity, next-generation affinity chromatography resin. Nuvia IMAC resin delivers high binding capacity over a range of pH and flow rates, providing wide experimental design space for many applications. Immobilized metal affinity chromatography (IMAC) is a powerful purification technique that relies on the affinity that the histidine tag has for immobilized transition metals. Nuvia IMAC resins, based on Nuvia beads, contain nitrilotriacetic acid (NTA) as the chelating ligand for di- or trivalent metal ions. Its chemical structure allows highly selective binding of recombinant histidine-tagged proteins when charged with Ni²⁺ or other transition metals, such as Zn²⁺ or Cu²⁺. Due to superior mass transfer characteristics, Nuvia IMAC resin offers high capacity at high flow rates. It can be used under either nondenaturing or denaturing conditions. Nuvia IMAC resin is available in 25, 100, and 500 ml bottles.

Nuvia IMAC resin delivers value and flexibility by providing users:

- Superior quality, reproducible separations
- High capacity, even at high flow rates
- Stability at pH 2–14
- Biomolecule purification in a variety of workflows
- Excellent single-step purity by affinity chromatography
- Quick, efficient separation of biomolecules
- Contaminant removal
- Robust base matrix

For More Information

Web: bio-rad.com/nuvialMACresin

Ordering Information

Catalog #	Description	Properties (all listed products)
7800800	Nuvia IMAC Resin, 25 ml	 Ultra-high capacity at high flow rates
7800801	Nuvia IMAC Resin, 100 ml	 pH stability across broad range
7800802	Nuvia IMAC Resin, 500 ml	Robust beads

Larger volumes and special packaging are available on request. Please contact local sales specialist.

Chromatography Resins/Media Recombinant-Tagged Affinity Purification

bio-rad.com/affinityresin

See Also

Affinity resin/media selection guide: page 56. Bio-Scale Mini cartridges: page 95. IMAC purification kits: page 76.

Profinity[™] IMAC Resins and Cartridges

Profinity IMAC resins are affinity chromatography supports for the purification of recombinant histidinetagged proteins. Profinity IMAC resins, based on UNOsphere[™] beads, contain iminodiacetic acid (IDA) as the chelating ligand for di- or trivalent metal ions. Its chemical structure allows highly selective binding of recombinant histidine-tagged proteins when charged with Ni²⁺ or other transition metals such as Zn²⁺ or Cu²⁺. They offer high capacity at high flow rates and can be used under either nondenaturing or denaturing conditions The resins are suitable for purification using liquid chromatographic instrumentation, gravity-flow columns, or spin columns. The resin is available in two forms: uncharged and precharged with Ni²⁺. The uncharged form can be charged with the metal ion of your choice for even greater purification flexibility.

Features of Profinity IMAC resins include:

- Optimal ligand density for higher purity of target protein
- Superb mechanical strength
- Excellent pressure-flow properties for high maximum operating pressures and flow rates, allowing rapid purification, column cleaning, and re-equilibration
- Stability from pH 1–14
- Compatibility with denaturing agents, detergents, and reducing agents

For More Information Web: bio-rad.com/profinityIMAC

าร.	Profinity IMAC Resin
	Profinity IMAC Resin
	bo-Scale [™] Mini Profinity [™] IMAC Cartridges
	Properties (all listed products)
	Stable from pH 1 to 14Strong bead matrix for gravity flow

Catalog #	Description	Prope	rties (all listed products)		
Ready-to-Us	se Affinity Resins/Media				
1560121	Profinity IMAC Uncharged Resin, 10 ml	 Stab 	le from pH 1 to 14		
1560123	Profinity IMAC Uncharged Resin, 50 ml	Stro	ng bead matrix for gravity flo	W	
1560125	Profinity IMAC Uncharged Resin, 500 ml				
1560127	Profinity IMAC Uncharged Resin, 1 L				
1560131	Profinity IMAC Ni-Charged Resin, 10 ml				
1560133	Profinity IMAC Ni-Charged Resin, 25 ml				
1560135	Profinity IMAC Ni-Charged Resin, 100 ml				
1560137	Profinity IMAC Ni-Charged Resin, 500 ml				
Description	5 x 1	l ml	1 x 5 ml	5 x 5 ml	
Prepacked E	Bio-Scale Mini Cartridges				
Profinity IMAC Ni-Charged Resin 7324610		610	7324612	7324614	
Larger volum	es and special packaging for industrial application	ons are available	on request		

Recombinant-Tagged Affinity Purification

Profinity[™] GST Cartridges and Kits

Profinity GST resins are an affinity chromatography support for the purification of recombinant GST-tagged proteins. Bio-Scale[™] Mini Profinity[™] GST cartridges are 1 and 5 ml Bio-Scale Mini cartridges filled with Profinity GST support.

For More Information Web: bio-rad.com/profinityGST

Ordering Information

Catalog #	Description
7324620	Bio-Scale Mini Profinity GST Cartridges, 5 x 1 ml
7324622	Bio-Scale Mini Profinity GST Cartridge, 1 x 5 ml
7324624	Bio-Scale Mini Profinity GST Cartridges, 5 x 5 ml
6200240	GST Buffer Kit, includes GST lysis, wash, and elution buffers
6200223	Profinia GST Buffer Kit, includes lysis, wash, and elution buffers, cleaning and storage solutions, glutathione reagent; sufficient for 10 applications
6200243	GST Purification Kit, 1 ml, includes GST purification buffer kit and 2 x 1 ml GST cartridges
6200244	GST Purification Kit, 5 ml, includes 2 GST purification buffer kits and 1 x 5 ml GST cartridge
6200226	Profinia GST Purification Kit , 1 ml, includes Profinia GST buffer kit, 2 x 1 ml GST and 2 x 10 ml desalting cartridges
6200236	Profinia GST Purification Kit , 5 ml, includes 2 Profinia GST buffer kits, 1 x 5 ml GST and 1 x 50 ml desalting cartridge
6200230	Profinia GST Starter Kit , includes Profinia GST buffer kit, 1 x 1 ml GST and 1 x 10 ml desalting cartridge, <i>E. coli</i> lysate, glutathione reagent

Profinity eXact[™] Resins and Cartridges

Profinity eXact Purification Resin, Prepacked Cartridges, and Mini Spin Columns

The Profinity eXact purification resin consists of a highly engineered subtilisin protease conjugated to an agarose-based matrix. Purity of the eluted protein using this resin is typically higher than that for other affinity-tag systems due to the specific recognition of subtilisin for its prodomain sequence (K_p <100 pM).

The resin can be packed into different column formats, including low- to medium-pressure columns, gravityflow columns, and mini spin columns, offering added purification flexibility. Bio-Scale[™] Mini cartridges are available in 1 and 5 ml volumes. Mini spin columns contain 0.1 ml resin. Additional advantages of Profinity eXact purification resin include:

- Purification and processing of fusion-tagged proteins in a single step
- On-column cleavage in as little as 30 min
- No protease addition is required
- Precise cleavage at N-terminus to generate native protein sequence



Profinity eXact Resin Cartridges, Spin Columns, and Bottles

Resin is supplied in 100 mM sodium phosphate (pH 7.2) containing 0.02% sodium azide. It is also available prepacked in 1 and 5 ml cartridges and in mini spin columns.

For More Information Web: bio-rad.com/affinitycartridges Request or download bulletin: 5655

See Also Bio-Scale Mini cartridges: page 95.

Profinity eXact Purification Starter Kit

The Profinity eXact expression and purification starter kit can be used to easily evaluate Profinity eXact fusion-tag technology. It is suitable for new purifications requiring tag removal and for purifications where cleavage has resulted in inferior results.

 Profinity eXact mini spin purification starter kit for single-step purification and on-column cleavage of the tagged protein; also includes a lyophilized lysate to ensure that preliminary purifications are a success

Profinity eXact pPAL7 Supercoiled Expression Vector Kit

The pPAL7 supercoiled plasmid expression vector is used for routine cloning of target DNA sequences using a conventional restriction digest cloning strategy.

Profinity eXact Antibody Reagent

The Profinity eXact antibody reagent is a mouse monoclonal antibody used to detect expression of the target protein. The Profinity eXact antibody specifically recognizes the prodomain of the subtilisin protease, which is fused to the protein of interest. For convenient western blot detection of the fusion protein, Bio-Rad offers colorimetric detection kits.

Resin Specifications	
Functional ligand	Subtilisin protease, 27.8 kD
Base bead	6% agarose bead
Form	50% suspension in 100 mM sodium phosphate (pH 7.2), 0.02% sodium azide
Particle size range	60–160 μm
Dynamic binding capacity*	>3 mg tag-free protein/ml resin
Recommended linear flow rate	1,000 cm/hr at 25°C
pH stability	2–13
Chemical compatibility	Common reagents, including detergents, reducing agents, buffering agents, and additives
Storage	4°C
Shelf life in 20% ethanol	>1 year at 4°C
Operational temperature	4–40°C

* Dynamic binding capacity determination of a 40 kD maltose binding protein.

Note: Dynamic binding capacity is protein dependent.

Catalog #	Description
1563007	Profinity eXact Mini Spin Columns, includes 10 spin columns, ten 2 ml capped tubes, and ten 2 ml capless tubes
7324646	Bio-Scale Mini Profinity eXact Cartridges, 2 x 1 ml
7324647	Bio-Scale Mini Profinity eXact Cartridges, 4 x 1 ml
7324648	Bio-Scale Mini Profinity eXact Cartridge, 1 x 5 ml
1563002	Profinity eXact pPAL Supercoiled Expression Vector Kit, includes 100 µl of 100 ng/µl vector, 20 reactions
1563004	Profinity eXact Monoclonal Antibody, 100 µl, 1 mg/ml
1563005	Profinity eXact Purification Resin,* 10 ml
1563006	Profinity eXact Mini Spin Purification Starter Kit, includes 10 prepacked spin columns, 50 x 2 ml collection tubes, lyophilized control protein lysate, bacterial lysis reagent, 50 ml bind/wash buffer, 20 ml elution buffer

* Larger volumes are available on request.

Profinia[™] System Reagents and Kits

Buffers

Bio-Rad premade affinity buffer kits for recombinanttagged protein purification come with concentrated formula sufficient for ten purifications for a 1 ml affinity cartridge. These kits provide easy and fast purification for histidinetagged (native IMAC buffer) proteins.

- Denaturing IMAC purification can be performed with native buffer IMAC kits with the addition of urea in the purification buffers
- Kits for desalting and cartridge cleaning after affinity purification are also available
- Purification kits containing both buffer kits and appropriate cartridges are provided, if purification cartridges are desired

For More Information

Request or download bulletins: 3193, 5283, 5444, and 5456

Kits

Buffer and starter kits can be used with any instrument, gravity-flow, or spin-column purification procedure.

Profinia purification, buffer, and starter kits are designed specifically for use on the Profinia protein purification system for time savings and highly reproducible results. These kits are directly installed on the system; manual dilution of the concentrated buffers provided in the kits is not required.

For More Information Request or download bulletin: 5574

Reagents

Individually packaged reagents are available for use with the Profinia system. While designed specifically to work with the Profinia system, these reagents also have general applicability within all stages of an affinity purification workflow, from sample preparation to protein detection.

Histidine and GST Purification E. coli Control Lysate

The histidine and GST purification E. coli control lysate is a lyophilized, dual-tagged 51 kD target protein that is meant to eliminate concerns over variability in purification buffer solutions or in the purification matrix itself. The control lysate facilitates system setup and initial purification; it is included in every Profinia IMAC and GST starter kit.

Glutathione Reagent

Powdered glutathione reagents are available for use with GST applications. The glutathione pack is essential for eluting GST fusion proteins from immobilized glutathione resins.

Histidine and GST Antibodies

Histidine-tagged and GST-tagged monoclonal antibodies are used to detect target protein expression of overexpressed 6x histidine and GST fusion proteins. They are supplied at a concentration of 1 mg/ml in phosphate buffered saline (pH 7.4) with 0.05% NaN_a.





Glutathione



Histidine and GST Purification E. Coli Control Lysate

Histidine and GST Antibodies

Affinity Purification Kit Selection Guide

	Bu	Iffer Sets	Bio-Scale [™] N	/lini Cartridges*
Kit	Lysis, Wash, and Elution	Desalting and Cartridge Cleaning	Affinity	Desalting
IMAC Kits				
Native IMAC buffer kit	•			
Native IMAC purification kits (1 and 5 ml)	•		•	
Profinia native IMAC buffer kit	•	•		
Profinia native IMAC purification kits (1 and 5 ml) •	•	•	•
Profinia native IMAC starter kit	•	•	•	•
GST Kits				
GST buffer kit	•			
GST purification kits (1 and 5 ml)	•		•	
Profinia GST buffer kit	•	•		
Profinia GST purification kits (1 and 5 ml)	•	•	•	•
Profinia GST starter kit	•	•	•	•
Desalting and Cartridge Cleaning Kits				
Desalting and cartridge cleaning buffer kit		•		
Profinia desalting purification kits (10 and 50 ml)		•		•

* Starter kits include histidine and GST control lysate, one 1 ml affinity cartridge, and one 10 ml desalting cartridge.

See Also

Profinity IMAC resins: page 72.

Ordering Info	rmation	
Catalog #	Description	
Affinity Buffer	Kits	
6200239	Native IMAC Buffer Kit, includes native IMAC lysis, wash, and elution buffers	
6200240	GST Buffer Kit, includes GST lysis, wash, and elution buffers	
6200224	Desalting and Cartridge Cleaning Buffer Kit, includes desalting buffer, cleaning buffers, and cartridge storage buffer	
Affinity Purific	cation Kits	
6200241	Native IMAC Purification Kit, 1 ml, includes IMAC purification buffer kit and 2 x 1 ml IMAC cartridges	
6200242	Native IMAC Purification Kit, 5 ml, includes 2 IMAC purification buffer kits and 1 x 5 ml IMAC cartridge	
6200243	GST Purification Kit, 1 ml, includes GST purification buffer kit and 2 x 1 ml GST cartridges	
6200244	GST Purification Kit, 5 ml, includes 2 GST purification buffer kits and 1 x 5 ml GST cartridge	
Profinia Buffe	r Kits	
6200221	Profinia Native IMAC Buffer Kit, includes lysis, wash, and elution buffers, cleaning and storage solutions; sufficient for 10 applications	
6200223	Profinia GST Buffer Kit, includes lysis, wash, and elution buffers, cleaning and storage solutions, glutathione reagent; sufficient for 10 applications	
Profinia Purifi	cation Kits	
6200225	Profinia IMAC Purification Kit, 1 ml, includes Profinia native IMAC buffer kit, 2 x 1 ml IMAC and 2 x 10 ml desalting cartridges	
6200235	Profinia IMAC Purification Kit , 5 ml, includes 2 Profinia native IMAC buffer kits, 1 x 5 ml IMAC and 1 x 50 ml desalting cartridge	
6200226	Profinia GST Purification Kit , 1 ml, includes Profinia GST buffer kit, 2 x 1 ml GST and 2 x 10 ml desalting cartridges	
6200236	Profinia GST Purification Kit , 5 ml, includes 2 Profinia GST buffer kits, 1 x 5 ml GST and 1 x 50 ml desalting cartridge	
6200228	Profinia Desalting Purification Kit , 10 ml, includes desalting and cartridge cleaning buffer kit, 2 x 10 ml desalting cartridges	
6200238	Profinia Desalting Purification Kit , 50 ml, includes 2 desalting and cartridge cleaning buffer kits, 1 x 50 ml desalting cartridge	
		continu

Catalog #	Description
Profinia Puri	ification Kits
6200229	Profinia Native IMAC Starter Kit, includes Profinia native IMAC buffer kit, 1 x 1 ml IMAC and 1 x 10 ml
	desalting cartridge, E. coli lysate
6200230	Profinia GST Starter Kit, includes Profinia GST buffer kit, 1 x 1 ml GST and 1 x 10 ml desalting cartridge,
	E. coli lysate, glutathione reagent
Bio-Scale M	lini Affinity and Desalting Cartridges
7324610	Bio-Scale Mini Profinity IMAC Cartridges, 5 x 1 ml
7324612	Bio-Scale Mini Profinity IMAC Cartridge, 1 x 5 ml
7324614	Bio-Scale Mini Profinity IMAC Cartridges, 5 x 5 ml
7324620	Bio-Scale Mini Profinity GST Cartridges, 5 x 1 ml
7324622	Bio-Scale Mini Profinity GST Cartridge, 1 x 5 ml
Affinity Puri	fication Kit Components
6200205	2x Native IMAC Lysis Buffer, 125 ml
6200206	2x Native IMAC Wash Buffer 1, 125 ml
6200207	2x Native IMAC Wash Buffer 2, 100 ml
6200208	2x Native IMAC Elution Buffer, 100 ml
6200213	2x GST Lysis Buffer, 100 ml
6200215	2x GST Elution Buffer, 100 ml
6200216	5x Desalting Buffer, 200 ml
6200217	2x Cleaning Solution 1, 125 ml
6200218	4x Cleaning Solution 2, 125 ml
6200219	2x Storage Solution, 200 ml

Affinity Purification

See Also

Bio-Scale Mini cartridges: page 95.

UNOsphere SUPrA[™] rProtein A Resin/Media

Developed for monoclonal antibody capture chromatography, UNOsphere SUPrA resin provides an ideal balance between dynamic binding capacity, flow properties, and stability. The UNOsphere[™] hydrophilic polymeric support provides high-quality purifications and batch-to-batch reproducibility. As part of the proven UNOsphere resin platform, UNOsphere SUPrA resin offers flexibility and a predictable scale-up path.

Key features include:

 Built on robust polymeric beads engineered for high mechanical stability, low backpressures, and resistance to repeated clean-in-place cycles

- Designed with large pores that result in high dynamic binding capacities at fast flow rates
- Optimized to operate under a wide range of flow rates up to 600 cm/hr
- Available in prepacked Foresight[™] columns and RoboColumn units for evaluation and method development; also available in manufacturing-scale quantities
- Regulatory support file and application notes are available

For More Information

Web: bio-rad.com/unospheresupra Request or download bulletins: 5728, 5729, and 6053

Property	Description	Property	Description
Composition	Highly cross-linked polymer	Working pH range	3–11
Particle size range	53–61 μm	Clean-in-place (CIP) solutions	6 M guanidine hydrochloride
Ligand	Recombinant Protein A		10 mM hydrochloric acid
Coupling chemistry	Ероху		0.1 M sodium hydroxide 1 M acetic acid/20% ethanol
Dynamic binding capacity*	30 ± 3 mg/ml at 150 cm/hour 25 ± 2 mg/ml at 300 cm/hour 20 ± 2 mg/ml at 450 cm/hour (Minimum spec: 20 mg/ml at 300 cm/hour)	Recommended mobile phase velocity range	100–600 cm/hr
		Temperature stability	2-40°C
Chemical stability**	10 mM hydrochloric acid	Delivery conditions	50% slurry in 20% ethanol
	6 M guanidine hydrochloride 0.1 M arginine (pH 2.8) 0.1 M citrate (pH 2.8) 0.1 M glycine (pH 2.8)	Storage conditions	2–8°C

* 10% breakthrough capacity determined with 1.0 mg/ml polyclonal human IgG in 1.1 x 10 cm column.

** No significant change in chromatographic performance after storage for 24 hr at room temperature.

Catalog #	Description			
UNOsphere	SUPrA rProtein A Resin/Medi	а		
1560218	UNOsphere SUPrA rProtei	n A Media , 25 ml		
1560219	UNOsphere SUPrA rProtei	n A Media , 100 ml		
1560220	UNOsphere SUPrA rProtei	n A Media , 500 ml		
Description		1 x 1 ml	5 x 1 ml	1 x 5 ml
Booonption				
	Bio-Scale Mini Cartridges			
Prepacked E	Bio-Scale Mini Cartridges SUPrA Affinity Media	7324200	7324201	7324202
Prepacked E UNOsphere	•	7324200	7324201	7324202
Prepacked E UNOsphere Foresight UI	SUPrA Affinity Media		7324201	7324202
Prepacked E UNOsphere Foresight UI	SUPrA Affinity Media	PrA Column, 1 ml	7324201	7324202
Prepacked E UNOsphere Foresight UI 7324729 7324749	SUPrA Affinity Media NOsphere SUPrA Columns Foresight UNOsphere SUF	PrA Column, 1 ml PrA Column, 5 ml	7324201	7324202
Prepacked E UNOsphere Foresight UI 7324729 7324749	SUPrA Affinity Media NOsphere SUPrA Columns Foresight UNOsphere SUF Foresight UNOsphere SUF NOsphere SUPrA RoboColum	PrA Column, 1 ml PrA Column, 5 ml	7324201	7324202

Affi-Gel[®] and Affi-Prep[®] Protein A Resins

Chromatography on Affi-Gel and Affi-Prep Protein A resins yield highly purified immunoglobulins (IgG), selectively remove IgG prior to analysis of other IgG classes, or adsorb immune complexes for antigen purification. Protein A binds to the Fc region of immunoglobulins, especially IgG from mammalian species. Advantages include:

- High purity of IgGs
- High affinity for mammalian IgG
- High capacities for mouse IgG₁ as well as other subclasses with MAPS optimized buffer

In addition, Affi-Prep resins offer high linear flow rates up to 2,000 cm/hr, pressure stability up to 1,000 psi (70 bar), and high chemical stability, which allows sanitization with 0.1 M NaOH.

With Affi-Gel and Affi-Prep Protein A resins and MAPS II buffer, you can purify up to 10 mg of IgG_1/ml of media. This is 8–10 times higher than with standard methods.

In addition, the MAPS process and Affi-Gel Protein A permit greater binding of mouse IgG₁ than does immobilized Protein G resin.

For More Information Web: bio-rad.com/affigelproteina

Capacities of Protein A Resins

Immunoglobulin	Affi-Gel Protein A Capacity, mg/ml	Affi-Prep Protein A Capacity, mg/ml
Mouse IgG ₁	6–10	7–9
Mouse IgG _{2a}	6–10	7–9
Mouse IgG _{2b}	6–10	7–9
Mouse IgG ₃	6–10	7–9
Mouse IgM*	6–10	7–9
Human IgG	15	10-12
Sheep, cow, horse, g	goat,	
rabbit, dog, pig IgG	8–10	7–9

* Approximately 50% of all mouse IgMs bind using the MAPS buffer system.

Ordering Inf	ormation			
Catalog #	Description			
Affi-Prep and	d Affi-Gel Media			
1560006	Affi-Prep Protein A Media, 5 ml			
1560005	Affi-Prep Protein A Media, 25 ml			
1536153	Affi-Gel Protein A Media, 5 ml			
1536154	Affi-Gel Protein A Media, 50 ml			
1536159	Affi-Gel Protein A MAPS II Kit, includes 5	5 ml Affi-Gel Protein A media, Affi-Gel P	rotein A MAPS II buffers,	
	1 x 10 cm Econo-Column column; enough	to purify 500 mg of mouse IgG ₁		
1536161	Protein A MAPS II Binding Buffer, makes	5 L		
Prepacked E	cono-Pac Columns			
7322022	Econo-Pac Protein A Columns, prefilled v	vith Affi-Gel Protein A media, 5		
7322020	Econo-Pac Protein A Kit, 1 x 2 ml Affi-Gel	Protein A column, 1 x 10 ml 10DG colu	umn, buffers	
Description		5 x 1 ml	1 x 5 ml	
Prepacked E	lio-Scale Mini Cartridges			
Affi-Prep Prote	in A media	7324600	7324602	

Affinity Resins/Media

Affi-Gel[®] Blue Resin

Affi-Gel Blue resin is a cross-linked agarose bead with covalently attached Cibacron Blue F3GA dye. The blue dye functions as an ionic, hydrophobic, aromatic, or sterically active binding site in various applications. Affi-Gel Blue resin is ideally suited for albumin removal (using 50–100 mesh) and enzyme purification (using 100–200 mesh). Proteins and peptides are bound and released with a high degree of specificity by manipulating the composition of the eluent buffers.

The resin is available in bottle and cartridge form.

For More Information Web: bio-rad.com/affigelblue



Bio-Scale Mini Affi-Gel Blue Cartridge



Affi-Gel Blue Gel

Ordering Inf	formation	
Catalog #	Description	Applications (all listed products)
1537301	Affi-Gel Blue Gel, 100 ml, 50–100 mesh	Albumin removal
1537302	Affi-Gel Blue Gel, 100 ml, 100–200 mesh	Enzyme purification
7324642	Bio-Scale Mini Affi-Gel Blue Cartridge , 1 x 5 ml, cartridges packed with 100–200 mesh media	
7324644	Bio-Scale Mini Affi-Gel Blue Cartridges , 5 x 5 ml, cartridges packed with 100–200 mesh media	

DEAE Affi-Gel[®] Blue Resin

DEAE Affi-Gel Blue resin is a bifunctional affinity gel containing Cibacron Blue F3GA dye covalently attached to DEAE Bio-Gel[®] A resin. The dye binds albumin, proteases, and other complement proteins; the DEAE group binds remaining acidic proteins. Features of DEAE Affi-Gel Blue resin include:

- Single-step IgG purification from serum; the eluted IgG contains a small amount of transferrin (samples are diluted approximately fivefold)
- No detectable proteolytic activity in the eluted IgG fraction
- Economical alternative to Protein A affinity chromatography
- Available in bottle and cartridge form

For More Information Web: bio-rad.com/affigeIDEAE



Bio-Scale Mini DEAE Affi-Gel Blue Cartridge



DEAE Affi-Gel Blue Gel

Ordering In	formation		
Catalog #	Description	Applications (all listed products)	
1537307	DEAE Affi-Gel Blue Gel, 100 ml	 Albumin, proteases, and complement protein removal 	
7324632	Bio-Scale Mini DEAE Affi-Gel Blue Cartridge, 1 x 5 ml	 IgG purification 	
7324634	Bio-Scale Mini DEAE Affi-Gel Blue Cartridge, 5 x 5 ml		
			+!

continues

Ordering Information			
Description	1 x 5 ml	5 x 5 ml	
Prepacked Bio-Scale Mini Cartridges			
DEAE Affi-Gel Blue Gel	7324632	7324634	
Affi-Gel Blue Gel	7324642	7324644	

CM Affi-Gel[®] Blue Resin

CM Affi-Gel Blue resin contains Cibacron Blue F3GA dye covalently coupled to CM Bio-Gel[®] A resin. This bifunctional gel binds both albumin and serum proteases. CM Affi-Gel Blue chromatography provides a convenient initial step in the purification of serum proteins. Features of CM Affi-Gel Blue resin include:

- Rapid removal of ≥90% of albumin and all plasminogen in serum samples
- No prior sample preparation needed
- ≥80% yield of stable antiserum free of albumin and protease activity

For More Information Web: bio-rad.com/affigelcm

Ordering Information

Catalog #	Description
1537304	CM Affi-Gel Blue Gel, 100 ml

Affi-Gel[®] Boronate Resin

Affi-Gel boronate-derivatized polyacrylamide resin has affinity for coplanar adjacent *cis*-hydroxyl groups (*cis*-diols) and a high binding capacity, which provides highly efficient separation of low MW molecules such as nucleotides, nucleosides, catecholamines, and sugars. It has a sorbitol capacity of 130 µmol/ml.

For More Information Web: bio-rad.com/affigelboronate Request or download bulletin: 1066



CM Affi-Gel Blue Gel

Affi-Gel Boronate Gel

Ordering Information	
Catalog #	Description
1536103	Affi-Gel Boronate Gel, 5 g
153-6104	Affi-Gel Boronate Gel, 50 g

Affinity Resins/Media

bio-rad.com/affinityresin

Affi-Prep[®] Polymyxin Resin

Affi-Prep polymyxin resin consists of 2–4 mg of USP-grade polymyxin per ml of the macroporous polymeric Affi-Prep support. Affi-Prep polymyxin resin binds endotoxins from a number of different strains of gram-negative bacteria including *E. coli, Salmonella abortus, S. minnesota,* and *Serratia marcescens*. Features of Affi-Prep polymyxin resin include:

- Endotoxin removal in research and process-scale applications
- Linear flow rates to 2,000 cm/hr
- Pressure stability to 1,000 psi (70 bar)
- High chemical stability (withstands sanitization with 0.1 M NaOH)

For More Information Web: bio-rad.com/affigelpolymyxin

Ordering Information

 Catalog #
 Description

 1560010
 Affi-Prep Polymyxin Media, 25 ml

Affi-Gel[®] Heparin Resin

Affi-Gel heparin resin is a ready-to-use support for the purification of a range of proteins such as coagulation factors, other plasma proteins, polynucleotide polymerases, nucleases, lipases, lipoproteins, and proteases. Heparin binds a variety of enzymes and other proteins, either ionically or by other specific enzyme-inhibitor (or enzyme-activator) interactions. Features of Affi-Gel heparin resin include:

- Heparin content ≥0.6 mg/ml
- Human antithrombin III binding capacity ≥1.2 mg/ml
- Linear flow rates of 10–20 cm/hr

For More Information Web: bio-rad.com/affigelheparin



Affi-Prep Polymyxin Resin

Affi-Gel Heparin Resin

Ordering Information	
Catalog #	Description
1536173	Affi-Gel Heparin Media, 40 ml

Activated Affinity Resins/Media

Profinity[™] Epoxide Resin

Profinity epoxide resin is an activated affinity chromatography support for the immobilization of biomolecules. Profinity epoxide is a useful support for the immobilization of ligands that contain nucleophiles such as amino, thiol, or hydroxyl groups. These groups couple to the epoxy groups on the resin, which is then used for the purification of proteins, carbohydrates, or DNA.

Profinity epoxide resin is based on UNOsphere[™] beads, which have an open pore structure. The open pore structure allows coupling of large ligands for the purification of large targets such as Protein A, recombinant proteins containing MBP, and calmodulin. It is supplied as a dry powder (1 g of powder gives ~8 ml final volume).

For More Information Web: bio-rad.com/profinityepoxide

Ordering Information

Ordering Information

Catalog #	Description
1560200	Profinity Epoxide Media, 5 g
1560201	Profinity Epoxide Media, 25 g

Affi-Gel[®] 10 and Affi-Gel 15 Resins

Affi-Gel 10 and Affi-Gel 15 activated affinity resins provide spontaneous, rapid, and highly efficient coupling of ligands via primary amines. Affi-Gel 10 resin is most efficient for coupling neutral or basic proteins with pl 6.5–11. Affi-Gel 15 resin is recommended for coupling acidic proteins with pl <6.5. Affi-Gel 10 and 15 resins offer:

- Aqueous or anhydrous coupling conditions
- Complete protein coupling within 4 hr at 4°C
- Protein coupling capacity up to 35 mg/ml of resin

For More Information Web: bio-rad.com/affigel10and15 Request or download bulletin: 1085

Catalog #	Description
1536099	Affi-Gel 10 Media, 25 ml
1536046	Affi-Gel 10 Media, 4 x 25 ml
153-1000	Affi-Gel 10 Media, 1 L
1536051	Affi-Gel 15 Media, 25 ml
1536052	Affi-Gel 15 Media, 4 x 25 ml
1536098	Affi-Gel 10/15 Combination, includes 2 x 25 ml Affi-Gel 10 media and 2 x 25 ml Affi-Gel 15 media



Activated Affinity Resins/Media

Affi-Gel[®] Hz Hydrazide Resin

Affi-Gel Hz hydrazide activated resin couples immunoglobulin G (IgG) molecules via carbohydrate moieties on the Fc region of antibody molecules. Fc attachment results in a more specific antigen-antibody interaction and 100–300% higher antigen binding capacity than other resins. Affi-Gel Hz resin advantages include:

- Stable covalent hydrazone bonds
- Mild oxidation without alteration of antibody activity
- High antigen binding capacity
- pH stability

For More Information Web: bio-rad.com/affigelhydrazide

Ordering Int	Information	
Catalog #	Description	
1536047	Affi-Gel Hz Hydrazide Media, 25 ml	
1536060	Affi-Gel Hz Immunoaffinity Kit, includes 5 ml Affi-Gel Hz media, 2 x 25 mg Affi-Gel Hz oxidizer, 25 ml Affi-Gel Hz coupling buffer concentrate, 2 Econo-Pac 10DG desalting columns, 1 x 10 cm Econo-Column column	
1536054	Affi-Gel Hz 10x Coupling Buffer Concentrate, 500 ml	

See Also

Affinity resin/media selection guide: page 56.

Carbodiimide Activated Resin

Affi-Gel[®] 102 resin is for use with 1-ethyl-3-(3dimethylaminopropyl)carbodiimide hydrochloride (EDAC or EDC) carbodiimide coupling reagent, which immobilizes ligands that contain primary or terminal carboxyl groups. The resin offers flexible alternative chemistries and economy. Affi-Gel 102 amino-terminal cross-linked agarose resins with a six-atom hydrophilic arm feature:

- EDAC carbodiimide coupling reagent

Compatibility with carboxyl-containing ligands

For More Information Web: bio-rad.com/carbodiimide

Ordering Information		
Catalog #	Description	
1532401	Affi-Gel 102 Media, 50 ml	
1530990	EDAC, 5 g	

Size Exclusion Chromatography

Bio-Gel® P Resin

Bio-Gel P polyacrylamide resin, for high-resolution gel filtration, is prepared by copolymerization of acrylamide and N,N'-methylene-*bis*-acrylamide. Bio-Gel P resin:

- Is available in several particle size ranges with molecular weight exclusion limits ranging from 100–100,000
- Is extremely hydrophilic and essentially nonionic
- Provides efficient, gentle gel filtration of sensitive compounds
- Does not support microbial growth or leach carbohydrates (due to its synthetic composition) as dextrose and agarose gels can

Bio-Gel P resin is autoclavable at pH 5.5–6.5 and operates over a pH range of 2–10 at room temperature. Flow rate and resolution increase with increasing temperature in the range of $4-80^{\circ}$ C.

Bio-Gel P polyacrylamide resin is available as bottled resin or as prepacked spin columns and cartridges. Cartridges are packed with Bio-Gel P-6 resin, while spin columns come prepacked with both P-6 and P-30 resin in either Tris or SSC buffer.

For More Information Web: bio-rad.com/biogelp Request or download bulletin: 2068

Ordering Information

Catalog #	Description
1504114	Bio-Gel P-2 Media, fine, 100 g
1504115	Bio-Gel P-2 Media, fine, 500 g
1504118	Bio-Gel P-2 Media, extra fine, 100 g
1504120	Bio-Gel P-4 Media, medium, 100 g
1504124	Bio-Gel P-4 Media, fine, 100 g
1504128	Bio-Gel P-4 Media, extra fine, 100 g
1504130	Bio-Gel P-6 Media, medium, 100 g
1504134	Bio-Gel P-6 Media, fine, 100 g
1504138	Bio-Gel P-6 Media, extra fine, 100 g
1500738	Bio-Gel P-6DG Media, 100 g
150-0739	Bio-Gel P-6DG Media, 1 kg
1504140	Bio-Gel P-10 Media, medium, 100 g
1504144	Bio-Gel P-10 Media, fine, 100 g
1504150	Bio-Gel P-30 Media, medium, 100 g
1504154	Bio-Gel P-30 Media, fine, 100 g
1504160	Bio-Gel P-60 Media, medium, 100 g
1504164	Bio-Gel P-60 Media, fine, 100 g
1504170	Bio-Gel P-100 Media, medium, 100 g
1504174	Bio-Gel P-100 Media, fine, 100 g
Catalog #	Description
Prepacked Eco	no-Pac Columns

7322010	Econo-Pac 10DG Desalting Columns	, 30





Bio-Gel P Resin

Bio-Scale[™] Mini Bio-Gel Cartridges

Bio-Gel P Polyacrylamide Resin Selection Guide

Media	MW Fractionation Range
Bio-Gel P-2 media	100-1,800
Bio-Gel P-4 media	800-4,000
Bio-Gel P-6 media	1,000-6,000
Bio-Gel P-6DG media	1,000-6,000
Bio-Gel P-10 media	1,500-20,000
Bio-Gel P-30 media	2,500-40,000
Bio-Gel P-60 media	3,000-60,000
Bio-Gel P-100 media	5,000-100,000

	Comments	
	Rapid carbohydrate, peptide, and protein desalting	
9	Carbohydrate and peptide separations, protein desalting	
9	Purification of proteins and polypeptides	
9	Rapid carbohydrate, peptide, and protein desalting; also available in prepacked columns and cartridges	
g	Purification of proteins and polypeptides	
g		
g		
g		
I ns , 30		
		continues

Sample preparation products: page 2. Gel filtration chromatography standard: page 89. Bio-Spin and Micro Bio-Spin prepacked columns: page 97. Empty Econo-Pac columns: page 104. ENrich SEC columns: page 93.

See Also

Size Exclusion Chromatography

bio-rad.com/sizeexclusion

Ordering Infor	mation			
Description		Pack of 1	Pack of 5	
Prepacked Bio	-Scale Mini Cartridges			
Bio-Gel P-6 Gel (Desalting), 5 ml		7324502	7324504	
Bio-Gel P-6 Gel,	, 10 ml	_	7325304	
Bio-Gel P-6 Gel,	, 50 ml	7325312	7325314	
Catalog #	Description			
Adaptor Fitting	js			
7320111	Luer to M6 Adaptor Fittings K	Luer to M6 Adaptor Fittings Kit, includes luer to M6 fittings to connect 1 cartridge to an FPLC system		
7320112	Luer to 10-32 Adaptor Fitting an HPLC system	Luer to 10-32 Adaptor Fittings Kit, includes luer to 10-32 fittings to connect 1 cartridge to an HPLC system		
7320113	0,	Luer to BioLogic System Fittings Kit, includes 1/4-28 female to male luer and 1/4-28 female to female luer to connect 1 cartridge to a BioLogic DuoFlow system		

Bio-Gel[®] A 1.5 m Resin

Bio-Gel A 1.5 m resin, ideal for purification of antibodies and aggregates, consists of agarose beads in which the pore size is controlled by the percentage of agarose in the gel. It is compatible with all commonly used buffers and can be used with high-salt buffers without significantly changing the bed volume. Bio-Gel A 1.5 m resin may be used at pH 4–13 and at temperatures 2–30°C. The fractionation range is 10,000–1,500,000 daltons.

For More Information Web: bio-rad.com/biogela

Ordering Information

Catalog #	Description					
1510450	Bio-Gel A 1.5 m Gel, fine, 500 ml					

Bio-Beads[™] S-X Resins

See Also

ENrich SEC columns: page 93.

Bio-Beads S-X resins are neutral, porous styrene divinylbenzene beads for size exclusion chromatography of lipophilic polymers and other solutes that require organic eluents. MW exclusion limits range from 400–14,000. This range is useful for fractionation of low MW organic polymers and other hydrophobic substances. Exclusion limits are influenced by the eluent used. Bio-Beads S-X resins require an eluent that is mobile; therefore, the beads must be used in a column. The beads are compatible with benzene, toluene, xylene, carbon tetrachloride, dimethylformamide, ketones, aromatics, methylene chloride, *o*-dichlorobenzene, perchloroethylene, tetrahydrofuran, and trichlorobenzene.

Recommended flow rates depend upon the cross-linkage:

- 1% cross-linked resins are used only with gravity flow
- 3% cross-linked resins can withstand a flow of 5 ml/min with a backpressure of 20 bar or 300 psi
- 8% and 12% cross-linked resins can withstand backpressure up to 33 bar or 500 psi

For More Information Web: bio-rad.com/biobeads

Ordering information							
Catalog #	Description	Size, µm	ml/dry g*	Application**			
1522150	Bio-Beads S-X1 Media, 100 g	40-80	7.5	1% cross-linked; for lipophilic polymers of MW 600–14,000			
1522151	Bio-Beads S-X1 Media, 1 kg	40-80	7.5	1% cross-linked; for lipophilic polymers of MW 600–14,000			
1522750	Bio-Beads S-X3 Media, 100 g	40-80	4.75	3% cross-linked; for organic compounds of MW ≤2,000			
1523350	Bio-Beads S-X8 Media, 100 g	40-80	3.1	8% cross-linked; for organic compounds of MW ≤1,000			
1523650	Bio-Beads S-X12 Media, 100 g	40-80	2.5	12% cross-linked; for organic compounds of MW ≤400			
* Ouvellen in h	anana ** MAA/ ranga ia far haada fullu a						

* Swollen in benzene. ** MW range is for beads fully swollen in benzene.

Larger volumes and special packaging for industrial applications are available on request.

Judaning Information

Hydrophobic Interaction Chromatography

Macro-Prep[®] HIC Resins

Macro-Prep HIC resins are methacrylate-based 50 µm beads for protein, polypeptide, enzyme, and nucleic acid purification. They are autoclavable and can withstand treatment in acid, base (pH up to 10), chaotropic agents, or detergents while retaining high protein binding capacities. They are available in two functional forms: a weakly hydrophobic methyl support for purification of compounds with strong hydrophobic regions, and a mildly hydrophobic t-butyl support for purification of compounds with few or weakly hydrophobic regions. Both resins are chemically and thermally stable. They can be cleaned in place with ethanol or 1% acetic acid and 1% phosphoric acid.

For More Information Web: bio-rad.com/macroprepHIC Request or download bulletin: 1841



Macro-Prep Methyl HIC Support

Ordering Information							
Description	Methyl HIC	t-Butyl HIC					
Macro-Prep HIC Support, 25 ml	1580080	1580090					
Macro-Prep HIC Support, 100 ml	1560080	1560090					
Macro-Prep HIC Support, 500 ml	1560081	1560091					
Macro-Prep HIC Support, 5 L	156-0082	-					
Macro-Prep HIC Support, 10 L	156-0083	156-0093					

Bio-Beads[™] SM-2 Adsorbents

Bio-Beads SM-2 nonpolar polystyrene adsorbents are analytical-grade neutral macroporous polymeric beads with a high surface area for adsorbing organics of MW <2,000. These beads can be used in aqueous solution and with solvents or solvent mixtures, including alcohols, petroleum ether, diethyl ether, and hexane, without expansion or contraction of the beads.

Common applications of Bio-Beads SM-2 adsorbents include the removal of detergents such as Triton X-100, the removal of organics such as polyaromatic hydrocarbons from water, cleanup of drugs from plasma and urine, cleanup of biological metabolites and pesticides, and cleanup of dyes and mycotoxins from food products.



Bio-Beads SM-2 Adsorbent

For More Information Web: bio-rad.com/biobeads_SM2 Request or download bulletin: 1461

Ordering Information

Catalog #	Description
1523920	Bio-Beads SM-2 Adsorbents, 100 g
152-3922	Bio-Beads SM-2 Adsorbents, 1 kg
1523923	Bio-Beads SM-2 Adsorbents, 10 kg
1528920	Bio-Beads SM-2 Adsorbents, 25 g

Resin and Cartridge Sampler Packs, Kits, and Standards

Sampler Packs

Bio-Rad offers its most popular resins in a variety of convenient sampler packs:

- Resin sampler pack includes 25 ml each of UNOsphere[™] Q, S, and Nuvia S, Macro-Prep[®] DEAE, High Q, and High S; 5 ml of UNOsphere SUPrA[™]; 10 g each of CHT[™] ceramic hydroxyapatite Types I and II, 40 μm; and 10 g of CFT[™] ceramic fluoroapatite Type II resins
- Bio-Scale[™] Mini ion exchange sampler pack includes one 1 ml cartridge each of UNOsphere Q and S, and Macro-Prep High Q, High S, and DEAE resins
- Bio-Scale Mini affinity sampler pack includes one 1 ml cartridge each of IMAC and Affi-Prep[®] Protein A resins and one 5 ml cartridge each of DEAE Affi-Gel[®] Blue and Affi-Gel Blue resins

For More Information Web: bio-rad.com/resinsampling



Ordering Information					
Catalog #	Description				
Process Sca	le Resins/Media				
1580100	Resin Sampler Pack, includes 25 ml each of Macro-Prep DEAE, Macro-Prep High Q, Macro-Prep High S, UNOsphere Q, UNOsphere S, UNOsphere Rapid S, 5 ml of UNOsphere SuPrA, 10 g each of CHT ceramic hydroxyapatite Types I and II, 40 μm, and 10 g of CFT ceramic fluoroapatite Type II, 40 μm				
Lab Scale R	esins/Media				
7324650	Bio-Scale Mini Ion Exchange Sampler Pack, includes one 1 ml cartridge each of UNOsphere S, UNOsphere Q, Macro-Prep High Q, Macro-Prep High S, Macro-Prep DEAE				
7324651	Bio-Scale Mini Affinity Sampler Pack, includes one 1 ml cartridge each of IMAC and Affi-Prep Protein A, one 5 ml cartridge each of DEAE Affi-Gel Blue and Affi-Gel Blue				

Bio-Scale[™] Mini Kits

Bio-Scale Mini Apatite Purification Kit

CHT[™] ceramic hydroxyapatite and CFT[™] ceramic fluoroapatite have comparable biomolecule separation characteristics, differing mostly in the pH buffer range in which they optimally perform. Ceramic hydroxyapatite exhibits pH stability as low as 6.5, whereas the fluorine substitution in ceramic fluoroapatite extends pH stability to values as low as 5.6. The Bio-Scale Mini apatite purification kit is designed as a convenient way to evaluate which apatite material provides optimal chromatographic performance for your application.

- Prepacked cartridges with CHT Type II ceramic hydroxyapatite and CFT Type II ceramic fluoroapatite for convenient process development
- Low bed volume, allowing minimum requirements for sample and buffer
- Luer fitting for convenient connection to any chromatographic system
- Distinct selectivity and different pH ranges

Bio-Scale Mini mAb Purification Kit

Maximize method optimization and parameter screening for monoclonal antibodies with the Bio-Scale Mini mAb purification kit. This convenient process development



workflow–based kit contains UNOsphere SUPrA[™] affinity resin, UNOsphere[™] Q resin, and CHT Type I ceramic hydroxyapatite to address the entire range of needs for monoclonal antibody capture, intermediate contaminant removal, and final polishing.

- Convenient prepacked columns with a simple luer fitting for easy connection to any chromatography system
- Ideal for screening and optimization of purification protocols
- Reproducible and scalable results

For More Information Web: bio-rad.com/resinsampling Request or download tech note: 5728

See Also

lon exchange resins: page 57. Macro-Prep ion exchange resin/media:

page 59. UNOsphere and

Nuvia ion exchange resins/media: page 57. CHT ceramic

hydroxyapatite: page 66. CFT ceramic fluoroapatite: page 68. Macro-Prep HIC resins: page 87.

Bio-Scale Mini cartridges: page 105.

Ordering Information

Catalog #	Description
7324407	Bio-Scale Mini Apatite Purification Cartridge Kit, includes one each, 5 ml prepacked CFT ceramic fluoroapatite Type II, 40 μm and CHT ceramic hydroxyapatite Type I, 40 μm, multimodal chromatography media cartridges
7324408	Bio-Scale Mini mAb Purification Cartridge Kit, includes one each, 5 ml prepacked UNOsphere SUPrA affinity media, UNOsphere Q media, and CHT ceramic hydroxyapatite Type I, 40 µm, cartridges

Chromatography Standards

Ion Exchange Chromatography Standards

Bio-Rad offers two protein standards for ion exchange chromatography that are suitable for use with bulk resins, cartridges, or columns. Each standard is supplied as a set of six vials of lyophilized protein mixture for qualitative analysis only.

Organic Acid Standard

Bio-Rad's organic acid standard is supplied as a set of six vials of lyophilized mixture for qualitative analysis only.

Carbohydrate Standard

Bio-Rad's carbohydrate standard is supplied as a set of six vials of lyophilized mixture for qualitative analysis only. The standards can be used for column testing or semiquantitative determination.

Gel Filtration Chromatography Standard

Bio-Rad's gel filtration standard is a calibration standard for size exclusion columns used in protein purification. The mixture includes vitamin B_{12} and myoglobin, which are visible when eluting from glass or clear plastic columns, to ensure that the column is properly packed and the sample is eluting evenly. The standard can be used with most size exclusion HPLC columns. The standard is supplied as a set of six vials of lyophilized protein mixture.

For More Information

Web: bio-rad.com/chromstandards

Resin and Cartridge Sampler Packs, Kits, and Standards

bio-rad.com/chromstandards

Standard Specifications

Description	Contents	MW	pl	For Use with
Protein Standard for Anion	Equine myoglobin	17,000	6.9	UNO [®] Q columns; Bio-Scale [™] Mini
Exchange Chromatography	Conalbumin	77,000	4.9	UNOsphere [™] Q cartridges;
	Chicken ovalbumin	45,000	4.6	Macro-Prep [™] High Q and DEAE resins;
	Soybean trypsin inhibitor	21,500	4.5	UNOsphere Q resin
Protein Standard for Cation	Equine myoglobin	17,000	6.9	UNO S columns; Bio-Scale Mini
Exchange Chromatography	Ribonuclease A	13,500	8.7	UNOsphere S cartridges;
	Cytochrome c	12,000	10.7	Macro-Prep High S and CM resins;
				UNOsphere S resin
Organic Acid Analysis	Sodium oxalate	134		Aminex [®] HPX-87H column;
Standard	Sodium citrate	294		organic acid analysis kit
	Sodium malate	196		
	Sodium succinate	270		
	Sodium formate	69		
	Sodium acetate	82		
Carbohydrate Analysis	Melezitose	504		Aminex HPX-87C column;
Standard	Maltose	360		carbohydrate analysis kit
	Glucose	180		
	Mannose	180		
	Fructose	180		
	Adonitol (ribitol)	152		
Gel Filtration Standard	Thyroglobulin	670,000	4.5	SEC columns; Bio-Gel® P resin;
	Bovine γ-globulin	158,000	5.1	ENrich [™] SEC columns
	Chicken ovalbumin	44,000	4.6	
	Equine myoglobin	17,000	6.9	
	Vitamin B ₁₂	1,350	4.5	

Catalog #	Description	Contents	MW	pl	For Use with
1250561	Protein Standard	Equine myoglobin	17,000	6.9	ENrich Q Columns; UNO Q columns;
	for Anion Exchange	Conalbumin	77,000	4.9	Bio-Scale Mini UNOsphere Q
	Chromatography,	Chicken ovalbumin	45,000	4.6	cartridges; Macro-Prep High Q and
	6 vials	Soybean trypsin inhibitor	21,500	4.5	DEAE media; UNOsphere Q media
1250562	Protein Standard for	Equine myoglobin	17,000	6.9	ENrich S Columns; UNO S columns;
	Cation Exchange	Ribonuclease A	13,500	8.7	Bio-Scale Mini UNOsphere S
	Chromatography,	Cytochrome c	12,000	10.7	cartridges; Macro-Prep High S and
	6 vials				CM media; UNOsphere S media
1250586	Organic Acid	Sodium oxalate	134		Aminex HPX-87H column;
	Analysis Standard,	Sodium citrate	294		organic acid analysis kit
	6 vials	Sodium malate	196		
		Sodium succinate	270		
		Sodium formate	69		
		Sodium acetate	82		
1250585	Carbohydrate	Melezitose	504		Aminex HPX-87H column;
	Analysis Standard,	Maltose	360		carbohydrate analysis kit
	6 vials	Glucose	180		
		Mannose	180		
		Fructose	180		
		Adonitol (ribitol)	152		
1511901	Gel Filtration	Thyroglobulin	670,000	4.5	ENrich SEC columns;
	Standard, 6 vials	Bovine γ-globulin	158,000	5.1	Bio-Gel P media
		Chicken ovalbumin	44,000	4.6	
		Equine myoglobin	17,000	6.9	
		Vitamin B ₁₂	1,350	4.5	

Chromatography Columns

A complete range of prepacked and empty columns and accessories is available for protein and peptide separations. Bio-Rad's many disposable spin and gravity chromatography columns are made of chemically compatible polypropylene, are autoclavable, and can be washed with NaOH. Our low-pressure glass Econo-Column[®] chromatography columns offer an ideal combination of performance, reliability, and value. For high-resolution separations, Bio-Rad's Bio-Scale[™] MT mediumpressure columns can be run on a variety of liquid chromatography systems and are provided prepacked with selected resins.

Learn More about the Technology Web: bio-rad.com/tech/chrom

Prepacked Chromatography Columns

Application Resin Type of Separation **Chemical Form Binding Capacity/ml** UNOsphere SUPrA[™] Antibody/mAb Human IgG: 30 mg/ml* Affinity rProtein A Purification Affi-Prep® Protein A Affinity Protein A Mouse monoclonal IgG: 8-10 mg; human IgG: 16-23 mg UNOsphere[™] Q Strong anion exchange $-N(CH_{2})_{2}^{+}$ BSA: 180 mg/ml* -N(CH3)3+ lgG: >170 mg/ml at 300 cm/hr Nuvia[™] Q Strong anion exchange Nuvia[™] cPrime[™] Hydrophobic cation -N(CH₂)₂+ Lactoferrin: >60 mg/ml; lgG: 40 mg/ml exchange Nuvia S Strong cation exchange -SO_lgG: 110 mg/ml High resolution strong Nuvia HR-S -SO3-IgG: ≥70 mg/ml cation exchange Ca₅(PO₄)₃(OH)₂ CHT[™] Type I, 40 µm Hydroxyapatite Human IgG: 25-60 mg Ca₅(PO₄)₃(OH)₂ Human IgG: 15-25 mg CHT Type II, 40 µm Hydroxyapatite Ca10(PO4)6(OH)1.5(F)0.5 MPC¹ Hydroxyfluoroapatite Human IgG: 25-50 mg/ml CFT™ Fluoroapatite Ca₁₀(PO₄)₆F₂ Lysozyme: 14-21.5 mg/g DEAE Affi-Gel® Blue Cibacron Blue F3GA Serum: 0.2-1.0 ml Affinity and DEAE Affinity-Tagged Nuvia IMAC Affinity Nitrilotriacetic acid (NTA) Recombinant histidine-tagged protein: ≥40 mg Protein Profinity[™] IMAC Recombinant histidine-tagged protein: \geq 15 mg Iminodiacetic acid Affinity Purification Profinity GST Affinity Glutathione Recombinant GST-tagged protein: ≥10 mg/ml Profinity eXact[™] Affinity tag Modified subtilisin Tag-free maltose-binding protein/ml resin: >3 mg/mlNontagged Nuvia Q Strong anion exchange $-N(CH_2)_2^+$ IgG: >170 mg/ml at 300 cm/hr Protein Nuvia cPrime Hydrophobic cation -N(CH3)3+ Lactoferrin: >60 mg/ml; lgG: 40 mg/ml Purification exchange Nuvia S Strong cation exchange -SO, lgG: 110 mg/ml Nuvia HR-S High resolution strong -SO, lgG: ≥70 mg/ml cation exchange Strong cation exchange Human IgG: ≥49 mg Macro-Prep® High S -SO. CHT Hydroxyapatite Ca₅(PO₄)₃(OH)₂ Human IgG: 25-60 mg/ml* MPC Hydroxyfluoroapatite Ca10(PO4)6(OH)15(F)0.5 Human IgG: 25-50 mg/ml CFT Fluoroapatite Ca10(PO4)6F2 Lysozyme: 14-21.5 mg/g High-Resolution ENrich[™] Q Strong anion exchange -N(CH₃)₃+ Albumin: 130 mg/ml Polishina ENrich S Strong cation exchange -SO3-IgG: 120 mg/ml **ENrich SEC** 0.5-70 kD Size exclusion 5-650 kD

Prepacked Cartridge Selection Guide by Application

* Binding capacity based on bulk resin; check individual instruction manuals for run conditions and specifications.

continues

Application	Resin Type of Separation		Chemical Form	Binding Capacity/ml	
Desalting, Buffer Bio-Gel® P-6 Gel filtration Exchange		Polyacrylamide	CV: 10-22%		
Purification of Serum Proteins, Enzymes	Affi-Gel [®] Blue	Affinity	Cibacron Blue F3GA	Serum: 0.2 ml; albumin: 11 mg	
Plasmid Purification	d Macro-Prep High Q Strong anion exchange		$\begin{array}{l} -N(CH_3)_3^+ \\ -N(CH_3)_3^+ \\ -SO_3^- \\ -HN^+(C_2H_5)_2 \\ Ca_5(PO_4)_3(OH)_2 \\ Ca_{10}(PO_4)_6(OH)_{1.5}(F)_{0.5} \\ Ca_{10}(PO_4)_6F_2 \end{array}$	BSA: ≥37 mg BSA: 180 mg Human IgG: 60 mg Protein: >35 mg Human IgG: 25–60 mg/ml* Human IgG: 25–50 mg/ml Lysozyme: 14–21.5 mg/g	

Prepacked Cartridge Selection Guide by Application (cont.)

* Binding capacity based on bulk resin; check individual instruction manuals for run conditions and specifications.

ENrich[™] High-Resolution Ion Exchange Columns

ENrich ion exchange columns are designed for highresolution separations at fast flow rates. ENrich columns run at low backpressures on the NGC[™] chromatography system or any other medium- to high-pressure purification system. This allows more flow rate flexibility in both sample viscosities and temperature conditions. The 1 ml ENrich column can complete a high-resolution separation in about 10 minutes. ENrich columns are also available in 8 ml sizes.

The unique polymeric resin features:

- High capacity even at high flow rates
- Superior quality, reproducible separations
- Lower backpressure than similar resins
- Stability from pH 2–12
- Available for strong anion (Q) and strong cation (S) exchange



ENrich glass columns — provide high-resolution separation of biomolecules. The durable borosilicate glass tube and PEEK end fittings are compatible with all aqueous solvents.

For More Information Visit bio-rad.com/ENrich

Ordering Information

		Column Volume.	Recommended Max. Protein	Column Flow Dimensions	Max. O	perating F	Pressure	
Catalog #	Description	ml	Load, mg/column		psi	M Pa	bar	
ENrich High	Resolution Ion Exchange Columns							
7800001	ENrich Q 5 x 50 Column	1	100	5 x 50	500	3.45	34.5	
7800003	ENrich Q 10 x 100 Column	8	800	10 x 100	500	3.45	34.5	
7800021	ENrich S 5 x 50 Column	1	100	5 x 50	500	3.45	34.5	
7800023	ENrich S 10 x 100 Column	8	800	10 x 100	500	3.45	34.5	
Catalog #	Description							
Fittings								
7500564	1/4-28 Female to 10-32 Male Fitti BioLogic DuoFlow System	ngs, includes	2 ferrule-less fittings	s for attaching El	Nrich colu	mns to the		
7500568	ENrich 10-32 Fittings Kit, includes	s 2 nuts and 4	ferrules to connect	ENrich column to	o an HPLC	C system		
7800008	Fittings, 10-32 PEEK, black, 2/PK							
7800091	ENrich 5 Frit Kit, includes 2 frits, 1	frit remover, 2	2 O-rings					Inquire
7800093	ENrich 10 Frit Kit, includes 2 frits,	1 frit remover,	2 O-rings					Inquire

bio-rad.com/columns

Chromatography Columns Prepacked Chromatography Columns

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ENrich[™] High-Resolution Size Exclusion Columns

ENrich size exclusion columns are designed for high resolution at fast flow rates. ENrich columns run at low backpressures on the NGC[™] chromatography system or any other medium- to high-pressure purification system. This allows more flow rate flexibility in both sample viscosities and temperature conditions. The 24 ml ENrich column can complete a high-resolution separation in less than 30 minutes at a flow rate of 1 ml/min.

The unique polymeric resin features:

- High resolution based on size
- Superior quality, reproducible separations
- Lower backpressure than similar resins
- Stability from pH 2–12
- Separation ranges from 500–70,000 and 5,000–650,000 M_r

ENrich glass columns — provide high-resolution separation of biomolecules. The durable borosilicate glass tube and PEEK end fittings are compatible with all aqueous solvents.

For More Information

Web: bio-rad.com/ENrich

Ordering Information

		Column Volume.	Max. Operatin		perating P	ressure		
Catalog #	Description	ml	Proteins, M _r	(W x L), mm	psi	M Pa	bar	
ENrich High R	Resolution Ion Exchange Columns							
7801070	ENrich SEC 70 10 x 300 Column	24	500-70,000	10 x 300	600	4.1	41	
7801650	ENrich SEC 650 10 x 300 Column	24	5,000-650,000	10 x 300	600	4.1	41	
Catalog #	Description							
Fittings					-			
7500564	1/4-28 Female to 10-32 Male Fitting BioLogic DuoFlow system	s , includes 2	2 ferrule-less fittings	for attaching EN	rich colum	ins to the		
7500568 7800008	ENrich 10-32 Fittings Kit, includes 2 Fittings, 10-32 PEEK, black, 2/PK	2 nuts and 4	4 ferrules to connec	t ENrich columr	n to an HP	LC system		
7800093	ENrich 10 Frit Kit, includes 2 frits, 1 fr	rit remover,	2 O-rings					Inquire

1



Gel filtration chromatography standard: page 89.

Foresight[™] Prepacked Plates and Columns

Foresight plates and columns are prepacked with a range of Bio-Rad's process chromatography resins, offering process scientists convenience and reliability for their high-throughput experimentation needs. The products' robust design allows researchers to use the prepacked formats through the entire purification development cycle, from high-throughput resin screening to small-scale methods development and scale-up optimization.

Benefits include:

- Prepacked and ready-to-use formats designed to save process development time
- Ability to evaluate different experimental conditions to better define an operational window
- Ability to perform high-throughput experiments with minimum sample requirements
- · Available in a variety of chromatography resin modes that are designed for large-scale bioprocess
- Compatible with robotic liquid handling workstations

For More Information Web: bio-rad.com/foresight

Request or download bulletin: 6297

Ordering In	formation	
Catalog #	Description	
Foresight P	ates*	
7324714	Foresight UNOsphere Q, 20 µl	
7324710	Foresight UNOsphere S, 20 µl	
7324709	Foresight UNOsphere SUPrA, 20 µl	
7324703	Foresight Nuvia Q, 20 µl	
7324701	Foresight Nuvia S, 20 µl	
7324707	Foresight Nuvia HR-S, 20 µl	
7324705	Foresight Nuvia cPrime, 20 µl	
7324716	Foresight CHT Type I, 40 µm 20 µl	
7324718	Foresight CHT Type II, 40 µm, 20 µl	
7324785	Foresight MPC Type I, 40 µm, 20 µl	
		continues



es

Ordering Information		
Description	200 µl	600 µl
Foresight RoboColumn Units**,***		
Profinity IMAC Ni-Charged Resin	7324200	7324202
Foresight UNOsphere Q RoboColumn Units	7324819	7324820
Foresight UNOsphere S RoboColumn Units	7324813	7324814
Foresight UNOsphere SUPrA RoboColumn Units	7324834	7324835
Foresight Nuvia Q RoboColumn Units	7324804	7324805
Foresight Nuvia S RoboColumn Units	7324801	7324802
Foresight Nuvia HR-S RoboColumn Units	7324831	7324832
Foresight Nuvia cPrime RoboColumn Units	7324807	7324808
Foresight CHT Type I RoboColumn Units, 40 µm	7324822	7324823
Foresight CHT Type II RoboColumn Units, 40 µm	7324825	7324826
Foresight MPC Type I RoboColumn Units, 40 µm	7324828	7324829
Description	1 ml	5 ml
Foresight Columns		
Foresight UNOsphere Q	7324732	7324752
Foresight UNOsphere S	7324730	7324750
Foresight UNOsphere SUPrA	7324729	7324749
Foresight Nuvia Q	7324721	7324741
Foresight Nuvia S	7324720	7324740
Foresight Nuvia HR-S	7324723	7324743
Foresight Nuvia cPrime	7324722	7324742
Foresight CHT Type I, 40 µm	7324735	7324755
Foresight CHT Type II, 40 µm	7324736	7324756
Foresight MPC Type I, 40 µm	7324737	7324757
* Package size: 2 x 96-well plates.		
** Package size: 1 row of 8 columns.		
*** Earonight Robe Column units are to be used with robotic liquit	d handling workstations	

*** Foresight RoboColumn units are to be used with robotic liquid handling workstations.

For more information on prepacked columns and plates, please visit bio-rad.com/foresight.

Bio-Scale[™] Mini Cartridges

Bio-Scale Mini cartridges have a double-wall cartridge design* that provides extra durability and allows easy, reliable runs at pressures up to 45 psi using the aqueous buffers most commonly employed for protein separation. The cartridges are prepacked with Bio-Rad's chromatography resins for ion exchange, affinity, size exclusion, or hydroxyapatite technology and are available in 1, 5, 10, and 50 ml formats. Bio-Scale Mini cartridges are convenient and ready to use.

The cartridges can be used with any chromatography system and are ideal with the NGC[™] chromatography systems, BioLogic[™] systems, or a peristaltic pump. For simple step elution, the cartridges can be used with a luer lock syringe. Fittings are available for connection to HPLC-, FPLC-, and ÄKTA systems.

For More Information Web: bio-rad.com/cartridges Request or download bulletins: 5444, 5574, and 5584



bio-rad.com/cartridges

See Also

Bottled resins: pages 55–56. BioLogic systems: page 122. Econo gradient pump: page 142.

Description		1 x 1 ml	5 x 1 ml	1 x 5 ml	5 x 5 ml	
Prepacked Bio	-Scale Mini Cartridge	S				
UNOsphere Q M	-	_	7324100	7324102	7324104	
UNOsphere S M	ledia	_	7324110	7324112	7324114	
UNOsphere SU	PrA rProtein A Media	7324200	7324201	7324202	-	
Nuvia S Media		7324420	7324421	7324422	7324423	
Macro-Prep Hig	h Q Media	_	7324120	7324122	7324124	
Macro-Prep Hig	h S Media	_	7324130	7324132	7324134	
Macro-Prep DE	AE Media	_	7324140	7324142	7324144	
Affi-Prep Proteir	n A Media	_	7324600	7324602	_	
Nuvia IMAC		-	-	7800811	7800812	
Profinity IMAC N	Ni-Charged Resin	_	7324610	7324612	7324614	
Profinity GST Re	esin	_	7324620	7324622	7324624	
DEAE Affi-Gel B	Blue Media	_	_	7324632	7324634	
Affi-Gel Blue Me	edia	_	_	7324642	7324644	
CHT Type I, 40	µm Media	_	_	7324322	7324324	
CHT Type II, 40 µm Media		_	_	7324332	7324334	
CFT Type II Mee	dia	-	-	7324405	7324406	
Description			Pack of 1		Pack of 5	
Bio-Gel P-6 Me	edia, 10 ml		_		7325304	
Bio-Gel P-6 Me	edia, 50 ml		7325312		7325314	
Catalog #	Description					
Adaptor Fitting	js					
7885010	Luer to 10-32 Adapt	or Fittings Kit, inclu	udes female slip luer to fema	ale 10-32 fitting to connect	male end of luer	
	column to NGC syster	n		-		
7320111	Luer to M6 Adaptor	Fittings Kit, include	s luer to M6 fittings to conne	ect 1 cartridge to an FPLC s	system	
7320112	Luer to 10-32 Adaptor Fittings Kit, includes luer to 10-32 fittings to connect 1 cartridge to an HPLC system or NGC system					

or NGC system
 7320113 Luer to 1/4-28 Adaptor Fittings Kit, includes 1/4-28 female-to-male luer and 1/4-28 female-to-female luer to connect 1 cartridge to a BioLogic DuoFlow system

Bio-Scale[™] Mini Cartridge Protein Purification Sampler Packs and Kits

Protein purification sampler packs offer a quick way to experiment with separation techniques when the protein to be purified has not yet been characterized. The Bio-Scale Mini ion exchange sampler pack includes a 1 ml UNOsphere[™] Q cartridge, 1 ml UNOsphere S cartridge, 1 ml Macro-Prep[®] Q cartridge, 1 ml Macro-Prep S cartridge, and 1 ml Macro-Prep DEAE cartridge.

The Bio-Scale Mini affinity sampler pack includes a 1 ml IMAC cartridge, 1 ml GST cartridge, 1 ml Affi-Prep[®] Protein A cartridge, 5 ml DEAE Affi-Gel[®] Blue cartridge, and 5 ml Affi-Gel Blue cartridge. The Bio-Scale mini mAb purification cartridge kit includes the three most commonly used media for purification of monoclonal antibody. The kit includes a UNOsphere SUPrA[™] affinity cartridge for capture, a UNOsphere Q cartridge for the intermediate step, and a CHT[™] type I, 40 µm cartridge for the polishing step.

A list of all cartridges is included above in Ordering Information for Bio-Scale Mini Cartridges. For a list of all columns, see page 91.

For More Information Web: bio-rad.com/resinsampling

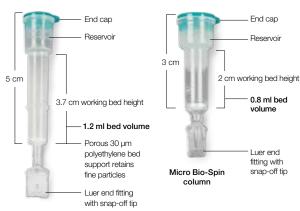
bio-rad.com/biospin

Catalog #	Description	
Catalog #	Description	
Bio-Scale M	lini Cartridge Kits	
7324407	Bio-Scale Mini Apatite Purification Cartridge Kit, includes one each of prepacked CFT	
	ceramic fluoroapatite Type II, 40 μm , and CHT ceramic hydroxyapatite Type I, 40 μm , mixed-mode chromatography media cartridges, 1 x 5 ml each	
7324408	Bio-Scale Mini mAb Purification Cartridge Kit, includes one each of UNOsphere SUPrA A and Q	
	cartridges and CHT Type I, 40 μm cartridge, 1 x 5 ml each	
Bio-Scale M	lini Sampler Packs	
7324650	Bio-Scale Mini Ion Exchange Sampler Pack, includes one each UNOsphere Q, UNOsphere S, Macro-Prep	
	Q, Macro-Prep S, Macro-Prep DEAE 1 ml cartridges	
7324651	Bio-Scale Mini Affinity Sampler Pack, includes one each IMAC, GST, Affi-Prep Protein A 1 ml cartridges,	
	and one each DEAE Affi-Gel Blue and Affi-Gel Blue 5 ml cartridges	
Adaptor Fitt	ings	
7885010	Luer to 10-32 Adaptor Fittings Kit, includes female slip luer to female 10-32 fitting to connect male end of	
	luer column to NGC system	
7320111	Luer to M6 Adaptor Fittings Kit, includes luer to M6 fittings to connect 1 cartridge to an FPLC system	
7320112	Luer to 10-32 Adaptor Fittings Kit, includes luer to 10-32 fittings to connect 1 cartridge to an HPLC system or NGC system	
7320113	Luer to 1/4-28 Adaptor Fittings Kit, includes luer to 1/4-28 fittings to connect 1 cartridge to a	
	BioLogic DuoFlow system	

Bio-Spin[®] and Micro Bio-Spin[™] Columns

Bio-Spin 6 and Micro Bio-Spin 6 columns are ideal for desalting protein samples quickly using size exclusion chromatography. Filled with Bio-Gel[®] P-6 or P-30 resin, these columns are shipped fully hydrated in Tris buffer and are ready to use. These products effectively clean up and remove salts, nucleotides, dye terminators, and small molecules from protein, RNA, and DNA samples in just 10 minutes. The columns are autoclavable.

- Provide fast salt and contaminant removal in an easy-to-use spin-column format
- Remove compounds <6 kD by size exclusion chromatography
- Accommodate up to 100 µl of sample (Bio-Spin columns)
- Accommodate up to 70 µl of sample (Micro Bio-Spin columns)



Bio-Spin column

For More Information Web: bio-rad.com/biospin

Bio-Spin Column Selection Guide

	Bio-Spin 6	Micro Bio-Spin 6	Bio-Spin 30	Micro Bio-Spin 30			
Equilibration buffer	SSC buffer*	10 mM Tris, pH 7.4, or SSC buffer*	SSC buffer*	10 mM Tris, pH 7.4, or SSC buffer*			
Applications	Desalting and buffer exchange	Desalting and buffer exchange	Desalting; nucleotide and small molecule removal	DNA sequencing reaction mixtures (Tris) and small molecule removal			
Retention and recovery	90% recovery of 20 bases or bp, 99% retention of salts	90% recovery of 20 bases or bp, 99% retention of salts	95% recovery of 22 bases or bp, 98% retention of ddNTPs	95% recovery of 22 bases or bp, 98% retention of ddNTPs			
MW exclusion limit, globular proteins	6,000	6,000	40,000	40,000			
Sample volume	50–100 µl	10–75 µl	50–100 µl	10–75 µl			
Centrifuge type	Swinging bucket	Microcentrifuge	Swinging bucket	Microcentrifuge			
*150 mM NaCl, 17.5 mM sodium citrate, pH 7.0.							

See Also

Nucleic acid sample preparation: page 9.

Prepacked Chromatography Columns

bio-rad.com/columns

Ordering Information				
Catalog #	Description			
7326227	Bio-Spin 6 Columns, 25 with Tris buffer			
7326228	Bio-Spin 6 Columns, 100 with Tris buffer			
7326221	Micro Bio-Spin 6 Columns, 25 with Tris buffer			
7326222	Micro Bio-Spin 6 Columns, 100 with Tris buffer			
7326006	Bio-Spin 30 Columns, 25 with SSC buffer			
7326202	Micro Bio-Spin 30 Columns, 25 with SSC buffer			
7326203	Micro Bio-Spin 30 Columns, 100 with SSC buffer			
Go to bio-rad	d.com/cartridges for current information on prepacked cartridges.			

See Also

ProteoMiner protein enrichment system: page 7.

Mini Bio-Spin[™] Columns

Mini Bio-Spin columns are available with 0.6 ml prepacked resin for both affinity-tagged purification and protein enrichment applications. The columns contain Profinity eXact[™] resins for affinity-tagged purification and on-column cleavage; see page 73.

For More Information

Web: bio-rad.com/minibiospin Request or download bulletins: Profinity eXact fusion-tag system — 5725, 5742, and 5766; ProteoMiner beads — 3096 and 5635

Ordering Information

Catalog # Description

1563007*

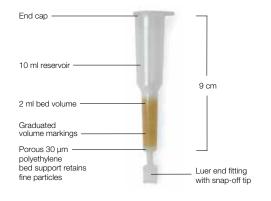
Profinity eXact Mini Spin Columns, includes ten 0.6 ml spin columns, ten 2 ml capped tubes, and ten 2 ml capless tubes

* For ProteoMiner kits, see page 7.

Poly-Prep[®] Ion Exchange Columns

Poly-Prep prepacked columns for gravity-flow chromatography provide convenience for sample preparation and other small-scale applications. The graduated polypropylene columns hold a standard bed volume of 2 ml of AG[®] ion exchange resin and include an integral 10 ml reservoir. A Poly-Prep stack cap, which allows connection to pumps, reservoirs, or columns in series, is also available.

For More Information Web: bio-rad.com/polyprep



bio-rad.com/columns

Ordering Information

Description	Particle Size, µm	lonic Form	Application		
Poly-Prep Columns, AG 1-X8 resin, 100–200 mesh, 50	106–180	Chloride	Separation of low molecular weight inorganic anions		
Poly-Prep Columns, AG 1-X8 resin, 200–400 mesh, 50	45–106	Chloride	For high-resolution random separations		
Poly-Prep Columns, AG 1-X8 resin, 200–400 mesh, 50	45–106	Formate	Separation of low molecular weight biological compounds such as nucleotides, peptides, and carboxylic acids		
Poly-Prep Columns, AG 50W-X8, 100–200 mesh, 50	106–250	Hydrogen	Separation and concentration of low molecular weight cations such as small peptides and amino acids		
Poly-Prep Columns, AG 50W-X8, 200–400 mesh, 50	63–150	Hydrogen	For high-resolution random separations		
Poly-Prep Column Stack Cap, 50 Stopcock, Lock 2-Way Luer, 10			Allows connection of pumps, reservoirs, or columns in series Provides control of flow through Poly-Prep columns		
	 Poly-Prep Columns, AG 1-X8 resin, 100–200 mesh, 50 Poly-Prep Columns, AG 1-X8 resin, 200–400 mesh, 50 Poly-Prep Columns, AG 1-X8 resin, 200–400 mesh, 50 Poly-Prep Columns, AG 50W-X8, 100–200 mesh, 50 Poly-Prep Columns, AG 50W-X8, 200–400 mesh, 50 Poly-Prep Column Stack Cap, 50 	Description Size, µm Poly-Prep Columns, AG 1-X8 106–180 resin, 100–200 mesh, 50 106–180 Poly-Prep Columns, AG 1-X8 45–106 resin, 200–400 mesh, 50 45–106 Poly-Prep Columns, AG 1-X8 45–106 resin, 200–400 mesh, 50 106–250 Poly-Prep Columns, AG 50W-X8, 106–250 100–200 mesh, 50 Poly-Prep Columns, AG 50W-X8, 63–150 200–400 mesh, 50 Poly-Prep Columns, AG 50W-X8, 63–150 200–400 mesh, 50	Description Size, µm Form Poly-Prep Columns, AG 1-X8 resin, 100-200 mesh, 50 106-180 Chloride Poly-Prep Columns, AG 1-X8 resin, 200-400 mesh, 50 45-106 Chloride Poly-Prep Columns, AG 1-X8 resin, 200-400 mesh, 50 45-106 Formate Poly-Prep Columns, AG 1-X8 resin, 200-400 mesh, 50 Hydrogen 100-250 Poly-Prep Columns, AG 50W-X8, 106-250 Hydrogen 100-200 mesh, 50 Poly-Prep Columns, AG 50W-X8, 63-150 Hydrogen 200-400 mesh, 50 Poly-Prep Columns, AG 50W-X8, 63-150 Hydrogen 100-200 mesh, 50		

Bio-Scale[™] CHT[™] Type I Columns

Bio-Scale CHT Type I columns are packed with CHT ceramic hydroxyapatite, Type I 10 µm resin, which has high affinity for basic proteins and lower affinity for acidic proteins. These prepacked columns allow rapid, reproducible high-resolution separations for analytical to semipreparative medium-pressure applications. These columns are ideal for use with any medium- to high-pressure chromatography system. Available bed volumes are 2, 5, 10, and 20 ml.

Bio-Scale CHT Type I Column Top-Off Support Kit If the top of the column bed becomes fouled and the usual hygiene steps do not restore performance, a few milliliters



of the bed can be removed and replaced with fresh support. The Bio-Scale CHT Type I column top-off support kit contains 1 ml support, frits, and distribution screens for each column diameter.

For More Information Web: bio-rad.com/bioscaleCHT

Ordering Information

Catalog #	Description	Column Volume, ml	Recommended Flow Rate, ml/min	Recommended Flow Rate, ml/min	Column Dimensions (W x L), mm	Max. Operating Pressure, psi	
7510021	Bio-Scale CHT2-I Column	2	20	0.5-3.0	7 x 52	1,000	
7510023	Bio-Scale CHT5-I Column	5	50	0.5-5.0	10 x 64	750	
7510025	Bio-Scale CHT10-I Column	10	100	0.5–7.0	12 x 88	600	
7510027	Bio-Scale CHT20-I Column	20	200	0.5-10.0	15 x 113	500	
7510029	Top-off Resin Kit, CHT-I, 1 ml						

See Also

Bio-Scale replacement parts: page 110. NGC systems: page 111. CHT ceramic hydroxyapatite: page 66. Bio-Scale Mini cartridges: page 95.

Chromatography Columns Prepacked Chromatography Columns

bio-rad.com/columns

See Also

UNOsphere ion exchange resin: page 57. NGC systems: page 111.

UNO[®] Monolith Ion Exchange Columns

UNO monolith ion exchange columns contain a patented* continuous-bed matrix, allowing biomolecule separations at high flow rates without sacrificing resolution or capacity.

UNO columns run at low backpressures on the BioLogic DuoFlow[™] system or any other medium- to highpressure chromatography system. A 1 ml UNO column can complete a high-resolution separation in about 3 minutes. UNO columns are also available in 6 and 12 ml sizes.

The unique homogeneous UNO matrix:

- · Provides large pore diameters especially suited for purifying larger proteins, DNA, and virus
- · Has high capacity, even at high flow rates, due to the dense network of nodules that contain the ionic functional groups. These groups are completely accessible to biomolecules via the interconnecting channels
- Has the highest guality and batch-to-batch reproducibility
- Prevents fragmentation so columns last longer
- Is stable from pH 2–12
- Is available for strong anion (Q) and strong cation (S) exchange



UNO replacement columns – UNO replacement columns provide a simple bed replacement as an alternative to purchasing a new column.

UNO glass columns – UNO glass columns provide highresolution separation of biomolecules. The transparent glass tube allows easy bed inspection and column troubleshooting. Three column sizes provide flexibility for purification protocols.

UNO polishing PEEK columns – UNO polishing columns, 0.16 ml, are a late-stage purification tool to obtain the highest resolution and recovery from small sample loads. They allow you to purify and concentrate dilute samples in one step.

For More Information Web: bio-rad.com/unomonolith

Ordering Inf	ormation	Column	Recommended	Recommended	Column Flow		k. Opera	-	
Catalog #	Description	Volume, ml	Max. Protein Load, mg/column	Flow Rate, ml/min	Dimensions (W x L), mm	psi	Pressur M Pa	e bar	
7200001	UNO Q1 Column	1.3	20	0.5–5.0	7 x 35	700	4.5	48	
7200003	UNO Q6 Column	6	90	0.5-8.0	12 x 53	700	4.5	48	
7200005	UNO Q12 Column	12	180	0.5-8.0	15 x 68	700	4.5	48	
7200021	UNO S1 Column	1.3	20	0.5-5.0	7 x 35	700	4.5	48	
7200023	UNO S6 Column	6	90	0.5-8.0	12 x 53	700	4.5	48	
7200025	UNO S12 Column	12	180	0.5–8.0	15 x 68	700	4.5	48	
UNO Replace	ement Columns								
7200011	UNO Q1R Column	1.3	20	0.5–5.0	7 x 35	700	4.5	48	
7200013	UNO Q6R Column	6	90	0.5-8.0	12 x 53	700	4.5	48	
7200015	UNO Q12R Column	12	180	0.5-8.0	15 x 68	700	4.5	48	
7200031	UNO SR1 Column	1.3	20	0.5–5.0	7 x 35	700	4.5	48	
7200033	UNO S6R Column	6	90	0.5-8.0	12 x 53	700	4.5	48	
7200035	UNO S12R Column	12	180	0.5-8.0	15 x 68	700	4.5	48	
UNO Polishin	ng PEEK Column								
7200009	UNO Q Polishing Column	0.16	2	0.1–1.0	4.6 x 10	200	1.3	14	
7200029	UNO S Polishing Column	0.16	2	0.1–1.0	4.6 x 10	200	1.3	14	
Catalog #	Description								
Fittings 7500554 1/16" OD (1.6 mm) Post-Pump Fittings, includes Delrin nut, ferrules, lock ring, 10 sets 7500568 UNO 10-32 Fittings Kit, includes 2 nuts and 4 ferrules to connect UNO column to an HPLC system 7500567 UNO M6 Fittings Kit, includes 2 nuts and 4 ferrules to connect UNO column to an FPLC system									

* U.S. patent 6,423,666.

bio-rad.com/aminex

Chromatography Columns Prepacked Chromatography Columns

Aminex[®] HPLC Columns

Aminex HPLC columns are packed with a polystyrene divinylbenzene resin. Aminex resin has high pressure stability, wide pH stability, and high column efficiency and selectivity. Aminex HPLC columns separate compounds using the ion-moderated partition chromatography technique. Aminex columns are often used in the food, beverage, and biofuel industries. Aminex columns are an industry standard for the analysis of carbohydrates, organic acids, organic bases, and other small organic molecules, including peptides and nucleic acids. To separate complex mixtures with Aminex columns, simple isocratic mobile phases (often just water) and precise temperature control are used.

Aminex columns are commonly used for USP methods under the "L" specification. Specific designations are listed in the table below.

For More Information

Web: bio-rad.com/aminex Request or download bulletins: 1928 and 6333

Ordering Information

CE	CC

See A Iso

Organic acid standard: page 89. Carbohydrate standard: page 89.

Catalog #	Description	Guard Column*	Applications	Particle Size, µm	lonic Form	Cross- Linkage %	pH Range	
	te Analysis Columns			, p		ge /e		
1250143	Aminex HPX-87N Column, 300 x 7.8 mm	1250508	Beet sugars (USP L58)	9	Sodium	8	5–9	
1250142	Aminex HPX-87K Column, 300 x 7.8 mm	1250507	Molasses, corn	9	Potassium	8	5–9	
1250095	Aminex HPX-87C Column, 300 x 7.8 mm	1250128	High fructose corn syrup (USP L19)	9	Calcium	8	5–9	
1250094	Aminex HPX-87C Column, 250 x 4.0 mm	1250128	Sugar alcohols (USP L19)	9	Calcium	8	5–9	
1250098	Aminex HPX-87P Column, 300 x 7.8 mm	1250119 or 1250118	Pentose sugars, cellulose hydrolysates, biofuels (USP L34)	9	Lead	8	5–9	
1250140	Aminex HPX-87H Column, 300 x 7.8 mm	1250129	Sugars with organic acids, biofuels (USP L17)	9	Hydrogen	8	1–3	
1250096	Aminex HPX-42C Column, 300 x 7.8 mm	1250128	Oligosaccharides, thickening agents	25	Calcium	4	5–9	
1250097	Fast Carbohydrate Column, 100 x 7.8 mm	1250119 or 1250118	Glucose, galactose, sucrose, fructose	9	Lead	8	5–9	
1250105	Fast Carbohydrate Column, 100 x 7.8 mm	1250119 or 1250118	Glucose, galactose, sucrose, fructose	9	Lead	8	5–9	
Organic Aci	d and Alcohol Columns							
1250140	Aminex HPX-87H Column, 300 x 7.8 mm	1250129	Sugars with organic acids, fermentation monitoring, biofuels	9	Hydrogen	8	1–3	
1250100	Fast Acid Analysis Column, 100 x 7.8 mm	1250129	Alcohol, glycol organic acid analysis	9	Hydrogen	8	1–3	
1250115	Fermentation Monitoring Column, 150 x 7.8 mm	1250129	Sugar, acids, alcohols	9	Hydrogen	8	1–3	
Application	Kits for Food Analysis**							
1250233	Carbohydrate Analysis Kit	Included	Carbohydrates	9	Calcium	8	5–9	
1250234	Organic Acid Analysis Kit	Included	Organic acids	9	Hydrogen	8	1–3	
								continue

Prepacked Chromatography Columns

bio-rad.com/columns

Catalog #	Description	Applications	Ionic Form	pH Range
Micro-Guard	l Cartridges			
1250118***	De-Ashing Refill Cartridges, 30 x 4.6 mm, 2	Aminex silver- and lead-form columns	H ⁺ and CO ₃ [−]	6–8
1250119	Carbo-P Refill Cartridges, 30 x 4.6 mm, 2	Aminex HPX-87P column	Lead	5–9
1250128	Carbo-C Refill Cartridges, 30 x 4.6 mm, 2	Aminex calcium-form columns	Calcium	5–9
1250129	Cation H Refill Cartridges, 30 x 4.6 mm, 2	Aminex hydrogen-form columns	Hydrogen	1–3
1250506	Anion CO3 ⁻ Cartridges, 30 x 4.6 mm, 2	Aminex silver- and lead-form columns	CO3-	_
1250508	Cation Na ⁺ Cartridges, 30 x 4.6 mm, 2	Aminex HPX-87N column	Sodium	5–9
Cartridge Ho	olders and Accessories			
1250131	Standard Cartridge Holder, for one 30 x 4.6 m	ım cartridge		
1250147	Cartridge Holder Seal Replacement Kit, for #	1250131		
1250148	Cartridge Holder Seals, for #1250131			
1250120	Do Aching Cartridge Holder for #1250118 bo	Ida two 2.0 v 1.6 mm cortridado in corioo		

1250139 De-Ashing Cartridge Holder, for #1250118, holds two 3.0 x 4.6 mm cartridges in series 780008 Fittings, 10-32 PEEK, black, 2/PK

* Supplied as 2 guard columns.

See Also

Affi-Gel Protein A MAPS II kit: page 79.

Affi-Gel Protein A resin: page 79.

DEAE Affi-Gel Blue

resin: page 80.

** Includes 1 column and 2 Micro-Guard cartridges; requires standard cartridge holder, catalog #1250131.

*** Requires de-ashing cartridge holder, #1250139.

Econo-Pac® Affinity and Desalting Columns

Econo-Pac prepacked columns for gravity-flow chromatography allow fast and easy desalting as well as simplified antibody purification.

Econo-Pac Protein A columns are well suited for binding of IgGs, especially from mammalian species. Econo-Pac columns with DEAE Affi-Gel[®] Blue, an affinity/anion exchange chromatography resin, are well suited for obtaining highly pure IgG from a variety of species from serum samples. The Econo-Pac 10DG resin, with a molecular exclusion limit of 6,000, is recommended specifically for desalting and buffer exchange.

The prepacked Econo-Pac columns include an upper frit, a snap-off end tip, graduated column markings, a 10 ml bed, and 30 ml total column volume. To improve column performance, use a flow adaptor, see below. For bottled size exclusion resins, see pages 85–86; for bottled affinity resins, see pages 71–73 and 78–82; and for activated affinity resins, see pages 83–84.

End cap	
20 ml reservoir	_
Upper porous polymer bed support	14 cm
10 ml bed volume	
Lower porous polymer bed support	
Luer end fitting with snap-off tip	

Ordering Information	
Catalog #	Description
7322022	Econo-Pac Protein A Columns, prefilled with Affi-Gel Protein A media, 5
7322020	Econo-Pac Protein A Kit, 1 x 2 ml Affi-Gel Protein A column, 1 x 10 ml 10DG column, buffers
7322026	Econo-Pac Serum IgG Purification Column, prefilled with DEAE Affi-Gel Blue gel, 5
7322027	Econo-Pac Serum IgG Purification Kit, 5 x 5 ml DEAE Affi-Gel Blue columns, 5 x 10 ml 10DG columns, buffers
7322010	Econo-Pac 10DG Desalting Columns, 30
7380019	Econo-Pac Flow Adaptor, 1.5 cm column ID

Empty Columns

Bio-Rad's empty columns accommodate a range of chromatography needs, including spin columns, low-pressure columns with optional flow adaptors and jackets for temperature control, and analytical columns for medium- or high-pressure systems.

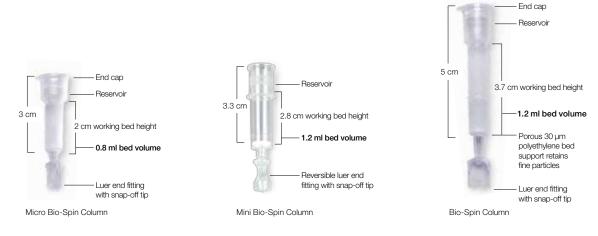
Bio-Spin[®], Micro Bio-Spin[™], and Mini Bio-Spin Columns

Empty Bio-Spin and Micro Bio-Spin chromatography columns are disposable polypropylene spin columns that can be packed with a variety of chromatographic resins. Bio-Spin columns hold up to 1.2 ml of any resin and fit in standard swinging bucket centrifuges; Micro Bio-Spin and Mini Bio-Spin columns hold up to 0.8 and 1.2 ml of resin respectively, and fit in standard microfuges. All three columns fit standard collection tubes, have snap-off tips and polyethylene bed supports, and are autoclavable.

For More Information Web: bio-rad.com/spincolumns Request or download bulletin: 2289

See Also

Nucleic acid sample preparation: page 9. Prepacked Bio-Spin and Micro Bio-Spin columns: page 97.



Ordering Information

Catalog #	Description
7326008	Bio-Spin Chromatography Columns, empty, 100
7326025	Bio-Spin Chromatography Columns, empty, 1,000
7326204	Micro Bio-Spin Chromatography Columns, empty, 100
7326207	Mini Bio-Spin Chromatography Columns, empty, 100
7311660	End Caps, for Micro Bio-Spin chromatography columns, 1,000



bio-rad.com/spincolumns

See Also

Prepacked Econo-Pac columns: page 102.

Econo-Pac[®] Columns

Econo-Pac columns are 14 cm high, 1.5 x 12 cm polypropylene columns that may be fitted with a flow adaptor (see below) or used for gravity-flow chromatography. When used for open column work, a special upper bed support prevents the bed from running dry. Bed volumes from 1–20 ml are acceptable. These columns can be autoclaved and will retain fine particles. Columns can be easily stored in poly column racks.

For More Information

Web: bio-rad.com/econopaccolumns Request or download bulletin: 2289





Poly Column Rack

Ordering Information			
Catalog #	Description		
7321010	Econo-Pac Chromatography Columns, empty, includes upper bed supports, end caps, tip closures, 50		
7321011	Econo-Pac Chromatography Columns, empty, includes upper bed supports, end caps, tip closures, 500		
Accessories			
7380019	Econo-Pac Flow Adaptor, 1.5 cm column ID		
7317005	Poly Column Rack, 20-place, with removable tube rack		
7328102	2-Way Stopcocks, female-to-male luer, 10		
7318232	Female Luer Plugs, 25, polypropylene		
7311660	End Caps, for Econo-Pac columns, 1,000		

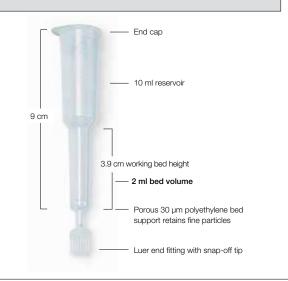
See Also

Prepacked Poly-Prep columns: page 98.

Poly-Prep® Columns

Poly-Prep columns are 9 cm high, conical 0.8 x 4 cm polypropylene columns that hold up to 2 ml of chromatography resin and 10 ml of eluent or sample in an integral reservoir. These columns are ideal for sample preparation and small-scale chromatography applications, including work with radioisotopes and other applications that require disposable products. Poly-Prep columns may be autoclaved and will retain fine particles.

For More Information Web: bio-rad.com/polyprepcolumns Request or download bulletin: 2289



bio-rad.com/econocolumns

Chromatography Columns

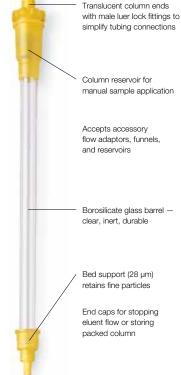
Empty Columns

Catalog #	Description	
7311550	Poly-Prep Chromatography Columns, empty, includes end caps and tip closures, 50	
7311553	Poly-Prep Chromatography Columns, empty, includes end caps and tip closures, 1,000	
Accessories		
7311555	Poly-Prep Column Stack Cap, 50	
7317005	Poly Column Rack, 20-place, with removable tube rack	
7328102	2-Way Stopcocks, female-to-male luer, 10	
7318232	Female Luer Plugs, polypropylene, 25	
7311660	End Caps, for disposable plastic columns, 1,000	

Glass Econo-Column® Columns

Econo-Column chromatography columns are the standard for high-quality, affordable low-pressure chromatography columns. Columns ranging from 5 to 170 cm in length and 0.5–5.0 cm in diameter are available. A porous polymer bed support at the bottom of the column retains fine particles, and translucent polypropylene end fittings allow viewing of the entire column bed. Econo-Column chromatography columns can be autoclaved and are designed to operate at pressures <1 bar (14.7 psi). Econo-Column chromatography columns accept Econo-Column funnels as well as Econo-Column flow adaptors. Econo-Column chromatography columns are packaged in quantities of 1, 2, and 4, depending on column diameter and length. For convenience, all packaging sizes contain one stopcock per column ordered.





For More Information Web: bio-rad.com/econocolumns Request or download bulletin: 2289

Empty Columns

Catalog # 7370507	ID, cm		Owners On stinger		
7370507	iD, citi	Length, cm	Cross-Sectional Area, cm ²	Maximum Volume, ml	Columns/Pkg
	0.5	5	0.20	1	2
7374506	0.5	5	0.20	1	4
7370512	0.5	10	0.20	2	2
7374511	0.5	10	0.20	2	4
7370517	0.5	15	0.20	3	2
7374516	0.5	15	0.20	3	4
7370522	0.5	20	0.20	4	2
7374521	0.5	20	0.20	4	4
7370707	0.7	5	0.39	2	2
7374706	0.7	5	0.39	2	4
7370712	0.7	10	0.39	4	2
7374711	0.7	10	0.39	4	4
7370717	0.7	15	0.39	6	2
7374716	0.7	15	0.39	6	4
7370722	0.7	20	0.39	8	2
7374721	0.7	20	0.39	8	4
7370732	0.7	30	0.39	12	2
7374731	0.7	30	0.39	12	4
7370752	0.7	50	0.39	20	2
7374751	0.7	50	0.39	20	4
7374006	1.0	5	0.79	4	4
7371007	1.0	5	0.79	4	2
7374011	1.0	10	0.79	8	4
7371012	1.0	10	0.79	8	2
7374021	1.0	20	0.79	16	4
7371022	1.0	20	0.79	16	2
7374031	1.0	30	0.79	24	4
7371032	1.0	30	0.79	24 24	2
7374051	1.0	50	0.79	40	4
7371052	1.0	50	0.79	40	2
7371091	1.0	100	0.79	79	2
7371093	1.0	120	0.79	103	2
7374150	1.5	5	1.77	9	4
7371507	1.5	5	1.77	9	2
7374151	1.5	10	1.77	18	4
7371512	1.5	10	1.77	18	2
7374156	1.5	15	1.77	27	4
7371517	1.5	15	1.77	27	2
7374152	1.5	20	1.77	35	4
7371522	1.5	20	1.77	35	2
7374153	1.5	30	1.77	53	4
7371532	1.5	30	1.77	53	2
7374155	1.5	50	1.77	89	4
7371552	1.5	50	1.77	89	2
7371576	1.5	75	1.77	124	2
7371591	1.5	100	1.77	177	2
7371591 7371593	1.5	120	1.77	230	2
7371598	1.5	170	1.77	301	2
7374250	2.5	5	4.91	25	4
7372507	2.5	5	4.91	25	2
7374251	2.5	10	4.91	49	4
7372512	2.5	10	4.91	49	2
7374252	2.5	20	4.91	98	4
7372522	2.5	20	4.91	98	2
7374253	2.5	30	4.91	147	4
7372532	2.5	30	4.91	147	2
7372551	2.5	50	4.91	246	2
		00			continu

bio-rad.com/econocolumns

Ordering Information

Catalog #	ID, cm	Length, cm	Cross-Sectional Area, cm ²	Maximum Volume, ml	Columns/Pkg	
7372576	2.5	75	4.91	344	2	
7372591	2.5	100	4.91	491	2	
7372593	2.5	120	4.91	589	2	
7375011	5.0	10	19.63	196	1	
7375021	5.0	20	19.63	393	1	
7375031	5.0	30	19.63	589	1	
7375051	5.0	50	19.63	982	1	
7375071	5.0	70	19.63	1,374	1	

Catalog # Description

Econo-Column Selection Packs

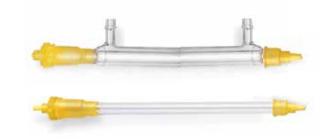
 7376601
 Econo-Column Selection Pack A, includes 7 columns, 1 each of 0.7 x 10, 20, and 30 cm; 1.5 x 30 and 50 cm; 2.5 x 20 and 50 cm

 7376607
 Econo-Column Selection Pack B, includes 6 columns, 1 each of 1.0 x 20, 30, and 50 cm; 1.5 x 20, 30, and 50 cm

For fittings, see low-pressure fittings on page 138.

Jacketed Econo-Column[®] Columns

Jacketed Econo-Column chromatography columns have an integral water jacket and are ideal for applications that require temperature control such as thermal chromatography of DNA using hydroxyapatite. A porous polymer bed support at the bottom of the column retains fine particles and translucent polypropylene end fittings allow viewing of the entire column bed. Jacketed Econo-Column chromatography columns accept Econo-Column funnels and flow adaptors.

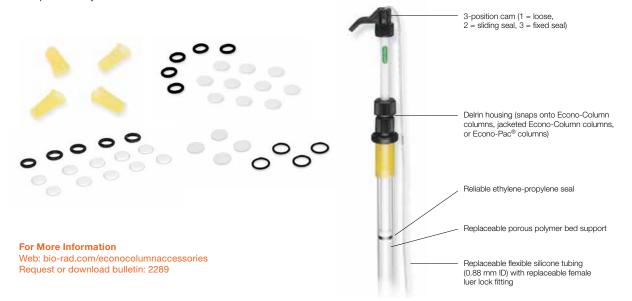


Ordering Information

Catalog #	Description	ID, cm	Length, cm	Cross-Sectional Area, cm ²	Maximum Volume, ml	Columns/ Pkg
7376108	Econo-Column Jacketed Column	0.7	15	0.37	6	1
7376116	Econo-Column Jacketed Column	1.0	15	0.79	12	1
7376131	Econo-Column Jacketed Column	1.0	30	0.79	25	1
7376151	Econo-Column Jacketed Column	1.5	50	1.77	89	1
7376201	Econo-Column Open-Ended	1.0	30	0.79	25	1
	Jacketed Column					

Econo-Column® Flow Adaptors

Flow adaptors significantly improve column performance by eliminating head space above the gel bed and by protecting the column bed from disruption during sample loading. Flow adaptors improve resolution by delivering buffer and sample directly to the top of the column bed. Flow adaptors are recommended for use with any low-pressure column connected to pumps, the BioLogic[™] LP system, or other low-pressure systems. Econo-Column flow adaptors are available for 1.0, 1.5, 2.5, and 5.0 cm ID Econo-Column chromatography columns (pages 105–106), jacketed Econo-Column chromatography columns (page 107), and Econo-Pac[®] columns (page 104). Due to wear and tear of bed supports and O-rings, maintenance kits are available for standard upkeep of flow adaptors.



Ordering In	formation
Catalog #	Description
Flow Adapto	vrs
7380014	Flow Adaptor, 1.0 cm column ID, 1–7 cm functional length
7380015	Flow Adaptor, 1.0 cm column ID, 1–14 cm functional length
7380016	Flow Adaptor, 1.5 cm column ID, 1–14 cm functional length
7380017	Flow Adaptor, 2.5 cm column ID, 1–14 cm functional length
7380018	Flow Adaptor, 5.0 cm column ID, 1–14 cm functional length (does not include cam mechanism)
7380019	Econo-Pac Flow Adaptor, 1.5 cm column ID
Flow Adapto	or Maintenance Kits
7380022	Flow Adaptor Maintenance Kit, for 5.0 cm flow adaptor, includes 2 bed supports and 2 O-rings
7380024	Flow Adaptor Maintenance Kit, for 1.0 cm adaptor with cam mechanism, includes 10 bed supports and 5 O-rings
7380025	Flow Adaptor Maintenance Kit, for 1.5 cm adaptor with cam mechanism, includes 10 bed supports and 5 O-rings
7380027	Flow Adaptor Maintenance Kit, for 2.5 cm adaptor with cam mechanism, includes 10 bed supports and 5 O-rings

Econo-Column® Funnel

The Econo-Column funnel, constructed of durable polypropylene, is ideal for packing columns, loading diluted samples, or delivering large volumes of buffer. It forms a tight seal with Econo-Column chromatography columns up to 2.5 cm ID (pages 105–106), jacketed Econo-Column chromatography columns (page 107), Poly-Prep® columns (page 104), and Econo-Pac® columns (page 104).



Ordering Information

Catalog # Description 7310003 Econo-Column Funnels, 250 ml, 5

Glass Econo-Column® Reservoirs

Reservoirs are available in 500 ml and 1 L capacities and will fit 0.5, 0.7, 1.0, or 1.5 cm ID Econo-Column chromatography columns. To make a constant-pressure reservoir, close the reservoir top with a stopper that contains a piece of glass tubing extending into the reservoir. The removable upper cap has a male luer lock fitting.



Glass Econo-Column Reservoir

Ordering Info	Ordering Information		
Catalog #	Description		
7379112	Econo-Column Reservoir, 500 ml		
7379113	Econo-Column Reservoir, 1 L		

Chromatography Columns Empty Columns

bio-rad.com/econocolumns

See Also

UNO columns:

page 100. BioLogic DuoFlow

systems:

page 122.

Bio-Scale Mini cartridges: page 95.

Bio-Scale[™] MT High-Resolution Columns Bio-Scale CHT columns: page 99.

Bio-Scale MT empty columns can be packed with the resin of your choice. These columns provide extremely high resolution in most chromatography applications. Bio-Scale MT columns allow precise sample application and provide the low dead volume required for highresolution separations. The four column sizes (2, 5, 10, and 20 ml) allow easy scale-up of separation and purification protocols. The optimized design allows easy packing, bed height adjustment, sample application, and equilibration. Bio-Scale MT columns are convenient for use with BioLogic[™] systems or any medium- or highpressure chromatography system.

For More Information

Web: bio-rad.com/MTcolumns Request or download bulletin: 1970

		i i	
Adjustable	bed support eliminate	es column voids	
	Easy a	assembly for packing	and cleaning
Biocompatible		Optimized design of high-resolution chro	sample applicator for matography
preservation of sample biological activity	Transparent glass tube allows easy bed inspection		/ Fingertight assembly eliminates the need for tools

Catalog #	Description	Column Volume, ml	Pressure Limit, psi
Bio-Scale C	olumns*		
7510081	Bio-Scale MT2 Column, 7 x 52 mm	1.9–2.3	1,000
7510083	Bio-Scale MT5 Column, 10 x 64 mm	4.6–5.7	750
7510085	Bio-Scale MT10 Column, 12 x 88 mm	9.5–11.3	600
7510087	Bio-Scale MT20 Column, 15 x 113 mm	19.4–21.9	500
Catalog #	Description		
Cartridge H	olders and Accessories		
7510091	Bio-Scale 2 Replacement Parts Kit, includes 5 frits, 5	5 distribution screens, 2 O-rings, 1 f	rit remover
7510093	Bio-Scale 5 Replacement Parts Kit		
7510095	Bio-Scale 10 Replacement Parts Kit		
7510097	Bio-Scale 20 Replacement Parts Kit		
7500554	1/16" OD (1.6 mm) Post-Pump Fittings, includes Delri	in nut, ferrules, lock ring, 10 sets	
7500567	UNO M6 Fittings Kit, includes 2 nuts and 4 ferrules to	connect UNO column to an FPLC	system
7500568	LINO 10-32 Eittings Kit, includes 2 puts and 4 formulas	to connect LINO column to an HPI	Covetom

7500568 UNO 10-32 Fittings Kit, includes 2 nuts and 4 ferrules to connect UNO column to an HPLC system

* Each Bio-Scale MT column comes with a Bio-Scale replacement parts kit.

Medium-Pressure Chromatography Systems

NGC[™] Medium-Pressure Chromatography Systems

The NGC family of medium pressure preparative chromatography systems offers a single laboratory chromatography solution that aligns and scales to fit your purification, automation, and throughput requirements. NGC laboratory scale chromatography systems provide you with a fully customizable and truly modular platform that can be designed to your current purification needs and is upgradable to meet future throughput and automation requirements.

For More Information

Web: bio-rad.com/NGCsystems Please contact your local Sales Representative for more details.

D Learn More about the Technology

Web: bio-rad.com/tech/chrom



NGC Quest[™] and NGC Scout[™] Series

NGC Discover[™] Series

NGC Discover Pro Series

NGC chromatography system platforms — modular, customizable, and upgradable systems that adapt and expand to your throughput and application needs. All NGC systems are compatible with the BioFrac[™] fraction collector and the C-96 autosampler.



BioFrac Fraction Collector (see page 132)



See Also

Multi-D chromatography applications: page 113.

bio-rad.com/NGCsystems

NGC Chromatography Systems Selection Guide

Product	Catalog #	NGC [™] Quest 10 7880001	NGC Quest 10 Plus 7880003	NGC Quest 100 7880002	NGC Quest 100 Plus 7880004	NGC [™] Scout 10 7880005	NGC Scout 10 Plus 7880007	NGC Scout 100 7880006	NGC Scout 100 Plus 7880008	NGC [™] Discover 10 7880009	NGC Discover 100 7880010	NGC Discover Pro 10 7880011	NGC Discover Pro 100 7880012
NGC F10 pump module	7884002	•	•			•	•			•		•	
NGC F100 pump module	7884003			•	•			•	•		•		•
NGC mixer module	7884018	•	•	•	•	•	•	•	•	•	•	•	•
NGC sample inject valve module	7884007	•	•	•	•	•	•	•	•	•	•	•	•
NGC single-wavelength detector module	7884008	•		•		•		•					
NGC multi-wavelength detector module	7884009		•		•		•		•	•	•	•	•
NGC buffer blending valve module	7884010					•	•	•	•	•	•	•	•
NGC pH valve module (includes pH probe)	7884011					•	•	•	•	•	•	•	•
NGC sample pump module	7884004									•	•	•	•
NGC inlet valve module	7884006									•	•	•	•
NGC outlet valve module	7884013											•	•
NGC column switching valve module, 10 ml	7884012									•		•	
NGC column switching valve module, 100 ml	7884026										•		•
ChromLab [™] software	7886000	•	•	•	•	•	•	•	•	•	•	•	•
NGC chromatography system and ChromLab software documentation	7886500	•	•	•	•	•	•	•	•	•	•	•	•

Note: All NGC systems include a touch screen and conductivity monitor and are compatible with the BioFrac fraction collector and C-96 autosampler.

Features and Benefits

Flexible, customizable chromatography systems to suit both your application and research needs.

- Adjustable and scalable platform adapts to individual application, workflow, and throughput requirements
- Plug-and-play modules enable a modular, customizable system that adapts to changing needs over time
- ChromLab software provides powerful, graphical instrument control, streamlined method development, and intuitive data analysis
- Graphical fluidics scheme selector matches the flow path to applications-based system setup
- Point-to-Plumb[™] feature lighting provides step-by-step LED guided setup for easy system plumbing
- Real-time active flow path display for clear visualization of buffer, sample and valve position, and easy identification of system status
- Real-time module status displays offer immediate system diagnostics
- Pre-plumbed systems with QC-validated performance support more reproducible results and sharper peaks (included with all preconfigured NGC Quest, NGC Scout, and NGC Discover systems)

- Tier-Rotate[™] system design enables optimal placement of valves and detectors to minimize hold-up volume
- Open platform is compatible with all medium-pressure chromatography columns and resins
- BioFrac fraction collector compatibility allows for fraction collection from analytical to preparative scale purifications
- Compact footprint fits on lab bench, in deli-fridge, or in coldroom

For more information about these features and benefits, please contact your local sales representative. Take a tour of the system at **bio-rad.com/NGCsystems**.

Applications and Uses of Medium-Pressure Chromatography Systems

Preparative to analytical scale isolation, purification, and analysis of multiple types of molecules, including:

- Recombinant protein purification and refolding
- Monoclonal antibody purification
- Virus removal preparations
- Analysis of plasma proteins for disease diagnosis
- Nucleic acid purifications

NGC Systems

Preconfigured NGC systems are designed with increasing automation and throughput in mind. All NGC systems include either a 10 or a 100 ml/min automated dual gradient pump, a mixer module, a sample injection valve module, and a detector with a conductivity monitor. Each preconfigured system can be further customized with additional modules to meet your specific purification needs.

NGC Quest and NGC Quest Plus

NGC Quest systems are designed for the all-purpose purification of proteins with automated pumps that provide accurate gradients for high-resolution separations. These systems support automated sample injection using fixed or dynamic sample loops.

NGC Quest 10 and Quest 100 systems feature:

 LED-based single-wavelength light source for the detection of proteins or nucleic acids (280 or 255 nm) with high sensitivity conductivity measurements for accurate salt gradient formation

NGC Quest 10 Plus and Quest 100 Plus systems feature:

 Multi-wavelength (4) detector for simultaneous detection (190 to 800 nm) of proteins, peptides, nucleic acids, chromaphores, and other biomolecular complexes with high sensitivity conductivity measurements for accurate salt gradient formation

NGC Scout[™] and NGC Scout Plus

NGC Scout systems are designed for method optimization with automated pumps and valves that provide accurate gradients and pH for high-resolution separations suitable for any application.

All NGC Scout 10 and Scout 100 systems include:

- All features of NGC Quest systems
- Buffer blending to automate buffer titrations for rapid scouting of pH parameters
- Gradient separations at different pH values for rapid method development

The NGC Scout 10 and 100 systems feature:

Single-wavelength UV (255 or 280) and conductivity detector

NGC Scout 10 Plus and Scout 100 Plus systems feature:

Multi-wavelength (4) UV/Vis and conductivity detector

NGC Discover and Discover Pro

Both the NGC Discover and NGC Discover Pro chromatography systems are designed for higher throughput applications with rapid, robust automation for those that need to do method development.

Both NGC Discover 10 systems include the capabilities of the NGC Scout 10 Plus instruments but also comprise:

- A 100 ml/min integrated sample pump supports contamination-free automated large volume sample application
- Inlet valves enable automated switching between buffers and samples, accelerating method development. NGC supports up to 2 inlet valves for buffers and 2 inlet valves for samples
- A column switching valve facilitates automated column/media scouting up to 5 columns without the need to replumb. NGC supports up to 3 column switching valves
- A sample outlet valve, available as a standard feature with the NGC Discover Pro systems — allows the collection of up to 12 large-volume fractions and enables automated Multi-D chromatography applications. NGC supports up to 2 outlet valves

Learn More about Multi-D Chromatography Web: bio-rad.com/Multi-D

Catalog #	Description
NGC Mediur	n-Pressure Chromatography Systems*
7880001	NGC Quest 10 Chromatography System, includes automated 10 ml/min pumps, single-wavelength
	(UV) and conductivity detection, accurate gradients, and sample injection
7880003	NGC Quest 10 Plus Chromatography System, includes automated 10 ml/min pumps, multi-wavelength
	(UV/Vis) and conductivity detection, accurate gradients, and sample injection
7880002	NGC Quest 100 Chromatography System, includes automated 100 ml/min pumps, single-wavelength (UV)
	and conductivity detection, accurate gradients, and sample injection
7880004	NGC Quest 100 Plus Chromatography System, includes automated 100 ml/min pumps, multi-wavelength
	(UV/Vis) and conductivity detection, accurate gradients, and sample injection
7880005	NGC Scout 10 Chromatography System, includes NGC Quest 10 capability, automated 10 ml/min
	pumps, pH valve and buffer blending valve for automated gradient and buffer blending
7880007	NGC Scout 10 Plus Chromatography System, includes NGC Quest 10 Plus capability, automated 10 ml/min
	pumps, pH valve and buffer blending valve for automated gradient and buffer blending
7880006	NGC Scout 100 Chromatography System, includes NGC Quest 100 capability, automated 100 ml/min
	pumps, pH valve and buffer blending valve for automated gradient and buffer blending
7880008	NGC Scout 100 Plus Chromatography System, includes NGC Quest 100 Plus capability, automated
	100 ml/min pumps, pH valve and buffer blending valve for automated gradient and buffer blending
7880009	NGC Discover 10 Chromatography System, includes NGC Scout 10 Plus capability, automated 10 ml/min
	pumps, sample pump for large sample injection, column switching valve (up to 5 columns), and buffer inlet valve
7880010	NGC Discover 100 Chromatography System, includes NGC Scout 100 Plus capability, automated 100 ml/min
	pumps, sample pump for large sample injection, column switching valve (up to 5 columns), and buffer inlet valve
7880011	NGC Discover Pro 10 Chromatography System, includes NGC Scout 10 Plus capability,
	automated 10 ml/min pumps, sample pump for large sample injection, column switching valve
	(up to 5 columns), buffer inlet valve, and outlet valve
7880012	NGC Discover Pro 100 Chromatography System, includes NGC Scout 100 Plus capability,
	automated 100 ml/min pumps, sample pump for large sample injection, column switching valve
	(up to 5 columns), buffer inlet valve, and outlet valve
* All NGC syst	ems include ChromLab software.

12001088 NGC Multi-D Chromatography Starter Kit

Module Overview

The NGC family of medium-pressure chromatography systems offers flexible system configurations that enable upgrades and reconfiguration of the modules to fit multi-user needs, applications, and laboratory space requirements. All NGC systems can be individually customized using NGC plug-and-play modules that are user installable. Systems can be easily reconfigured and seamlessly upgraded with increased functionality such as higher flow rates (10 ml/min or 100 ml/min), sophisticated detection capabilities, pH monitoring, automated buffer selection, multicolumn connection, and buffer blending.

NGC Buffer Blending Valve Module

The NGC buffer blending valve is used for automatic online buffer preparation and generation of pH gradients for quick pH scouting. When used in conjunction with the dual gradient pump system, the buffer blending valve enables automated elution gradients and highly accurate buffer blending for rapid scouting and method development. The valve can also double the flow rate of a salt gradient on an F10 pump and F100 pump.

NGC Inlet Valve Module

The NGC inlet valve module allows for automatic buffer and sample selection during method running. It speeds up method development by allowing for automatic selection of up to seven buffers and a cleaning solution per valve. It also works as a mini autosampler for injecting multiple large volume samples via the sample pump.



NGC F10 and F100 System Pump Modules

The F10 and F100 pumps produce buffer gradient solutions. Flow rates on all pumps can be automatically controlled to avoid overpressure. NGC instruments can have up to three high-precision pumps: two system gradient pumps (Pump A and Pump B) and one sample pump.

NGC Sample Pump 100 Module

The NGC sample pump 100 module enables both the injection of large sample volumes and accurate and consistent multiple loadings from a single sample stock. This dedicated pump eliminates the risk of contaminating system pumps, allowing for automated loading of large sample volumes directly to the column. The sample pump also includes an integrated pressure sensor that protects the column and resin from overpressure.

NGC Sample Inject Valve Module

The NGC sample inject valve enables the system to load a specific predetermined volume of sample onto a column with a maximum operating pressure of 3,650 psi. It is also compatible with capillary loops and sample pumps, eliminating the need to replumb. The C-96 autosampler can also be plumbed through the inject valve to enable multiple small volume sample injections.

NGC Single-/Multi-Wavelength Detector Modules

The NGC single UV and multi UV/Vis detector modules are combined with an integrated conductivity monitor to measure buffer conductivity or salt gradients.

The single-wavelength UV detector contains an LED UV lamp and monitors UV absorbance of proteins or nucleic acids at 280 or 255 nm, one wavelength at a time.

The multi-wavelength UV/Vis detector adds flexibility to the chromatography system, enabling the simultaneous monitoring of four wavelengths (UV and Vis) for greater sensitivity and detection of proteins, peptides, nucleic acids, and chromaphores such as hemoglobin.

NGC Outlet Valve Module

Use the NGC outlet valve either as a stand-alone unit or in conjunction with the BioFrac[™] Fraction Collector (#7410002).

As a single, stand-alone unit, the outlet valve is capable of collecting up to 12 large-volume fractions such as flowthrough or waste. Two outlet valves may be daisychained to collect up to 23 large-volume fractions, including waste.

When a BioFrac fraction collector is connected the collection sequence can be programmed to collect smaller-volume fractions in the BioFrac fraction collector and larger-volume fractions via the outlet valves, providing full flexibility.

The outlet valve also enables automated tandem/2-D and Multi-D chromatography applications by directing peaks of interest onto the next column.



Specifications for System and Sample Pump Modules

F10 F	Pump	
	Flow rates	0.001–10 ml/min (normal range); 0.002–20 ml/min (column packing flow)
	Max pressure limit	3,650 psi (252 bar, 25.2 MPa)
F100	Pump	
	Flow rate setting	0.01–100 ml/min (normal range); 0.02–200 ml/min (column packing flow)
	Max pressure limit	1,450 psi (100 bar, 10 MPa)
Sam	ole Pump 100	
	Flow rate	up to 100 ml/min
	Max pressure limit	1,450 psi (100 bar, 10 MPa)



Specifications for Single-/Multi-Wavelength Detector Modules

Single-wavelength range
Multi-wavelength (up to 4) range

255 or 280 nm 190–800 nm

Conductivity Monitor

Conductivity range

0.01–999.99 mS/cm

Medium-Pressure Chromatography Systems

bio-rad.com/NGCmodules

Features and benefits of the NGC outlet valve module include:

- Collect up to 12 large-volume fractions with a single valve
- Collect up to 23 large-volume fractions with two valves
- Collect variable fraction sizes with the BioFrac fraction collector
- Automate multistep purifications

NGC pH Valve Module

The NGC pH valve module includes a pH electrode for accurate pH monitoring during the run (1–14). The valve is capable of directing flow to the pH electrode or bypassing the probe automatically. The valve includes an integrated calibration port, which can be used to calibrate the probe without disconnecting the probe from the system.

For sensitive applications, the software is capable of calculating and displaying temperature-compensated pH values for accuracy and ease of use.

NGC Mixer Module

The NGC mixer module homogenizes buffers from two system pumps (Pumps A and B). In addition to the mixer motor assembly, the module includes an integrated system pressure sensor. It can accommodate both F10 mixers (263 µl and 750 µl) and F100 mixers (2, 5, and 12 ml). The mixer volume can be adjusted, depending on flow rate, to achieve optimal buffer homogenization by inserting the appropriate size barrels.

NGC Air Sensor Module

The NGC air sensor module enables detection of the end of buffer and sample, thereby protecting against air entering the system and damaging pumps or columns. The module supports up to four air sensors (large- and small-bore). Each NGC air sensor extension module can be used in conjunction with the air sensor module to enable four additional air sensors (totaling up to eight).

NGC Column Switching Valve Module

The NGC column switching valve allows connection of up to five columns, enabling quick and easy column scouting without replumbing. With an internal bypass mode this valve lets buffers bypass the connected columns when priming or cleaning the system. The valve can also reverse the flow, which is ideal for column cleaning and applications that require narrow band elution.

The column switching valve has integrated pressure sensors that measure pre- and delta-column pressures. This protects the column and resin from overpressure by triggering the pumps to slow down or stop.



NGC Accessories C-96 Autosampler

The C-96 autosampler enhances the NGC chromatography system by providing automated, accurate, and reproducible sample injections for optimal sample handling. Please refer to page 130 for detailed product information.

BioFrac Fraction Collector

The BioFrac fraction collector is compatible with all NGC chromatography systems. It is ideal for analytical to preparative scale chromatography applications. Please refer to page 132 for detailed product information.

NGC Medium-Pressure Chromatography System Modules and Accessories System Pump 7884002 NGC F10 Pump Module, includes to mritim system pump kit for reasing buffer gradents can be used in conjunction with buffer blending valve to generate flow rates up to 20 mr/min; kit includes necessary tubing and fittings 7884003 NGC F100 Pump Module, includes t00 mr/min system pump kit for reasing buffer gradents can be used in conjunction with buffer blending valve to generate flow rates up to 200 mr/min; kit includes reasesary tubing and fittings 7884004 NGC Sample Pump 100 Module, includes t00 mr/min system pump kit for automatod large valume sample application via the sample inject valve; kit includes necessary tubing and fittings 7884005 NGC Multi-Wavelength Detector Module, for dutection of nucleotides and proteins at 255 or 280 nm and generation of sait gradents. UWconductively detector kit includes necessary tubing and fittings 7884005 NGC Multi-Wavelength Detector Module, for dutection of nucleotides and proteins at 255 or 280 nm and generation of sait gradents. UWconductively detector kit includes necessary tubing and fittings 7884005 NGC Multi-Wavelength Detector Module, for dutection usevelength (Umantoring of etation fractions 150-800 nm and generation of sait gradents. UW-is, conductivity detector kit includes necessary tubing and ittings 788502 NGC UV Finor Call, 10 mm, particla UV for and F10 systems 788502 NGC UV Finor Call, 10 mm, particla UV for and F10 systems 788502 NGC UV Finor Call, 10 mm, particla UV for and F10 systems 788502 NGC UV Finor Call, 10 mm, particla UV for and F10 systems 788502 NGC UV Finor Call, 20 mm, preparative VI for and F18 single-wavelength UV and multi-wavelength UV/sis astactors in F100 systems. Ideal for use at high for arise appropriate backpressure to prevent bubble generging in 11/0 detectors NGC LED Lamp Replacement, includes Statistic man perplacement for single-wavelength UV/sis astactors in F100 systems. Ideal for use at high for arises 788502 NGC Coll Por bed (Ag/AGC), for	System Pumps 7884002 NGC F100 Pump Module, includes 10 milmin system pump kit for creating buffer gradients; can be used in computed on with buffer blending valve to generate flow rates up to 20 milmin; kit includes necessary tubing and fittings 8ample Pump 7884003 NGC Stool Pump Module, includes 100 milmin system pump kit for creating buffer gradients; can be used in computed on with buffer bending valve to generate flow rates up to 200 milmin; kit includes necessary tubing and fittings 8ample Pump 7884004 NGC Single-Wavelength Detector Module, for detection of nucleotides and proteins at 255 or 280 nm and generation of salt gradients; UVconductivity detector kit includes necessary tubing and fittings 7884004 NGC Single-Wavelength Detector Module, for simultaneous wavelength (4) montioning of elution fractions 7884004 NGC Wile Coll, form, UV flow cell, standard with all systems. Fits single-wavelength UV and mult-wavelength UV/vis detectors in both F10 and F100 systems 788502 NGC UV Flow Cell, 6 mm, UV flow cell, standard with all systems. Fits single-wavelength UV and mult-wavelength UV/vis detectors in both F10 and F100 systems 788502 788	Catalog #	Description	
NGC F10 Pump Module, includes 10 mi/min system pump kit for creating buffer gradients; can be used in conjunction with buffer blending valve to generate flow rates up to 20 mi/min; kit includes meassary tubing and fittings 8784003 NGC F100 Pump Module, includes 100 mi/min system pump kit for creating buffer gradients; can be used in conjunction with buffer blending valve to generate flow rates up to 20 mi/min; kit includes meassary tubing and fittings 8784004 NGC Single-Wavelength Detector Module, for detection of nucleotides and proteins at 255 or 280 nm and generation of sait gradients; UVConductivity detector kit includes necessary tubing and fittings 8784004 NGC Multi-Wavelength Detector Module, for detection of nucleotides and proteins at 255 or 280 nm and generation of sait gradients; UVConductivity detector kit includes necessary tubing and fittings 8784005 NGC Multi-Wavelength Detector Module, for detection of nucleotides and proteins at 255 or 280 nm and generation of sait gradients; UVConductivity detector kit includes necessary tubing and fittings 8784005 NGC Multi-Wavelength Detector Module, for detection of nucleotides and proteins at 255 or 280 nm and generation of sait gradients; UVConductivity detector kit includes necessary tubing and fittings 8784006 NGC UV Flow Ceil, 5 mm, UV flow ceil, Easingle-wavelength UV and multi-wavelength UVVis detectors in F10 a protein state state. 8785007 NGC UV Flow Ceil, 7 mm, analytical UV flow ceil. Fits single-wavelength UV and multi-wavelength UVVis detectors 8785007 NGC LUP Lamp Replacement, includes 255/280 nm LED lamp	NGC FIO Pump Module, includes 10 m/min system pump kit for creating buffer gradients; can be used in conjunction with buffer biending valve to generate flow rates up to 20 m/min; kit includes necessary tubing and fittings 8784003 NGC FIO Pump Module, includes 100 m/min system pump kit for creating buffer gradients; can be used in conjunction with buffer biending valve to generate flow rates up to 200 m/min; kit includes necessary tubing and fittings 8784004 NGC Sample Pump 100 Module, includes 100 m/min sample pump kit for automated large valume sample application via the sample inject valve; kit includes necessary tubing and fittings 8784005 NGC Single-Wavelength Detector Module, for detection of nucleotides and proteins at 255 or 280 nm and generation of sait gradents; UV/Vis, conductivity detector kit includes necessary tubing and fittings 8784005 NGC Multi-Wavelength Detector Module, for detection of nucleotides and proteins at 255 or 280 nm and generation of sait gradents; UV/Vis, conductivity detector kit includes necessary tubing and fittings 8784006 NGC Multi-Wavelength Detector Module, for alternation sait asystems; Fits single-wavelength UV and multi-wavelength UV/Vis detectors in both FIO and FIO systems 8784007 NGC CW Flow Cell, 10 mm, analytical UV flow cell. Fits single-wavelength UV and multi-wavelength UV/Vis detectors in both FIO and FIO systems 878502 NGC UV Flow Cell, 20 mm, preparate UV flow cell. Fits single-wavelength UV and multi-wavelength UV/Vis detectors 878502 NGC UV Flow Cell, 20 mm, preparatise UV flow cell. Fits single-wavelength UV and multi-	NGC Medium-I	Pressure Chromatography System Modules and Accessories	
In conjunction with buffer blending valve to generate flow rates up to 20 m/min; ktil includes necessary tubing and fittings R84000 KOC F100 Pump Module, includes 100 m/min system pump kt for creating buffer gradients; can be used in conjunction with buffer blending valve to generate flow rates up to 200 m/min; ktil includes mecessary tubing and fittings R84004 ROC Single-Wavelength Detector Module, for detection of nucleotides and proteins at 255 or 280 mm and generation of sait gradients; UV:conductivity detector in cluckes inclusions up tubing and fittings R84009 ROC Single-Wavelength Detector Module, for detection of nucleotides and proteins at 255 or 280 mm and generation of sait gradients; UV:conductivity detector in cluckes necessary tubing and fittings R84004 ROC VF GW Cell, 5 mm, UV flow cell, standard with all systems. Fits single-wavelength UV and mull-wavelength Detector Module, for simultaneous wavelength (4) montoring of elution fractions and fittings R84001 R0C VF GW Cell, 5 mm, UV flow cell, standard with all systems. Fits single-wavelength UV and mull-wavelength UV/vis detectors in FIO0 systems, ideal for use at how flow rates R85022 NoC UV Flow Cell, 5 mm, LV flow cell, standard with all systems. Fits single-wavelength UV and mull-wavelength UV/vis detectors in FIO0 systems, ideal for use at how flow rates R85023 NoC UV Flow Cell, 5 mm, peptalecented UV flow cell. Fits single-wavelength UV and mult-wavelength UV/vis detectors R8502 NoC UV Flow Cell, 5 mm, peptalecenter, includes 255/280 nm LED lamp replacement for single-wavelength detectors NoC Deuterium usamp Replacement, includes strangen inamp replacement for single-wavelength detectors NoC C Put Velle Module, for accurate infine pH measurement; includes replacement for single-wavelength detectors NoC C Put Velle Module, for accurate infine pH measurement; includes replacement (Vi) for multi-wavelength detectors	In conjunction with buffer blending value to generate flow rates up to 20 mi/min; ktillinduides necessary tubing and fittings /// Provide the search conjunction with buffer blending value to generate flow rates up to 200 mi/min; ktillinduides necessary tubing and fittings /// Provide the sample inject value to generate flow rates up to 200 mi/min; ktillinduides necessary tubing and fittings /// Provide the sample inject value is to mi/min sample pump ktil for automated large volume sample application vis the sample inject value; ktillinduides necessary tubing and fittings /// Provide the sample inject value; ktillinduides necessary tubing and fittings /// Provide the sample inject value; ktillinduides necessary tubing and fittings /// Provide the sample inject value; ktillinduides necessary tubing and fittings /// Provide the sample inject value; ktillinduides necessary tubing and fittings /// Provide the sample inject value; ktillinduides necessary tubing and fittings /// Provide the sample inject value; ktillinduides necessary tubing and fittings /// Provide the sample inject value; ktillinduides necessary tubing and fittings /// Provide the sample inject value; ktillinduides necessary tubing and fittings /// Provide the sample inject value; ktillinduides necessary tubing and fittings /// Provide the sample inject value; ktillinduides necessary tubing and fittings /// Provide the sample inject value; ktillinduides necessary tubing and its sample value (provide the ktillinduides necessary tubing and its sample value (provide the sample inject value; ktillinguides necessary tubing and its sample value (provide the ktillinguides necessary tubing and its sample value; ktillingu	System Pumps		
7884003 NGC Fr00 Pump Module, includes 100 m/min system pump kit for creating buffer gradients: can be used in conjunction with buffer blending valve to generate flow rates up to 200 m/min; kit includes necessary tubing and fittings Sample Pump 7894004 NGC Sample Pump 100 Module, includes 100 m/min sample pump kit for automated large volume sample application via the sample inject valve, kit includes necessary tubing and fittings Detectors NGC Single-Wavelength Detector Module, for detection of nucleotides and proteins at 255 or 280 nm and generation of sate gradients; UV/Conductivity detector kit includes necessary tubing and fittings 7884004 NGC Wing and Stradients; UV/Conductivity detector kit includes necessary tubing and fittings 7884007 NGG UV Flow Cell, 5mm, UV flow cell, standard with all systems. Fits single-wavelength UV and multi-wavelength UV/Vs detectors in both FIO and FIO and FIO asystems 7885028 NGG UV Flow Cell, 5mm, UV flow cell, standard with all systems. Fits single-wavelength UV and multi-wavelength UV/Vs detectors in FIO systems. Ideal for use at 10w and rouse at lower flow rates 7885029 NGG UV Flow Cell, 5mm, UV flow cell, standard with all systems. Fits single-wavelength UV and multi-wavelength UV/Vs detectors in FIO systems. Ideal for use at 10w and reates appropriate backpressure to prevent bubble spiking in UV detectors 7885029 NGG UV Flow Cell, 5mm, transfer web web to performate backpressure to prevent bubble spiking in UV detectors 7885029 NGG UV Flow Cell, 7mm, preparatite UV flow cell, standares, UV/Vs detectors in FIO syste	R84003 NGC F100 Pump Module, includes 100 m/min system pump kit for creating buffer gradients can be used in conjunction with buffer bending valve to generate flow rates up to 200 m/min; kit includes necessary tubing and fittings Sample Pump R84004 NGC Sample Pump 100 Module, includes 100 m/min sample pump kit for automated large volume sample application val the sample night valve; kit includes necessary tubing and fittings Detectors NGC Single-Wavelength Detector Module, for detection of nucleotides and proteins at 255 or 280 nm and generation of sall generation of sall generation of sall generation for sall generation for sall generation for sall generation for sall generation of sall generation for sall generation of sall generation for sall sangle-Wavelength UV and multi-wavelength UV/vis detectors in F00 systems. Ideal for use at twen flow rates R88002 NGC UV Flow Cell, 2 nm, preparative UV flow cell, its single-Wavelength UV and multi-wavelength UV/vis detectors in F00 systems. Ideal for use at twen flow rates R88002 NGC UV Flow Cell, 2 nm, preparative UV flow cell, its single-Wavelength UV and multi-wavelength detectors NGC UV Flow Cell, 2 nm, preparative law non-creates appropriate backpressure to prevent bubble spiking in UV altectors R88002 NGC Exploratin Lingp Replacement, includes 25/280 nm LED lamp replace	7884002	in conjunction with buffer blending valve to generate flow rates up to 20 ml/min; kit includes necessary	
7884004 NGC Sample Pump 100 Module, includes 100 m/min sample pump kit for automated large volume sample application via the sample inject valver, kit includes necessary tubing and fittings 7884008 NGC Single-Wavelength Detector Module, for detection of nucleotides and proteins at 255 or 280 nm and generation of satig readents; UV/Conductivity detector kit includes necessary tubing and fittings 7884008 NGC With-Wavelength Detector Module, for simultaneous wavelength (I) monitoring of elution tractors and fittings 7884009 NGC UV Flow Cell, 5 mm, UV flow cell, standard with all systems. Fits single-wavelength UV and multi-wavelength UV/Vis detectors in both F10 and F100 systems 788202 NGC UV Flow Cell, 5 mm, UV flow cell, Fits single-wavelength UV and multi-wavelength UV/Vis detectors in F100 systems. Ideal for use at lower flow rates 788202 NGC UV Flow Cell, 7 mm, represente VU flow cell. Fits single-wavelength UV and multi-wavelength UV/Vis detectors in F100 systems. Ideal for use at lower flow rates 7880000 Backpressure Regulator, 40 psi, restricts flow and creates appropriate backpressure to prevent bubble solking in UV detectors 7880001 NGC Duterium Lamp Replacement, includes duterium impreplacement (V) for multi-wavelength detectors 7880001 NGC pelpacements 700000 7880002 NGC pelpacement 7000000000000000000000000000000000000	7884004 NGC Sample Pump 100 Module, includes 100 m/min sample pump kit for automated large volume sample application via the sample inject valve; kit includes necessary tubing and fittings 7884008 NGC Single-Wavelength Detector Module, for detection of nucleotides and proteins at 255 or 280 nm and generation of sate gradients; UV/conductivity detector kit includes necessary tubing and fittings 7884008 NGC Will-Wavelength Detector Module, for simultaneous wavelength (I) monitoring of kulion fractions 7884008 NGC UV Flow Call, 5 mm, UV flow cell, standard with all systems. Fits single-wavelength UV and multi-wavelength UV/vis detectors in both F10 and F100 systems 788002 NGC UV Flow Call, 5 mm, UV flow cell, Est single-wavelength UV and multi-wavelength UV/vis detectors in F10 systems. Ideal for use at lower flow rates 788002 NGC UV Flow Call, 7 mm, reparate VU flow cell. Fits single-wavelength UV/vis detectors in F100 systems. Ideal for use at lower flow rates 788002 NGC UV Flow Cell, 7 mm, reparate VU flow cell. Fits single-wavelength UV/vis detectors in F100 systems. Ideal for use at low and creates appropriate backpressure to prevent bubble spiking in UV detectors 7880001 NGC Deturition Lamp Replacement, includes deuterium lamp replacement (V) for multi-wavelength detectors 7880002 NGC Eduard Lamp Replacement, includes deuterium lamp replacement (V) for multi-wavelength detectors 7880001 NGC Deplacement, acudes turnise in ampreplacement (V) for multi-wavelength detectors	7884003	NGC F100 Pump Module, includes 100 ml/min system pump kit for creating buffer gradients; can be used in conjunction with buffer blending valve to generate flow rates up to 200 ml/min; kit includes	
R884004 NGC Sample Pump 100 Module, includes 100 m/min sample pump kit for automated large volume sample application via the sample inject valve; kit includes necessary tubing and fittings R884008 NGC Single-Wavelength Detector Module, for detection of nucleotides and proteins at 255 or 280 nm and generation of sail gradients; UV/conductivity detector kit includes necessary tubing and fittings R884008 NGC With-Wavelength Detector Module, for simultaneous wavelength (I) monitoring of elution fractions on 200 nm and generation of sail gradients; UV/sc onductivity detector kit includes necessary tubing and fittings R880204 NGC UV Flow Cell, 5 mm, UV flow cell, standard with all systems. Fits single-wavelength UV and mult-wavelength UV/si detectors in both F101 and F100 systems R880205 NGC UV Flow Cell, 2 mm, progenative UV flow cell. Fits single-wavelength UV and mult-wavelength UV/si detectors in F100 systems. Ideal for use at how rates R880208 NGC UV Flow Cell, 2 mm, progenative UV flow cell. Fits single-wavelength UV and mult-wavelength UV/sis detectors in F100 systems. Ideal for use at how and creates appropriate backpressure to prevent bubble spiking in UV detectors R880000 NGC LED Lamp Replacement, includes dustarium impreplacement (UV) for mult-wavelength detectors R880001 NGC G fugget Lamp Replacement, includes dustarium impreplacement (UV) for mult-wavelength detectors R880001 NGC Harper Module, for accurate inter pH wave for accurate pH monitoring (pH -1-4) during purfications R880011 NGC pH Valve	R84004 NGC Sample Pump 100 Module, includes 100 m/min sample pump kit for automated large volume sample application via the sample inject valve; kit includes necessary tubing and fittings R84008 NGC Single-Wavelength Detector Module, for detection of nucleotides and proteins at 255 or 280 nm and generation of salt gradients; UV/ks, conductivity detector kit includes necessary tubing and fittings R84008 NGC Wile/Wavelength Detector Module, for simultaneous wavelength (i) monitoring of elution fractions R84008 NGC UV Flow Cell, 5 mm, UV flow cell, standard with all systems. Fits single-wavelength UV and multi-wavelength UV/s detectors in both F10 and F100 systems. R85021 NGC UV Flow Cell, 5 mm, UV flow cell, Fits single-wavelength UV and multi-wavelength UV/s detectors in F100 systems. Ideal for use at lower flow rates R85022 NGC UV Flow Cell, 7 mm, repeature UV flow cell. Fits single-wavelength UV and multi-wavelength UV/s detectors in F100 systems. Ideal for use at lower flow rates R85023 NGC UV Flow Cell, 7 mm, repeature UV flow cell. Fits single-wavelength UV and multi-wavelength UV/s detectors in F100 systems. Ideal for use at lower flow rates R85029 NGC LED Lamp Replacement, includes tuber flow rates R85020 NGC LED Lamp Replacement, includes duaterium lamp replacement (V) for multi-wavelength detectors NGC D Equator Lamp Replacement, includes uspecies in appropriate backpressure to prevent bubble Spling in UV detectors NGC D Equator Lamp Replacem	Sample Pump		
TR3E4008 NGC Single-Wavelength Detector Module, for detection of nucleotides and proteins at 255 or 280 nm and generation of sail gradients: UV/via, conductivity detector ki includes necessary tubing and fittings 7884009 NGC Multi-Wavelength Detector Module, for simultaneous wavelength (4) monitoring of elution fractions 190–800 nm and generation of sail gradients; UV/via, conductivity detector ki includes necessary tubing and fittings 7885024 NGC UV Flow Cell, 10 mm, analytical UV flow cell. Fits single-wavelength UV and multi-wavelength UV/vis detectors in 100 and F100 systems. Ideal for use at lower flow rates 7885023 NGC UV Flow Cell, 20 mm, preparative UV flow call. Fits single-wavelength UV and multi-wavelength UV/vis detectors in F100 systems. Ideal for use at lower flow rates 788502 NGC UV Flow Cell, 20 mm, preparative UV flow call. Fits single-wavelength UV and multi-wavelength UV/vis detectors in F100 systems. Ideal for use at lower flow rates 788503 NGC Detector Lamp Replacement, includes 255/280 nm LED lamp replacement for single-wavelength detectors 788504 NGC Detector Lamp Replacement, includes duterium lamp replacement (V) for multi-wavelength detectors 788505 NGC Detector Lamp Replacement, includes replacement includes pH probe, tubing, and fittings 788506 NGC PH Valve Module, for use with the pH valve for accurate pH monitoring (pH 0–14) during purifications 788507 NGC Burk pH Probe, pH valve cap for use with the pH valve when the probe is removed Wite	R384008 NGC Single-Wavelength Detector Module, for detection of nucleotides and proteins at 256 r280 nm and generation of sail gradients; UV/Vic conductivity detector kit includes necessary tubing and fittings R384009 NGC Muti-Wavelength Detector Module, for aimultaneous wavelength (4) monitoring of elution fractions 190–800 nm and generation of sail gradients; UV/Vic onductivity detector kit includes necessary tubing and fittings R385024 NGC UV Flow Cell, 5 mm, UV flow cell, standard with all systems. Fits single-wavelength UV and multi-wavelength UV/Vis detectors in Flo and FIO and FIO asystems. Idea to sail towards in the variation of systems. Idea for use at 10w erit flow rates R385023 NGC UV Flow Cell, 7 mm, preparative UV flow cell. Fits single-wavelength UV and multi-wavelength UV/Vis detectors in Flow systems. Idea for use at 10w erit flow rates R385023 NGC UV Flow Cell, 2 mm, preparative UV flow cell. Fits single-wavelength UV and multi-wavelength UV/Vis detectors in NGC beacterine Lamp Replacement, includes 255/280 nm LED lamp replacement for single-wavelength detectors in NGC Deuterinu Lamp Replacement, includes 255/280 nm LED lamp replacement (Vi) for multi-wavelength detectors NGC fungsten Lamp Replacement, includes replacement (Vi) for multi-wavelength detectors NGC Durget Lamp Replacement, includes replacement (Vi) for multi-wavelength detectors NGC Durget Lamp Replacement, includes replacement includes pH probe, tubing, and fittings R380050 NGC HV Valve Module, for accurate inline pH wave for parcurate pH monitoring (pH 0–14) during purifications NGC PH Probe (gA/QCI), or use with the pH valve for accurate pH monitoring (pH 0–14) during purifications NGC PH Probe (gA/QA), or use with the PH valve			
generation of sall gradients: UV/conductivity detector kit includes necessary tubing and fittings 7884009 NGC Multi-Wavelength Detector Module, for simultaneous wavelength (i) monitoring of elution fractions 190–800 nm and generation of sall gradients; UV/Vis, conductivity detector kit includes necessary tubing and fittings 7885021 NGC UV Flow Cell, 5 mm, UV flow cell, standard with all systems. Fits single-wavelength UV and multi-wavelength UV/Vis detectors in both FI0 and FI00 systems 7885022 NGC UV Flow Cell, 10 mm, analytical UV flow cell. Fits single-wavelength UV and multi-wavelength UV/Vis detectors in FI0 systems. Ideal for use at lower flow rates 7885022 NGC UV Flow Cell, 2 mm, preparative UV flow cell. Fits single-wavelength UV and multi-wavelength UV/Vis detectors in FI00 systems. Ideal for use at high flow rates 7500230 Backpressure Regulator, 40 psi, restricts flow and creates appropriate backpressure to prevent bubble splking in UV detectors 7502501 NGC LeD Lamp Replacement, includes 255/280 nm LED lamp replacement for single-wavelength detectors 7585001 NGC LeD Lamp Replacement, includes durget nump replacement for low wavelength detectors 7585002 NGC Replacement. Includes tungsten lamp replacement for low systems 7585002 NGC Petrobe Lamp Replacement, includes tungsten lamp replacement for low systems 7585003 NGC PH Probe (Ag/AgOI), for use with the pH wave for accurate pH monitoring (pH 0–14) during purifications 7585027 NGC PH Probe (Ag/AgOI), for use with the pH wave for accurate pH monitoring (pH 0–14) during purifications 7585027 NGC PH Probe (Ag/AgOI), for use with the pH wave for accurate pH monitoring (PH 0–14) during purifications 7585027 NGC PH Obde (Ag/AgOI), for use with the pH wave for accurate pH monitoring (PH 0–14) during purifications 7585027 NGC PH Obde (Ag/AgOI), for use with the pH wave for accurate pH monitoring (PH 0–14) during purifications 7585027 NGC PH Probe (Ag/AgOI), for use with the pH wave for accurate pH monitoring (PH 0–14) during purifications	generation of sait gradients: U/Voonductivity detector kit includes necessary tubing and fittings 7884009 NGC Multi-Wavelength Detector Module, for simultaneous wavelength (4) monitoring of elution fractions 190–800 nm and generation of sait gradients; U/V/s, conductivity detector kit includes necessary tubing and fittings 7885024 NGC U/ Flow Cell, 5 mm, U/ flow cell, standard with all systems. Fits singlewavelength U/V and multi-wavelength U/V/s detectors in both F10 and F100 systems 7885025 NGC U/ Flow Cell, 7 mm, reparative U/ flow cell. Fits singlewavelength U/V and multi-wavelength U/V/s detectors in F100 systems. Ideal for use at high flow rates 7885027 NGC U/ Flow Cell, 2 mm, reparative U/ flow cell. Fits single-wavelength U/V and multi-wavelength U/V/s detectors in F100 systems. Ideal for use at high flow rates 7885000 NGC LED Lamp Replacement, includes 255/280 nm LED lamp replacement for singlewavelength detectors NGC Deuterium Lamp Replacement, includes deuterium lamp replacement (V) for multi-wavelength detectors NGC Deuterium Lamp Replacement, includes deuterium lamp replacement (V) for multi-wavelength detectors NGC Replacements 7885002 NGC Replacement, includes upstein lamp replacement (V) for multi-wavelength detectors 788502 NGC PH Valve Module, for accurate inline pH measurement; includes pH probe, tubing, and fittings 788502 NGC PH Probe (Ag/AgC), for use with the pH valve for accurate pH monitoring (pH 0–14) during purifications 788502 NGC FIP Probe (Ag/AgC), for use with the pH valve when the probe is removed 788401 NGC F100 Mixer, 750 µI bases and top assembly, included with all 100 mirm NGC systems 788402 NGC F100 Mixer, 750 µI bases and top assembly, included with all 100 mirm NGC systems 788402 NGC F100 Mixer Barrel KI, 750 µI extension barrel for F100 750 µI mixer (poticnal) 788402 NGC F100 Mixer Barrel KI, 750 µI extension barrel for F100 750 µI mixer (poticnal) 788402 NGC F100 Mixer Barrel KI, 70 µI extension barrel for F100 750 µI mixer (poticnal) 788402	Detectors		
190-B00 nm and generation of salt gradients; UV/Ns, conductivity detector kti includes necessary tubing and fittings 7885024 NGC UV Flow Cell, 5 mm, UV flow cell, standard wth all systems. Fits single-wavelength UV and multi-wavelength UV/Vis detectors in b0h F10 and F100 systems 7885025 NGC UV Flow Cell, 10 mm, analytical UV flow cell. Fits single-wavelength UV and multi-wavelength UV/Vis detectors in F10 systems. Ideal for use at high flow rates 7885026 NGC UV Flow Cell, 2 mm, preparative UV flow cell. Fits single-wavelength UV and multi-wavelength UV/Vis detectors in F100 systems. Ideal for use at high flow rates 7885002 NGC UV Elew Cell, 2 mm, preparative UV flow cell. Fits single-wavelength UV and multi-wavelength UV/Vis detectors in F100 systems. Ideal for use at high flow rates 7885003 Backpressure, Regulator, 40 psi, restricts flow and creates appropriate backpressure to prevent bubble spliking in UV detectors 7885001 NGC LED Lamp Replacement, includes dustrium lamp replacement for Single-wavelength detectors 7885002 NGC Replacement, includes tungsten lamp replacement for Single-wavelength detectors 7885001 NGC PH vobe (Ag/AgOI), for use with the pH wave for accurate pH monitoring (pH -0-14) during purfications 788502 NGC PH Probe (Ag/AgOI), for use with the pH wave for accurate pH monitoring (pH -0-14) during purfications 788502 NGC PH Probe (Ag/AgOI), for use with the pH wave for accurate pH monitoring (pH -0-14) during purfications 788502 NG	190-800 nm and generation of salt gradients; UV/Vis, conductivity detector kt includes necessary tubing and fittings 7885024 NGC UV Flow Cell, 5 mm, UV flow cell, standard with all systems. Fits single-wavelength UV and multi-wavelength UV/Vis detectors in F10 systems. Ideal for use at low role. This single-wavelength UV and multi-wavelength UV/Vis detectors in F10 systems. Ideal for use at low role. This single-wavelength UV and multi-wavelength UV/Vis detectors in F100 systems. Ideal for use at high flow roles. This single-wavelength UV and multi-wavelength UV/Vis detectors in F100 systems. Ideal for use at high flow roles. 7500230 Backpressure Regulator, 40 psi, restricts flow and creates appropriate backpressure to prevent bubble splang in UV detectors. 7500240 NGC LD Lamp Replacement, includes 255/280 nm LED lamp replacement for single-wavelength detectors. 7885000 NGC Deuterium Lamp Replacement, includes tungstein lamp replacement (IV) for multi-wavelength detectors. 7885001 NGC Deuterium Lamp Replacement, includes tungstein lamp replacement (W) for multi-wavelength detectors. 788502 NGC PH Valve Module, for accurate inline pH measurement; includes pH probe, tubing, and fittings. 7885027 NGC Blank pH Probe, pH valve cap for use with the pH valve for accurate pH monitoring (pH 0–14) during purifications. 7884019 NGC FIO Mixer Module, for use with the pH valve for accurate pH monitoring (pH 0–14) during purifications. 7884020 NGC PH valve Module, for use with the pH valve for accurate pH monitoring (pH 0–14) during purifications.	7884008		
 NGC UV Flow Cell, 5 mm, UV flow cell, standard with all systems. Fits single-wavelength UV and multi-wavelength UV/vis detectors in both F10 aystems NGC UV Flow Cell, 10 mm, analytical UV flow cell. Fits single-wavelength UV and multi-wavelength UV/vis detectors in F10 systems. Ideal for use at low rates NGC UV Flow Cell, 2 mm, preparative UV flow cell. Fits single-wavelength UV and multi-wavelength UV/vis detectors in F100 systems. Ideal for use at high flow rates Sackpressure Regulator, 40 psi, restricts flow and creates appropriate backpressure to prevent bubble spiking in UV detectors NGC UE Lamp Replacement, includes 255/280 nm LED lamp replacement for single-wavelength detectors NGC Deuterium Lamp Replacement, includes subsystems and preplacement (W) for multi-wavelength detectors NGC Deuterium Lamp Replacement, includes trugsten lamp replacement (W) for multi-wavelength detectors NGC PH Valve Module, for accurate inline pH measurement; includes pH probe, tubing, and fittings NGC pH Valve Module, for accurate inline pH measurement; includes pH probe, tubing, and fittings NGC Mixer Module, for use with the pH valve for accurate pH monitoring (pH 0–14) during purifications NGC Mixer Module, for use with hall NGC system; additional mixer base or barrels (ordered separately) can be extended with 2, 5, and 12 m barrels for efficient gradient mixing at higher flow rates NGC F10 Mixer Barrel Kit, 2 m extension barrel for F10 253 µl mixer (potional) NGC F10 Mixer Barrel Kit, 2 m extension barrel for F10 254 µl mixer (potional) NGC F10 Mixer Barrel Kit, 2 m extension barrel for F10 250 µl mixer (potional) NGC F10 Mixer Barrel Kit, 2 m extension barrel for F10 250 µl mixer (potional) NGC Buff Probe Module, for culometal esting barrel for H00 x750 µl mixer (potional) NGC F10 Mixer Barrel Kit, 2 m ex	 NGC UV Flow Cell, 5 mm, UV flow cell, standard with all systems. Fits single-wavelength UV and multi-wavelength UV/vis detectors in both F10 and F100 systems NGC UV Flow Cell, 10 mm, analytical UV flow cell. Fits single-wavelength UV and multi-wavelength UV/vis detectors in F10 systems. Ideal for use at lower flow rates NGC UV Flow Cell, 2 mm, preparative UV flow cell. Fits single-wavelength UV and multi-wavelength UV/vis detectors in F100 systems. Ideal for use at high flow rates Backpressure Regulator, 40 psi, restricts flow and creates appropriate backpressure to prevent bubble spiking in UV detectors NGC UE Lamp Replacement, includes 255/280 nm LED lamp replacement for single-wavelength detectors NGC Deuterium Lamp Replacement, includes duterium lamp replacement (UV) for multi-wavelength detectors NGC Deuterium Lamp Replacement, includes duterium lamp replacement (UV) for multi-wavelength detectors NGC Deuterium Lamp Replacement, includes replacement, includes preplacement (UV) for multi-wavelength detectors NGC pH Valve Module, for accurate infine pH measurement; includes pH probe, tubing, and fittings NGC pH Probe (Ag/AgC), for use with the pH valve for accurate pH monitoring (pH 0–14) during purifications NGC Blank pH Probe, pH valve caf for use with the pH valve when the probe is removed Mixer MKER T000 Mixer 750 µ bases and top assembly, included with all 100 m/min NGC systems NGC F100 Mixer Barrel Kit, 2 ml extension barrel for F100 250 µ imker (potional) NGC F100 Mixer Barrel Kit, 2 ml extension barrel for F100 250 µ imker (potional) NGC F100 Mixer Barrel Kit, 2 ml extension barrel for F100 250 µ imker (potional) NGC Sample Inject Valve Module, for cultomated switching between multiple buffers and samples during methods, kit includes the necessary tubing and fittings NGC	7884009	190–800 nm and generation of salt gradients; UV/Vis, conductivity detector kit includes necessary tubing	
NGC UV Flow Cell, 10 mm, analytical UV flow cell. Fils single-wavelength UV and multi-wavelength UV/vis detectors in F10 systems. Ideal for use at lower flow rates 7885022 NGC UV Flow Cell, 2 mm, preparative UV flow cell. Fils single-wavelength UV and multi-wavelength UV/vis detectors in F100 systems. Ideal for use at high flow rates 7800230 Backpressure Regulator, 40 psi, restricts flow and creates appropriate backpressure to prevent bubble splking in UV detectors Pathoma Peplacement, includes 255/280 nm LED lamp replacement for single-wavelength detectors 7885001 NGC Dutertium Lamp Replacement, includes turgsten lamp replacement (UV) for multi-wavelength detectors 7885025 NGC Replacement Conductivity Monitor, includes replacement conductivity monitor PH Valve 788502 7885026 NGC pH Valve Module, for accurate inline pH measurement; includes pH probe, tubing, and fittings 7885027 NGC Balark pH Probe, pH valve cap tor use with the pH valve for accurate pH monitoring (pH 0–14) during purifications 7885027 NGC Mixer Module, for use with all NGC systems; additional mixer base or barrels (ordered separately) can be extended with 2, 5, and 12 m barrels for fice 31 µ mixer (pathora) 7884019 NGC F10 Mixer, 750 µ base and top assembly, included with all 100 mi/min NGC systems 7884020 NGC F10 Mixer, 750 µ base and top assembly, included w	NGC UV Flow Cell, 10 mm, analytical UV flow cell. Fits single-wavelength UV and multi-wavelength UV/is detectors in F100 systems. Ideal for use at lower flow rates 7850023 NGC UV Flow Cell, 2 mm, preparative UV flow cell. Fits single-wavelength UV and multi-wavelength UV/is detectors in F100 systems. Ideal for use at high flow rates 7500230 Backpressure Regulator, 40 psi, restricts flow and creates appropriate backpressure to prevent bubble spiking in UV detectors 7855001 NGC ED Lamp Replacement, includes 255/280 nm LED lamp replacement for single-wavelength detectors 7885002 NGC Deuterium Lamp Replacement, includes deuterium lamp replacement for single-wavelength detectors 7885002 NGC Deuterium Lamp Replacement, includes turgsten lamp replacement (Ws) for multi-wavelength detectors 7885001 NGC pel Valve Module, for accurate inline pH measurement; includes pH probe, tubing, and fittings 7885027 NGC pH Valve Module, for accurate inline pH wave for accurate pH monitoring (pH 0-14) during purifications 7885027 NGC Mixer Module, for use with the pH valve when the probe is removed Mixer 7884018 NGC Mixer Module, for use with all NGC systems; additional mixer base or barrels (ordered separately) can be extended with 2, 5, and 12 m harrels for efficient gradient mixing at higher flow rates 7884021 NGC F10 Mixer Barrel Kit, 750 µ laxension barrel for F102 280 µ mixer (optional) </td <td>7885024</td> <td>NGC UV Flow Cell, 5 mm, UV flow cell, standard with all systems. Fits single-wavelength UV and</td> <td></td>	7885024	NGC UV Flow Cell, 5 mm, UV flow cell, standard with all systems. Fits single-wavelength UV and	
7885022 NGC UV Flow Cell, 2 mm, preparative UV flow cell. Fits single-wavelength UV and multi-wavelength UV/is detectors in F100 systems. Ideal for use at high flow rates 7500230 Backpressure Regulator, 40 psi, restricts flow and creates appropriate backpressure to prevent bubble spiking in UV detectors 7885000 NGC LED Lamp Replacement, includes 255/280 nm LED lamp replacement for single-wavelength detectors 7885001 NGC Deuterium Lamp Replacement, includes deuterium lamp replacement (f) for multi-wavelength detectors 788502 NGC Tengsten Lamp Replacement, includes tungsten lamp replacement (f) for multi-wavelength detectors 788502 NGC PH Valve Module, for accurate inline pH measurement; includes pH probe, tubing, and fittings 788502 NGC pH Probe (Ag/AgO), for use with the pH valve for accurate pH monitoring (pH 0–14) during purifications 7884011 NGC PH Probe (Ag/AgO), for use with the pH valve when the probe is removed Mixer 7884012 NGC Mixer Module, for use with all NGC systems; additional mixer base or barrels (ordered separately) can be extended with 2, 5, and 12 mi barrels for efficient gradient mixing at higher flow rates 7884019 NGC F10 Mixer, 520 µ base and top assembly, included with all 10 m/min NGC systems 7884020 NGC F10 Mixer Barrel Kit, 750 µ extension barrel for F10 263 µ mixer (optional) 7884021 NGC F10 Mixer Barrel	7885022 NGC UV Flow Ceil, 2 mm, preparative UV flow ceil. Fits single-wavelength UV and multi-wavelength UV/Vis detectors in F100 systems. Ideal for use at high flow rates 7500230 Backpressure Regulator, 40 psi, restricts flow and creates appropriate backpressure to prevent bubble sysiking in UV detectors 7885000 NGC LED Lamp Replacement, includes 255/280 nm LED lamp replacement for single-wavelength detectors 7885001 NGC Deuterium Lamp Replacement, includes taugsten lamp replacement (Vis) for multi-wavelength detectors 788502 NGC Tangsten Lamp Replacement, includes taugsten lamp replacement (Vis) for multi-wavelength detectors 788502 NGC pH Valve Module, for accurate inline pH measurement; includes pH probe, tubing, and fittings 7885027 NGC pH Probe (Ag/AgC), for use with the pH valve for accurate pH monitoring (pH 0–14) during purifications 7885027 NGC Mixer Module, for use with all NGC systems; additional mixer base or barrels (ordered separately) can be extended with 2, 5, and 12 m barnels for efficient gradient mixing at higher flow rates 7884019 NGC F10 Mixer 263 µl base and top assembly, included with all 10 m/min NGC systems 788402 NGC F10 Mixer Barrel Kit, 2 m l extension barrel for F10 263 µl mixer (pat of Scout 10 and Discover 10 series) 788402 NGC F10 Mixer Barrel Kit, 2 m l extension barrel for F100 750 µl mixer (optional) 788402 NGC F10 Mixer Barrel Kit, 2 m l extension barrel for F100 750 µl mixer (optional)	7885023	NGC UV Flow Cell, 10 mm, analytical UV flow cell. Fits single-wavelength UV and multi-wavelength UV/Vis	
Topological Backpressure Regulator, 40 psl, restricts flow and creates appropriate backpressure to prevent bubble spiking in UV detectors Detector Lamp Replacements Resplacement for single-wavelength detectors 7885000 NGC LED Lamp Replacement, includes 255/280 nm LED lamp replacement for single-wavelength detectors 7885001 NGC Deuterium Lamp Replacement, includes deuterium lamp replacement (UV) for multi-wavelength detectors 788502 NGC Replacement Conductivity Monitor, includes replacement (VIs) for multi-wavelength detectors 788502 NGC PH Valve Module, for accurate inline pH measurement; includes pH probe, tubing, and fittings 788502 NGC pH Probe (Ag/AgCI), for use with the pH valve for accurate pH monitoring (pH 0–14) during purifications 788602 NGC Mixer Module, for use with all NGC systems; additional mixer base or barrels (ordered separately) can be extended with 2, 5, and 12 ml barrels for efficient gradient mixing at higher flow rates 7884019 NGC F100 Mixer, 263 µl base and top assembly, included with all 10 ml/min NGC systems 7884020 NGC F100 Mixer, 263 µl base and top assembly, included with all 10 ml/min NGC systems 7884021 NGC F100 Mixer Barrel Kit, 2 ml extension barrel for F102 63 µl mixer (optional) 7884022 NGC F100 Mixer Barrel Kit, 2 ml extension barrel for F100 750 µl mixer (optional) 7884023 NGC F100 Mixer Barrel Kit, 2 ml extension barrel for F100 750 µl mixer (optional)	Topological Status Backpressure Rejulator, 40 psi, restricts flow and creates appropriate backpressure to prevent bubble spiking in UV detectors Detector Lamp Replacements NGC LED Lamp Replacement, includes 255/280 nm LED lamp replacement for single-wavelength detectors R85000 NGC LED Lamp Replacement, includes deuterium lamp replacement (UV) for multi-wavelength detectors R85001 NGC Tungsten Lamp Replacement, includes deuterium lamp replacement (UV) for multi-wavelength detectors R85026 NGC Replacement Conductivity Monitor, includes replacement (UV) for multi-wavelength detectors R88002 NGC pH Valve Module, for accurate inline pH measurement; includes pH probe, tubing, and fittings R88011 NGC pH Probe (Ag/AgCI), for use with the pH valve for accurate pH monitoring (pH 0–14) during purifications R88027 NGC Blank pH Probe, pH valve cap for use with the pH valve when the probe is removed Mixer Tragstatility and the sease and top assembly, included with all 100 ml/min NGC systems R884019 NGC F100 Mixer, Z63 µl base and top assembly, included with all 100 ml/min NGC systems R884020 NGC F100 Mixer Barrel Kit, 2 ml extension barrel for F100 750 µl mixer (optional) R884021 NGC F100 Mixer Barrel Kit, 2 ml extension barrel for F100 750 µl mixer foody, part of Scout 100, Discover 100 series) R884022 NGC F100 Mixer Barrel Kit, 2 ml extension barrel for F100 7	7885022	NGC UV Flow Cell, 2 mm, preparative UV flow cell. Fits single-wavelength UV and multi-wavelength UV/Vis	
Detector Lamp Replacements 7885000 NGC LED Lamp Replacement, includes 255/280 nm LED lamp replacement for single-wavelength detectors 7885001 NGC Deuterium Lamp Replacement, includes deuterium lamp replacement (UV) for multi-wavelength detectors 7885002 NGC Tungsten Lamp Replacement, includes trugsten lamp replacement (Vis) for multi-wavelength detectors 7885005 NGC Replacement Conductivity Monitor, includes replacement conductivity monitor PH Valve 7884011 NGC pH Valve Module, for accurate inline pH measurement; includes pH probe, tubing, and fittings 7885026 NGC pH Probe (Ag/AgCI), for use with the pH valve for accurate pH monitoring (pH 0–14) during purifications 7885027 NGC Blank pH Probe, pH valve cap for use with the pH valve when the probe is removed Mixer 7884018 NGC Mixer Module, for use with all NGC systems; additional mixer base or barrels (ordered separately) can be extended with 2, 5, and 12 ml barrels for efficient gradient mixing at higher flow rates 7884021 NGC F100 Mixer, 250 µl base and top assembly, included with all 10 ml/min NGC systems 7884021 NGC F100 Mixer and Kit, 2 ml extension barrel for F102 63 µl mixer (potional) 7884028 NGC F100 Mixer Barrel Kit, 2 ml extension barrel for F102 63 µl mixer (potional) 7884028 NGC F100 Mixer Barrel Kit, 2 ml extension barrel for F102 750 µl mixer (potional)	Detector Lamp Replacements 7885000 NGC LED Lamp Replacement, includes 255/280 nm LED lamp replacement for single-wavelength detectors 7885001 NGC Deuterium Lamp Replacement, includes deuterium lamp replacement (UV) for multi-wavelength detectors 7885002 NGC Tungsten Lamp Replacement, includes tungsten lamp replacement (VI) for multi-wavelength detectors 7885005 NGC Replacement Conductivity Monitor, includes replacement conductivity monitor pH Valve 7884011 NGC pH Valve Module, for accurate inline pH measurement; includes pH probe, tubing, and fittings 7885026 NGC pH Probe (Ag/AgCI), for use with the pH valve for accurate pH monitoring (pH 0-14) during purifications 7885027 NGC Blank pH Probe, pH valve cap for use with the pH valve when the probe is removed Mixer 7884018 NGC Mixer Module, for use with all NGC systems; additional mixer base or barrels (ordered separately) can be extended with 2, 5, and 12 ml barrels for efficient gradient mixing at higher flow rates 7884021 NGC F100 Mixer, 253 µl base and top assembly, included with all 10 ml/min NGC systems 7884021 NGC F100 Mixer Barrel Kit, 2 ml extension barrel for F10 263 µl mixer (part of Socut 10 and Discover 10 series) 7884028 NGC F100 Mixer Barrel Kit, 2 ml extension barrel for F10 263 µl mixer (part of Socut 100, Discover 100 series) 7884029 NGC F100 Mixer Barrel Kit, 2 ml e	7500230	Backpressure Regulator, 40 psi, restricts flow and creates appropriate backpressure to prevent bubble	
NGC LED Lamp Replacement, includes 255/280 nm LED lamp replacement for single-wavelength detectors 7885001 NGC Deuterium Lamp Replacement, includes deuterium lamp replacement (UV) for multi-wavelength detectors 7885002 NGC Tougsten Lamp Replacement, includes deuterium lamp replacement (UV) for multi-wavelength detectors 7885005 NGC PH Probe (Ag/AgOI), for use with nicludes trappacement conductivity monitor PH Valve NGC pH Valve Module, for accurate inline pH measurement; includes pH probe, tubing, and fittings 7885026 NGC pH Probe (Ag/AgOI), for use with the pH valve for accurate pH monitoring (pH 0–14) during purifications 7885027 NGC Mixer Module, for use with all NGC systems; additional mixer base or barrels (ordered separately) can be extended with 2, 5, and 12 ml barrels for efficient gradient mixing at higher flow rates 7884019 NGC F100 Mixer, 750 µl base and top assembly, included with all 100 ml/min NGC systems 7884021 NGC F10 Mixer, 750 µl base and top assembly, included with all 100 ml/min NGC systems 7884022 NGC F10 Mixer, 750 µl base and top assembly, included with all 00 ml/min NGC systems 7884021 NGC F10 Mixer, 263 µl mixer (potional) 7884022 NGC F10 Mixer Barrel Kit, 2 ml extension barrel for F102 63 µl mixer (potional) 7884028 NGC F100 Mixer Barrel Kit, 5 ml extension barrel for F100 750 µl mixer (potional) 788402	NGC LED Lamp Replacement, includes 255/280 nm LED lamp replacement for single-wavelength detectors NGC Deuterium Lamp Replacement, includes deuterium lamp replacement (UV) for multi-wavelength detectors NGC Deuterium Lamp Replacement, includes deuterium lamp replacement (UV) for multi-wavelength detectors NGC Replacement Conductivity Monitor, includes replacement (Vis) for multi-wavelength detectors NGC Replacement Conductivity Monitor, includes replacement, toxicuting multi-wavelength detectors NGC pH Valve Module, for accurate inline pH measurement; includes pH probe, tubing, and fittings NGC pH Probe (Ag/QaCI), for use with the pH valve for accurate pH monitoring (pH 0–14) during purifications NGC Blank pH Probe, pH valve cap for use with the pH valve when the probe is removed Witxer 7884019 NGC F100 Mixer, 750 µl base and top assembly, included with all 100 ml/min NGC systems 7884021 NGC F100 Mixer, 750 µl base and top assembly, included with all 100 ml/min NGC systems 78840221 NGC F100 Mixer Barrel Kit, 2 ml extension barrel for F10 283 µl mixer (potional) 7884028 NGC F100 Mixer Barrel Kit, 7 ml extension barrel for F10 283 µl mixer (potional) 7884028 NGC F100 Mixer Barrel Kit, 2 ml extension barrel for F10 750 µl mixer boytonal) 7884028 NGC F100 Mixer Barrel Kit, 5 ml extension barrel for F10 750 µl mixer (potional) 7884029 NGC F100 Mix	Detector Lamp		
 NGC Deuterium Lamp Replacement, includes deuterium lamp replacement (UV) for multi-wavelength detectors NGC Tungsten Lamp Replacement, includes tungsten lamp replacement (Vis) for multi-wavelength detectors NGC Replacement Conductivity Monitor, includes replacement conductivity monitor NGC PH Valve Module, for accurate inline pH measurement; includes pH probe, tubing, and fittings NGC PH Probe (Ag/AgCI), for use with the pH valve for accurate pH monoting (pH 0-14) during purifications NGC Blank pH Probe, pH valve cap for use with the pH valve when the probe is removed Mixer Mixer Module, for use with all NGC systems; additional mixer base or barrels (ordered separately) can be extended with 2, 5, and 12 ml barrels for efficient gradient mixing at higher flow rates R84020 NGC F100 Mixer, 263 µl base and top assembly, included with all 100 ml/min NGC systems NGC F100 Mixer, 263 µl base and top assembly, included with all 100 ml/min NGC systems NGC F100 Mixer Barrel Kit, 750 µl base and top assembly, included with all 100 ml/min NGC systems NGC F100 Mixer Barrel Kit, 750 µl base and top assembly, included with all 100 ml/min NGC systems NGC F100 Mixer Barrel Kit, 750 µl base and top assembly, included with all 100 ml/min NGC systems NGC F100 Mixer Barrel Kit, 750 µl base and top assembly, included with all 100 ml/min NGC systems NGC F100 Mixer Barrel Kit, 750 µl base and top assembly, included with all 100 ml/min NGC systems NGC F100 Mixer Barrel Kit, 750 µl base and top assembly, included with all 100 ml/min NGC systems NGC F100 Mixer Barrel Kit, 750 µl base and top assembly of pH mixer Dosdy, part of Scout 100, Discover 100 series NGC F100 Mixer Barrel Kit, 12 ml extension barrel for F100 750 µl mixer loptional) NGC F100 Mixer Barrel Kit, 12 ml extension ba	 NGC Deuterium Lamp Replacement, includes deuterium lamp replacement (UV) for multi-wavelength detectors NGC Tungsten Lamp Replacement, includes tungsten lamp replacement (Vis) for multi-wavelength detectors NGC Replacement Conductivity Monitor, includes replacement conductivity monitor PM Valve NGC pH Valve Module, for accurate inline pH measurement; includes pH probe, tubing, and fittings NGC pH Probe (Ag/AgCI), for use with the pH valve for accurate pH monitoring (pH 0-14) during purifications NGC Blank pH Probe, pH valve cap for use with the pH valve when the probe is removed Mixer NGC Mixer Module, for use with all NGC systems; additional mixer base or barrels (ordered separately) can be extended with 2, 5, and 12 ml barrels for efficient gradient mixing at higher flow rates NGC F100 Mixer, 263 µl base and top assembly, included with all 100 ml/min NGC systems NGC F100 Mixer, 263 µl base and top assembly, included with all 100 ml/min NGC systems NGC F100 Mixer Barrel Kit, 2 ml extension barrel for F102 63 µl mixer (patro and Discover 10 series) NGC F100 Mixer Barrel Kit, 2 ml extension barrel for F100 750 µl mixer (botional) NGC F100 Mixer Barrel Kit, 2 ml extension barrel for F100 750 µl mixer (optional) NGC F100 Mixer Barrel Kit, 2 ml extension barrel for F100 750 µl mixer (optional) NGC F100 Mixer Barrel Kit, 2 ml extension barrel for F100 750 µl mixer (optional) NGC F100 Mixer Barrel Kit, 12 ml extension barrel for F100 750 µl mixer (optional) NGC F100 Mixer Barrel Kit, 12 ml extension barrel for F100 750 µl mixer (optional) NGC F100 Mixer Barrel Kit, 12 ml extension barrel for F100 750 µl mixer (optional) NGC F100 Mixer Barrel Kit, 12 ml extension barrel for F100 750 µl mixer (optional) NGC F100 Mixer Barrel Kit, 12 ml extension barrel for F100 750 µl mixer (o	•	•	
NGC Replacement Conductivity Monitor, includes replacement conductivity monitor 7885056 NGC pH Valve Module, for accurate inline pH measurement; includes pH probe, tubing, and fittings 7885026 NGC pH Probe (Ag/AgCI), for use with the pH valve for accurate pH monitoring (pH 0–14) during purifications 7885027 NGC Blank pH Probe, pH valve cap for use with the pH valve when the probe is removed Mixer 7884018 NGC Mixer Module, for use with all NGC systems; additional mixer base or barrels (ordered separately) can be extended with 2, 5, and 12 ml barrels for efficient gradient mixing at higher flow rates 7884019 NGC F100 Mixer, 750 µl base and top assembly, included with all 10 ml/min NGC systems 7884020 NGC F100 Mixer Barrel Kit, 750 µl base and top assembly included with all 10 ml/min NGC systems 7884021 NGC F100 Mixer Barrel Kit, 750 µl base and top assembly included with all 10 ml/min NGC systems 7884022 NGC F10 Mixer Barrel Kit, 72 ml extension barrel for F10 283 µl mixer (patr of Scout 10 and Discover 10 series) 7884023 NGC F100 Mixer Barrel Kit, 71 ml extension barrel for F100 750 µl mixer (optional) 7884024 NGC F100 Mixer Barrel Kit, 71 ml extension barrel for F100 750 µl mixer (optional) 7884025 NGC Inlet Valve Module, for automated switching between multiple buffers and samples during methods, kit includes the necessary tubing and fittings 7884007	NGC Replacement Conductivity Monitor, includes replacement conductivity monitor PH Valve 7885056 NGC pH Valve Module, for accurate inline pH measurement; includes pH probe, tubing, and fittings 7885026 NGC pH Probe (Ag/AgCI), for use with the pH valve for accurate pH monitoring (pH 0–14) during purifications 7885027 NGC Blank pH Probe, pH valve cap for use with the pH valve when the probe is removed Mixer 7884018 NGC Mixer Module, for use with all NGC systems; additional mixer base or barrels (ordered separately) can be extended with 2, 5, and 12 ml barrels for efficient gradient mixing at higher flow rates 7884019 NGC F100 Mixer, 750 µl base and top assembly, included with all 10 ml/min NGC systems 7884020 NGC F100 Mixer Barrel Kit, 2 ml extension barrel for F10 263 µl mixer (ptional) 7884022 NGC F100 Mixer Barrel Kit, 2 ml extension barrel for F100 750 µl mixer (bart of Scout 10 and Discover 10 series) 7884023 NGC F100 Mixer Barrel Kit, 12 ml extension barrel for F100 750 µl mixer (optional) 7884024 NGC F100 Mixer Barrel Kit, 12 ml extension barrel for F100 750 µl mixer (bart of Scout 100, Discover 100 series 7884024 NGC F100 Mixer Barrel Kit, 12 ml extension barrel for F100 750 µl mixer (optional) 7884025 NGC Inlet Valve Module, for automated switching between multiple buffers and samples during methods, kit includes the necessary tubing and fittings </td <td>7885001</td> <td></td> <td></td>	7885001		
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PH Valve NGC pH Valve Module, for accurate inline pH measurement; includes pH probe, tubing, and fittings 7884011 NGC pH Probe (Ag/AgCl), for use with the pH valve for accurate pH monitoring (pH 0–14) during purifications 7885027 NGC Blank pH Probe, pH valve cap for use with the pH valve when the probe is removed Wixer 7884018 NGC Mixer Module, for use with all NGC systems; additional mixer base or barrels (ordered separately) can be extended with 2, 5, and 12 ml barrels for efficient gradient mixing at higher flow rates 7884029 NGC F100 Mixer, 750 µl base and top assembly, included with all 100 ml/min NGC systems 7884021 NGC F100 Mixer, 750 µl base and top assembly, included with all 10 ml/min NGC systems 7884022 NGC F100 Mixer, 750 µl extension barrel for F10 253 µl mixer (opational) 7884028 NGC F100 Mixer Barrel Kit, 2 ml extension barrel for F100 250 µl mixer (opational) 7884028 NGC F100 Mixer Barrel Kit, 2 ml extension barrel for F100 750 µl mixer body, part of Scout 100, Discover 100 series 7884029 NGC F100 Mixer Barrel Kit, 12 ml extension barrel for F100 750 µl mixer (optional) 7884029 NGC F100 Mixer Barrel Kit, 12 ml extension barrel for F100 750 µl mixer (optional) 7884006 NGC Inlet Valve Module, for manual sample application of small volume samples via sample loops or large volume samples using a sample pump; kit includes necessary tubing, fittings, and sample injection port; valve can also be used with DynaLoop	PH Valve 7884011 NGC pH Valve Module, for accurate inline pH measurement; includes pH probe, tubing, and fittings 7885026 NGC pH Probe (Ag/AgCl), for use with the pH valve for accurate pH monitoring (pH 0–14) during purifications 7885027 NGC Blank pH Probe, pH valve cap for use with the pH valve when the probe is removed Mixer 7884018 NGC Mixer Module, for use with all NGC systems; additional mixer base or barrels (ordered separately) can be extended with 2, 5, and 12 ml barrels for efficient gradient mixing at higher flow rates 7884021 NGC F100 Mixer, 750 µl base and top assembly, included with all 100 ml/min NGC systems 7884021 NGC F100 Mixer, 750 µl base and top assembly, included with all 100 ml/min NGC systems 7884022 NGC F100 Mixer, 750 µl base and top assemble for F10 263 µl mixer (part of Scout 10 and Discover 10 series) 7884022 NGC F100 Mixer Barrel Kit, 2 ml extension barrel for F100 750 µl mixer (potional) 7884023 NGC F100 Mixer Barrel Kit, 2 ml extension barrel for F100 750 µl mixer (optional) 7884024 NGC F100 Mixer Barrel Kit, 12 ml extension barrel for F100 750 µl mixer and samples during methods, kit includes the necessary tubing and fittings 7884006 NGC Inlet Valve Module, for automated switching between multiple buffers and samples via sample loops or large volume samples using a sample pumps, and the C-96 autosampler 7884007 NGC Sample Inject Valve Module, for online buff			
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7884013 NGC Outlet Valve Module, for collection of up to 12 large volume fractions, including necessary tubing and fittings 7884026 NGC Column Switching Valve Module, 100 ml, for use with F100 systems and multiple columns for quick column scouting and reverse flow, holds 5 columns; kit includes the necessary tubing and fittings to accommodate the most common column types	7884013 NGC Outlet Valve Module, for collection of up to 12 large volume fractions, including necessary tubing and fittings 7884026 NGC Column Switching Valve Module, 100 ml, for use with F100 systems and multiple columns for quick column scouting and reverse flow, holds 5 columns; kit includes the necessary tubing and fittings to accommodate the most common column types	7884012	NGC Column Switching Valve Module, 10 ml, for use with F10 systems and multiple columns for quick column scouting and reverse flow, holds 5 columns; kit includes the necessary tubing and fittings to accommodate the most	
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			NGC Column Switching Valve Module, 100 ml, for use with F100 systems and multiple columns for quick column	
	contin		common column types	

Catalog #	Description
Maintenance k	Kits
7885003	Pump Maintenance Kit, 10 ml, for regular maintenance of NGC F10 pumps, includes seals and check valves
7885004	Pump Maintenance Kit, 100 ml, for regular maintenance of NGC F100 pumps, includes seals and check valves
7885005	Pump Maintenance Kit, Sample pump, 100 ml, for regular maintenance of NGC sample pump,
	includes seals and check valves
Air Sensor	
7885017	NGC Air Sensor Module, for detection of end of buffer and sample, protects against air entering pumps and
	columns, supports up to 4 air sensors (large- and small-bore); kit includes 2 large-bore air sensors
7885018	NGC Air Sensor Extension Module, connects to the base air sensor module to support 4 additional air sensors (optional, does not include any air sensors)
7885020	NGC Air Sensor, small, includes air sensor; enables exclusion of air from system and columns. Detects air in small-diameter PEEK tubing
7885021	NGC Air Sensor, large, includes air sensor; enables exclusion of air from system and columns.
	Detects air in large-diameter PTFE tubing
Fraction Colle	ctor and Autosampler
7410002	BioFrac Fraction Collector, 100/240 V, fraction collector compatible with all NGC systems, includes
	power cord, rack set F1 (2 x flatpack, 13 mm), BioFrac diverter valve, fittings kit
7884025	NGC Communication Adaptor, enables communication between Bio-Rad devices such as the BioFrac fraction collector and the NGC system
7605011	C-96 Autosampler without Cooling, 110/240 V, compatible with all NGC systems, includes standard 84+3 vial
	tray (1.5 and 10 ml), control cable set to connect with BioLogic DuoFlow system, 1 ml syringe, 2 ml sample loop; also includes #7605014, #7605026, and #7600604
7605010	C-96 Autosampler with Cooling, 110/240 V, compatible with all NGC systems, includes standard 84+3 vial tray
	(1.5 and 10 ml), control cable set to connect with BioLogic DuoFlow system, 1 ml syringe, 2 ml sample loop; also includes #7605014, #7605026, and #7600604
7884016	NGC Signal Import Module, enables analog-to-digital signal conversion and connection to devices such
	as the C-96 autosampler, includes cable for connecting to NGC system (#7885013) and external detectors
NGC Accesso	
7885038	NGC Column Holder, column holder for use with NGC systems, pkg of 1
7885039	NGC Cartridge Holder, universal cartridge holder, holds 1–10 ml cartridges
7885041	NGC Sample/Wash Tube Holder, holds two 50 ml Falcon tubes, for use with NGC systems (tubes not included)
7885042	NGC Tubing Retainers (small), holds small PEEK tubing in an organized manner, pkg of 3 magnetic retainers
7885035	NGC Tubing Retainers (large), holds larger PTFE tubing in an organized manner, pkg of 3 magnetic retainers
7885031	NGC Inline Filter Kit, includes buffer inline filter kit, filters particulates from buffer and prevents clogging of columns
7884017	NGC Fittings Kit, includes builder infinite filter kit, filters particulates from builder and prevents clogging of columns NGC Fittings Kit, includes PEEK and Tefzel nuts, ferrules, unions, plugs, tubing cutter, fittings tightener, and luer
1004017	syringe, for use with NGC systems
Additional Opt	
7884000	NGC Expansion Bay, tier 3, expands base system to 3-tier system for use with additional modules
7884001	NGC Expansion Bay, tier 4, expands system to 4-tier system for use with additional modules
7885014	NGC Buffer Tray, holds up to 8 buffer bottles. Includes drain port to prevent flooding in the event of a leak
7885016	NGC Drip Tray, for use with NGC systems
7885040	NGC Touch Screen Stand, used to mount touch screen outside of coldbox or -room while tethered
	to the system, enables convenient system operation from the outside
7885060	Touch Screen Bracket, for use with standard third-party monitor stands, used to mount touch screen
700 4045	outside the coldroom or -box while tethered to system, includes cable
7884015	Computer , for use with NGC systems, includes Intel Core i7 3.4 GHz (quad core), 4 GB RAM, 1 x 250 GB hard drive, CD/DVD drive, Microsoft Windows 7 Professional 64-bit edition
7884027	Monitor, for use with NGC system computer
7880020IQOQ	NGC IQ/OQ, NGC Quest/Quest Plus IQ/OQ (with BioFrac and air sensor), Installation Qualification and Operational Qualification (IQ/OQ) performed by field service engineers on location at the customer's site, duration 1 day.
7880030IQOQ	duration: 1 day NGC Scout/Discover/Discover Pro IQ/OQ (with BioFrac and air sensor), Installation Qualification and Operational Qualification (IQ/OQ) performed by field service engineers on location at the customer's site,

NGC[™] ChromLab[™] Software

ChromLab chromatography software is the integrated method development, data acquisition, and analysis software package for all NGC chromatography systems. It controls all functions for lab-scale protein purification including instrument control, method development, real-time monitoring, chromatogram comparison, and peak analysis.

This interface is also fully configured with VNC (virtual network computing), allowing you to control and monitor the system remotely from nearly any smartphone, tablet, or laptop.

ChromLab software is available in standard format or as a security edition, which provides the necessary features to permit users to operate in compliance with Title 21 of the U.S. Code of Federal Regulations Part 11 (21 CFR Part 11) within a closed system. It is compatible with Windows 7–10 64 bit.

ChromLab[™] Software

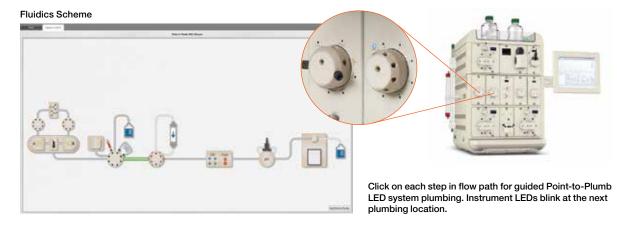
ChromLab is available in standard format (free) as an upgrade for existing ChromLab software users. It contains enhancements to existing ChromLab features and a linear flow rate calculator.

Graphical Instrument Setup and Control

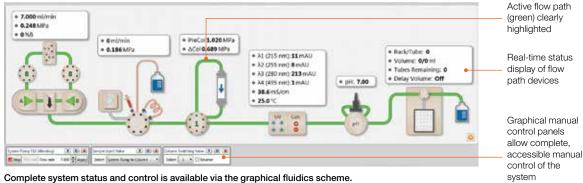
ChromLab software instrument controls are designed around a novel fluidics scheme interface that can be customized to exact hardware configurations. ChromLab enables easy setup with its novel Point-to-Plumb[™] feature. During manual data

acquisition, each component of the fluidics scheme can be controlled to reach optimized conditions. In both manual and automated method-based runs, the software highlights the real-time fluidics path and module status to ensure accuracy.

The instrument control interface is touch-screen optimized, allowing flexibility without the need for a computer adjacent to the system, thus minimizing the total footprint.



Manual Instrument Control



system

See Also Multi-D chromatography applications: page 113.

Streamlined Method Development

ChromLab software includes templates for common chromatographic techniques and a column database for maximum versatility. Select a column from the column database. The software automatically adjusts optimal flow rate and pressure parameters for the selected column. Methods are created by drag-and-drop functional phases. Grouping parameters into intuitive phases puts the focus on separation workflow instead of hardware controls. The interactive gradient graph enables visualization of the protocol and quick click-and-drag experimental adjustments.



Automated Multi-D Purification Techniques

The software contains tandem purification templates that reflect common automated purification scenarios. These templates may be edited to fit your research and reduce hands-on time.

Features and Benefits of ChromLab Software

- Touch screen allows the same level of flexibility without the need for a computer adjacent to the system, minimizing the total footprint for an operational system
- Customizable chromatogram layouts with a variety of viewing and data analysis options
- Rapid creation of trace comparisons for easy analysis across multiple purification runs
- Single-click peak detection and integration for quicker results
- Advanced integration parameters to enable manual integration functions and peak addition or removal for fine-tuning your data
- Intuitive, grouped data tabular layouts that organize data for easy navigation

Applications and Uses of ChromLab Software

- Controls all functions of the NGC medium-pressure chromatography system for lab-scale protein purification
- Method development to identify best methods
- Real-time monitoring of proteins, peptides, nucleic acids, and chromophores
- Chromatogram comparison and peak analysis
- Advanced integration parameters enable manual integration functions and peak addition or removal for fine-tuning data
- Organized data and easy navigation with intuitive grouped table layouts
- Multi-instrument control
- Centralized database for easy data storage and analysis

For More Information Web: bio-rad.com/chromlab

Learn More about Multi-D Chromatography Web: bio-rad.com/Multi-D

Ordering Info	Ordering Information				
Catalog #	Description				
7886000	ChromLab Software CD, single software platform compatible with all NGC systems, includes integrated system setup controls, method development, data acquisition, and analysis. Compatible with Windows 7–10 64 bit				

New ChromLab[™] Software, User Management Edition

ChromLab Software, User Management Edition enables multiple system control from a single PC and the ability to save all methods, runs, and analyses to a centralized database. User management enables assignment of user permissions to control access to and manipulation of all data files.

Ordering Information

Ordering Information

Catalog #	Description
17000099	ChromLab 4.0 User Management License, 1 seat
17000098	ChromLab 4.0 User Management License, 3 seats
17000097	ChromLab 4.0 User Management License, 5 seats

ChromLab[™] Software, Security Edition

ChromLab, Security Edition is available with one, three, or five licenses. When enabled, Security Edition provides the necessary features to permit users to operate in compliance with Title 21 of the U.S. Code of Federal Regulations Part 11 (21 CFR Part 11) within a closed system.

ChromLab, Security Edition software provides tools to:

- Limit and authorize system access to authorized users
- Limit access to selected tasks through user level permissions

- ChromLab administrator can designate a central computer as the host of a shared ChromLab database
- Data can be shared among ChromLab computers and NGC systems

- Produce computer-generated audit trails
- Prevent falsification of data
- Generate binding signatures and records
- Create accurate and complete signed reports for FDA submissions

For More Information Web: bio-rad.com/chromlab

Catalog #	Description
7886001	ChromLab Security Edition (SE Software) CD, single software platform compatible with all NGC systems, includes integrated system setup controls, method development, data acquisition, and analysis. Security edition also provides features in accordance with 21 CFR Part 11 requirements. 1 license
7886003	ChromLab Security Edition (SE Software) CD, 3 licenses
7886005	ChromLab Security Edition (SE Software) CD, 5 licenses

ChromLab[™] Software, IQ/OQ AND 21 CFR PART 11 COMPLIANT

The NGC[™] IQ/OQ is designed to evaluate the installation and operation of the instrument. This service is provided by our trained field service engineers utilizing the Installation Qualification and Operational Qualification protocols we have developed. Features and benefits of NGC installation and qualification and operational qualification:

- Ensure system performance
- Are performed by trained field service engineers
- Are performed at customer sites

For More Information Web: bio-rad.com/NGCiqoq

Ordering Infor	Ordering Information				
Catalog #	Catalog # Description				
7880020IQOQ	NGC Quest/Quest Plus IQ/OQ (with BioFrac and air sensor), Installation Qualification and Operational Qualification (IQ/OQ) performed by field service engineers on location at the customer's site, duration: 1 day				
7880030IQOQ	NGC Scout/Discover/Discover Pro IQ/OQ (with BioFrac and air sensor), duration: 2–3 days				

BioLogic DuoFlow[™] Medium-Pressure Chromatography Systems

Bio-Rad offers a complete line of laboratory-scale chromatography instruments that are flexible, upgradable, and easy to use. These instruments are specifically designed for protein separations paying close attention to the selection of materials, fraction collection, and the programming flexibility required when working with biological samples.

D Learn More about the Technology Web: bio-rad.com/tech/chrom

BioLogic DuoFlow Medium-Pressure Chromatography System Selection Guide

	Flow Rate	Pressure Limit	Techniques	UV Detection	Conductivity	pH Monitor	Sample Loading	Fraction Collection	Gradient
BioLogic DuoFlow 10	0.01–10 ml/min	3,500 psi/ 233 bar/ 23 MPa	Affinity, ion exchange, size exclusion/desalting, HIC, CHT [™]	254 and 280 nm	1–500 ms/cm	Optional	50 µl–90 ml loops and AVR7-3 automated sample inject valve		•
BioLogic DuoFlow 40	0.5–40 ml/min	1,000 psi/ 66 bar/ 6.6 MPa	Affinity, ion exchange, size exclusion/desalting, HIC, CHT	254 and 280 nm	1–500 ms/cm	Optional	50 µl–90 ml loops and AVR7-3 automated sample inject valve		• r

Note: refer to page 139 for low-pressure chromatography systems and components; and see page 134 for chromatography accessories.

BioLogic DuoFlow Pathfinder[™] system components: 1. BioLogic DuoFlow QuadTec[™] UV/Vis detector. SV5-4 select valve (optional). З. BioLogic DuoFlow Maximizer[™] mixer. AVR9-8 stream-select valve (optional). BioLogic DuoFlow Maximizer valve system. 4. 5. F10 or F40 workstation. 6. 10 BioFrac fraction collector. AVR7-3 sample inject valve. UNO[®] Q1 column. BioLogic[™] rack. BioLogic DuoFlow software. 12. USB bitbus communicator. Dell controller with flat-panel monitor. BioLogic DuoFlow 5.3 software CD. 15. Conductivity monitor. 11 16. C-96 autosampler. 6 13 COL 目前 ILLER 16 5 12 14

The BioLogic DuoFlow family of chromatography systems offers flexibility with multiple system configurations, many optional upgrades, and a common software platform that is intuitive and easy to follow. These systems can be used on the laboratory bench or in a coldroom and are suitable for analytical and preparative chromatography.

A Dell PC controller enables easy communication with the workstation and peripheral devices via an external USB bitbus communicator. The controller includes the Windows 7 operating system, application software, keyboard, mouse, and high-resolution flat-panel monitor.

Upgradable Systems Add Capability as Research Needs Change

BioLogic DuoFlow modular components allow the system to meet both laboratory space and application requirements. As requirements change, systems may be easily reconfigured and seamlessly upgraded with increased functionality such as higher flow rates, sophisticated detection capabilities, pH monitoring, column scouting, and buffer blending. The BioLogic DuoFlow system selection guide on the previous page lists the systems, their functions, and available options.

For More Information

Web: bio-rad.com/DFmediumpressure Request or download bulletins: 2687 and 5369

BioLogic DuoFlow System Options		F10 Pump	F40 Pump	BioFrac Fraction Collector	BioLogic Maximizer Valve System	BioLogic QuadTec UV/Nis Detector	UV (254/280 nm) Detector	Conductivity Monitor	214 nm Conversion Kit
Page numbers for cor	nponents	124	124	132	136	125	125	125	125
1	BioLogic DuoFlow 10 system 0.01–10 ml/min flow rate, 3,500 psi	•	o	o	o	o	•	•	o
	BioLogic DuoFlow 40 system 0.5–40 ml/min* flow rate, 1,000 psi	o	•	o	o	0	•	•	o

• Included as standard; • option or upgrade. * To double the flow rate, use the BioLogic Maximizer valve system.

Ordering Information

Catalog #	Description
BioLogic Du	ioFlow Systems*
7600037	BioLogic DuoFlow 10 System, 100/120 V, includes Dell controller and monitor, USB bitbus
	communicator, F10 workstation, MX-1 mixer, 3-tray rack, AVR7-3 sample inject valve, fittings kit,
	UV detector with 5 mm flow cell and 254/280 nm filters, conductivity monitor, starter kit
7600036	BioLogic DuoFlow 10 System, 100/120 V, for Japan and Korea only, does not include monitor
7600038	BioLogic DuoFlow 10 System, 220/240 V, does not include monitor
7604037	BioLogic DuoFlow 40 System, 100/120 V, same as #7600037 with F40 workstation replacing F10 workstation
7604036	BioLogic DuoFlow 40 System, 100/120 V, for Japan and Korea only, does not include monitor
7604038	BioLogic DuoFlow 40 System, 220/240 V, does not include monitor
7600047	BioLogic DuoFlow 10 System with BioFrac Fraction Collector, 100/120 V, includes Dell controller
	and monitor, USB bitbus communicator, F10 workstation, MX-1 mixer, 3-tray rack, AVR7-3 sample
	inject valve, fittings kit, UV detector with 5 mm flow cell and 254/280 nm filters, conductivity monitor,
	starter kit, diverter valve, two F1 racks
7600046	BioLogic DuoFlow 10 System with BioFrac Fraction Collector, 100/120 V, for Japan and Korea only, does not include monitor
7600048	
	BioLogic DuoFlow 10 System with BioFrac Fraction Collector, 220/240 V, does not include monitor
7604047	BioLogic DuoFlow 40 System with BioFrac Fraction Collector, 100/120 V, same as #7600047 with F40 workstation replacing F10 workstation
7604046	BioLogic DuoFlow 40 System with BioFrac Fraction Collector, 100/120 V, for Japan and Korea only,
7604046	does not include monitor
7610001	BioLogic DuoFlow 10 Core with BioFrac Fraction Collector, 100/120 V
7610001	
	BioLogic DuoFlow 10 Core with BioFrac Fraction Collector, 220/240 V
	em includes an F10 workstation. The 40 system includes an F40 workstation.
Note: Additio	nal detectors, valves, and accessories are optional and available.

BioLogic DuoFlow[™] Workstations and Accessories

BioLogic DuoFlow Workstations

The BioLogic DuoFlow workstations, with options of F10 or F40 pumps to accommodate different flow rates, include mixer barrel extenders that provide reproducible separations across the entire range of flow rates. The workstation integrates stream-select, sample loading, and diverter valves. The pump head can be removed easily from the workstation for routine maintenance.

The BioLogic DuoFlow F10 workstation is a component of all BioLogic DuoFlow 10 and 20 systems. The BioLogic DuoFlow 40 workstation is a component of all BioLogic DuoFlow 40 and 80 systems.

F10 and F40 Pump Kits

The pump kits used in the BioLogic DuoFlow workstation are interchangeable. The F10 pump enables a flow rate of 0.01–10 ml/min at 3,500 psi (233 bar, 23 MPa) and the F40 pump enables up to 40 ml/min at 1,000 psi (66 bar,



6.6 MPa). Flow rates for each pump head can be doubled with the addition of the BioLogic Maximizer[™] valve system. The kits contain fully assembled pump heads with seals and check valves installed for fast, easy pump head changes.

Mixers

The Model MX-1 and BioLogic Maximizer mixers ensure improved gradient quality for more accurate separations.

Ordering In	Ordering Information					
Catalog #	Description					
BioLogic Du	oFlow Workstations					
7600150	BioLogic DuoFlow F10 Workstation					
7600140	BioLogic DuoFlow F40 Workstation					
Pump Kits						
7600110	F10 Pump Kit, converts F40 workstation to F10 pumps to enable flow rates as low as 0.01 ml/min; includes 2 fully assembled pump heads, 4 piston assemblies, F10 tubing kit, tools					
7600180	F40 Pump Kit , expands pumping capabilities to 40 ml/min; includes 2 fully assembled pump heads, 4 piston assemblies, mixer barrel extender, 2 mm UV flow cell, F40 tubing kit, tools					
Mixers						
7600170	MX-1 Mixer, includes mixer body (263 µl) and standard mixer barrel for total volume of 750 µl					
7600171	Mixer Barrel Extender, for total volume of 2 ml; one included in the F40 pump kit (#7600180)					
7602010	BioLogic Maximizer Mixer, includes 750 µl mixer body, 5 ml and 12 ml mixer barrel extenders,					
	5 O-rings, stirbar, installation screws					
7602005	BioLogic Maximizer Mixer Barrel Extender, 5 ml					
7602012	BioLogic Maximizer Mixer Barrel Extender, 12 ml					
BioLogic Du	oFlow Workstation Accessories					
7600164	F10 Pump Maintenance Kit, to service one F10 pump, includes 2 piston seals, 4 check valves, seal removal tool, 2 O-rings					
7600161	F10 Piston Seals, 2, includes seal tool, to service one F10 pump					
7600162	F10 Piston Kit, 2 pistons, to service one F10 pump					
7600184	F40 Pump Maintenance Kit, to service one F40 pump, includes 2 piston seals, 4 check valves, seal removal tool, 2 O-rings					
7600172	F40 Piston Seals, 2, includes seal tool, to service one F40 pump					
7600173	F40 Piston Kit, 2 pistons, to service one F40 pump					
7500162	Check Valve, 1 (4 required per pump)					
7500703	Inline Filter Kit, includes 1 filter unit, 2 replacement frits					
7500230	40 psi Backpressure Regulator					
7600135	BioLogic System Starter Kit					

BioLogic DuoFlow[™] Detectors

BioLogic DuoFlow UV Detector with Conductivity Monitor

- Standard 254 and 280 nm filters
- Replaceable lamp with 365, 405, and 436 nm expansion filters
- 214 nm conversion kit with zinc lamp
- Standard analytical 5 mm flow cell or optional preparative 2 mm flow cell
- UV absorbance range from 0.0001–2.0 OD
- Conductivity detection range from 1–500 mS/cm

Signal Import Module (SIM)

The optional SIM allows import of an analog signal (up to 2.5 V) from a pH electrode or other external detector (for example, UV, refractive index, or fluorescence monitor). BioLogic DuoFlow system software accommodates two SIMs and can display up to four data signals simultaneously.



UV Detector with Conductivity Monitor



Signal Import Module

Q	rc	lei	rin	g	In	fo	orr	na	ti	on	1
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Catalog #	Description
7500200	BioLogic DuoFlow Detector Kit, includes UV optics module and conductivity monitor, 5 mm analytical flow cell
7500202	UV Optics Module, 5 mm analytical flow cell
7500240	Conductivity Monitor
7500210	Flow Cell, preparative, 2 mm (30 ml) pathlength
7500212	Flow Cell, analytical, 5 mm (16 ml) pathlength
7500216	Mercury Lamp, for use at all wavelengths except 214 nm
7500220	Detector Filters, 254 and 280 nm
7500224	Detector Filter, 405 nm
7500225	Detector Filter, 436 nm
7500214	214 nm Conversion Kit , for detectors with serial #362BRXXXX, includes zinc lamp, housing, and 214 nm filter for peptide detection
7500217	Zinc Lamp, for 214 nm detection
7500221	Detector Filter, 214 nm, requires zinc lamp
7601300	BioLogic QuadTec Detector Kit , includes BioLogic QuadTec detector with 3 mm PEEK flow cell, instrument control module (ICM), system cables 25, 26, and 17 (BioLogic QuadTec RS-232, ICM power, and bus communication), U.S. power cord, 40 psi backpressure regulator
7601330	Deuterium Lamp, replacement
7601332	Halogen Lamp, replacement
7601331	Halogen Lamp, with holder for first-time halogen lamp change
7601306	Standard Flow Cell, 3 mm pathlength (2 µl)
7601406	High-Speed Flow Cell, 2 mm pathlength, flow rate to 80 ml/min with fittings
7601311	Long Fingertight Fittings, 10-32 x 1.03", 4
7601320	Instrument Control Module (ICM) Kit, includes ICM power cable and cable 17
7500650	System Cable 17, bus communication cable, 1.2 m (4')
7601307	System Cable 25 (BioLogic QuadTec RS-232), connects BioLogic QuadTec detector to ICM
7601321	System Cable 26 (ICM Power), connects to 12 V power on BioLogic DuoFlow workstation
7500230	40 psi Backpressure Regulator
7602046	pH Tubing Kit, includes orange and green PEEK 1/4–28 prefitted tubing lengths for connecting the pH flow cell to the chromatography system
Signal Impor	rt Module (SIM)
7500502	Signal Import Module, includes 4' communication cable (system cable 17)
7602034	Universal AC/DC Inline Adaptor for USB Bitbus Device, required when connecting pH monitor or other external detector through SIM module on BioLogic DuoFlow systems

bio-rad.com/DFmedpressurecomponents

BioLogic DuoFlow[™] Valves and Accessories

BioLogic DuoFlow Valves

The high-pressure sample injection and stream-select valves, AVR7-3 and AVR9-8, prevent pressure spikes when the valve rotates from one port to another. This feature eliminates baseline interference and is beneficial when using fragile low-pressure columns or flow-sensitive detectors. It also prevents pump shutdowns due to transient overpressure conditions. These valves can be used alone or in combinations. A valve rebuild kit is available for four of the following valve types.

Sample Loading Options

- Single-injection loops for the AVR7-3 sample inject valve — for 25 µl to 5 ml samples
- DynaLoop[™] sample loops dynamic (sliding piston)
 25 and 90 ml sample loops allow large-volume sample loading or repetitive injection of smaller volumes
- Econo[™] gradient pump or Model EP-1 Econo pump — can load large sample volumes directly onto the column
- SV5-4 select valve can be used to automate large sample loading or as a buffer selector in chromatography protocols
- SVT3-2 diverter valve can be used as a buffer selector, for large sample loading, and for diverting buffer flow

BioLogic DuoFlow Valves AVR7-3 Valve

- Automation of single sample injections using single-injection loops (from 25 µl to 5 ml)
- Reverse-flow chromatography for affinity purifications
- 2-column switching
- Sequential binding and elution

AVR9-8 Valve

- Multiple buffer selection
- 8-column switching
- Large-volume fraction collection
- Tandem chromatography

SV5-4 Select Valve

- Automation of large-sample loading
- Buffer selection in chromatography protocols

SVT3-2 Diverter Valve

- Buffer selection
- Loading of large samples
- Diverting buffer flow

For More Information Web: bio-rad.com/DFmedpressurecomponents



AVR7-3, a 7-port, 3-position (load, inject, purge) highpressure sample inject valve also used for reverse-flow chromatography and two-column switching.











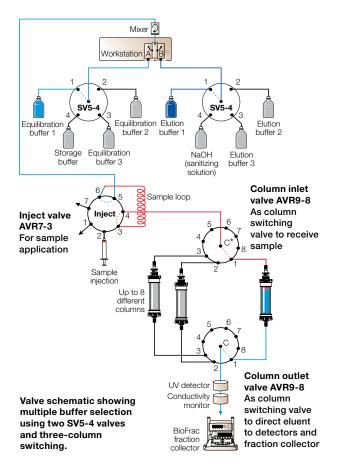
SVT3-2, a 3-way

fraction collector

solenoid valve

for sample

loading, or a



Catalog #	Description
BioLogic Du	oFlow Valves and Rebuild Kits
7600406	AVR7-3 Automated Sample Injection Valve, 7-port, 3-position high-pressure valve, 3,500 psi (233 bar) limit
7600401	AVR7-3 Valve Rebuild Kit
7600408	AVR9-8 Stream-Select Valve, 9-port, 8-position high-pressure valve, 3,500 psi (233 bar) limit
7600403	AVR9-8 Valve Rebuild Kit
7600410	SVT3-2 Diverter Valve, 3-port, 2-position solenoid valve, 30 psi (2 bar) limit
7600411	SVT3-2 Valve Rebuild Kit
7500415	SV5-4 Select Valve, 5-port, 4-position solenoid valve, 30 psi (2 bar) limit
BioLogic Du	oFlow Fittings Kit
7600550	BioLogic DuoFlow Fittings Kit
BioLogic Sir	gle-Injection Sample Loops, Kits, and Accessories
7500471	Sample Injection Port, for use with AVR7-3 automated sample injection valve
1250224	Injection Needle, 22 gauge, blunt
7500490	Small-Volume Sample Loop Kit, includes 100, 250, and 500 µl PEEK loops
7500491	Large-Volume Sample Loop Kit, includes 1, 2, and 5 ml PEEK loops
7500482	25 μl Tefzel Sample Loop
7500483	50 μl Tefzel Sample Loop
BioLogic Sir	gle-Injection Sample Loops, Kits, and Accessories
7500492	100 μl PEEK Sample Loop
7500493	250 μl PEEK Sample Loop
7500494	500 μl PEEK Sample Loop
7500495	1 ml PEEK Sample Loop
7500496	2 ml PEEK Sample Loop
7500497	5 ml PEEK Sample Loop
BioLogic Dy	namic (Sliding Piston) Sample Loops, Kits, and Seal Replacement
7500451	DynaLoop 25 Kit, includes 25 ml DynaLoop sliding piston loop, DynaLoop parts kit
7500452	DynaLoop 90 Kit, includes 90 ml DynaLoop sliding piston loop, DynaLoop parts kit
7500450	DynaLoop Parts Kit , includes 4 end cap O-rings, 1 sliding seal O-ring, 1 filter, 4 nut fittings, four 1/8" ferrules, five 1/4–28 nuts and ferrules, 10' of 1/8" tubing
7500475	DynaLoop 25 Sample Loop, 25 ml, replacement
7500476	DynaLoop 90 Sample Loop, 90 ml, replacement

BioLogic DuoFlow[™] Software, Version 5.3

BioLogic DuoFlow software is easy and intuitive. It walks you through simple step-by-step protocols to create and run methods and analyze the results. The software offers functions such as:

- Scouting wizard provides simplified setup of scouting experiments
- Method templates allow easy method creation with predefined chromatography method templates for all commonly used chromatography experiments
- Buffer blending controls automatic buffer pH blending of up to four stock solutions when used in combination with the BioLogic Maximizer[™] valve system

BioLogic DuoFlow software provides peak recovery control and data review with the following features:

- Trace Compare function permits overlay of different chromatograms for comparison of runs
- Fraction identification provides BioFrac[™] fraction collector numbering schemes that number tubes by collection order or by rack grid number

- Threshold collection allows collection of fractions when a detector signal is above or below a defined threshold
- Tagging of peaks labels peaks with name, retention time, absorbance units (UV trace), pH, or conductivity
- Selection of an activity trace permits data collected by an offline method to be included with the BioLogic DuoFlow run data; a histogram of the offline data can overlay the chromatogram peaks

System Requirements

 Operating system Processor RAM Screen resolution Hard drive space	Windows XP or Windows 7 Pentium 4 at 2 GHz 512 MB 1,024 x 768 40 GB
Drive USB port	CD-ROM 2.0 Hi-Speed

For More Information Web: bio-rad.com/duoflowsoftware

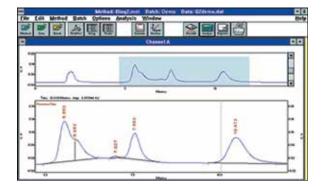
(Catalog #	Description
	7602050	BioLogic DuoFlow Software Version 5.3 Upgrade, upgrades existing BioLogic DuoFlow version 5.0 systems, includes version 5.3 software CD

EZLogic[™] Integration Software

Ordering Information

This powerful software package provides all the tools necessary to quantitate samples, integrate and overlay chromatograms, determine retention times, view the results, and generate customized reports. Graphical capabilities include split-screen chromatogram views, zooming, multiple parameter annotation, and color selection.

For More Information Web: bio-rad.com/EZlogic



EZLogic integration software screen.

Ordering Information Catalog # Description 7500111 EZLogic Integration Software Package

BioLogic DuoFlow[™] IQ/OQ Protocols

Bio-Rad offers qualification protocols and services for the BioLogic DuoFlow chromatography systems and their peripheral components, including the BioLogic Maximizer[™] valve system for buffer blending, the BioLogic QuadTec[™] UV/Vis detector, and the BioFrac[™] fraction collector. Bio-Rad's IQ/OQ protocols are designed to help comply with U.S. FDA regulatory requirements. Procedures are performed by factory-trained and certified technicians using instruments and reagents traceable to NIST standards. IQ service verifies that the BioLogic DuoFlow chromatography system is properly installed. OQ service tests the performance of the installed system and provides a record that confirms critical functions and safety features.

For more information on IQ/OQ for the BioLogic DuoFlow chromatography system, contact your local Bio-Rad sales representative.

BioLogic[™] Rack

The BioLogic rack is an adaptable racking system made of durable, solvent-resistant polypropylene, stainless steel, and glass-filled nylon. In addition to supporting a range of chromatography systems it supports a range of columns and cartridges, valves, detection modules, buffer bottles, and peripheral equipment such as the Model 2110 fraction collector. A BioLogic rack expansion kit and optional rack components are available for custom racking applications.

For More Information

Web: bio-rad.com/medpressurecomponents





BioLogic rack with optional expansion kit. Dimensions are 34 x 41 x 64 cm (W x D x H).

Ordering Information

Catalog #	Description	
7500251	BioLogic Rack , includes rack tray, 8 sleeves, 2 short vertical bars, 2 long vertical bars, column clamp set, 5 bar clamps, 4 cable organizers	
7500268	BioLogic Rack Expansion Kit, includes 2 rack trays, 2 long vertical bars, 16 sleeves	
Accessories		
7500262	Vertical Bars, long, 64 cm, 2	
7500263	Vertical Bars, short, 10 cm, 2	
7500264	Horizontal Bar Kit, includes 2 tie bars, 4 bar clamps	
7500260	Column Clamp Set, includes 1 column clamp assembly	
7500265	Bar Clamps, 5	

bio-rad.com/c96

C-96 Autosampler

The C-96 autosampler, with optional Peltier cooling, connects with the NGCTM and the BioLogic DuoFlowTM chromatography systems to provide automated sample injections. Easy-to-install accessories allow injection volumes from 5 µl to 5 ml. Three injection modes with programmable sample and reagent mixing make the C-96 a versatile autosampler.

- Easy to connect to the NGC system and the BioLogic DuoFlow chromatography systems
- Simple programming via front panel user interface
- Automated, highly reproducible injection of sample volumes from 5 μl to 5 ml

For More Information Web: bio-rad.com/c96



Catalog #	Description
7605010	C-96 Autosampler with Cooling, 110–240 V, includes standard 84+3 vial tray (1.5 and 10 ml), control cable set to connect with BioLogic DuoFlow system, 1 ml syringe, 2 ml sample loop; also includes #7605014, #7605026, and #7600604
7605011	C-96 Autosampler, 110–240 V, includes standard 84+3 vial tray (1.5 and 10 ml), control cable set to connect with BioLogic DuoFlow system, 1 ml syringe, 2 ml sample loop; also includes #7605014, #7605026, and #7600604
7605012	Prep Bio Kit, contains 24-position tray for 10 ml vials (22 mm OD), 2.5 ml syringe, 10 ml PEEK loop, 0.75 mm ID PEEK injection valve, prep needle, 6 mm fitting wrench, for use with C-96 autosamplers
7605013	Syringe, pkg of 1, 1 ml syringe, for use with C-96 autosamplers
7605014	Connector Kit, contains nuts and ferrules to plumb the syringe valve, for use with C-96 autosamplers
7605024	Sample Tray, pkg of 1, large-capacity 96-position tray for 1.5 ml vials (12 mm OD), for use with C-96 autosamplers
7600604	PEEK Tubing, pkg of 1, 1/16" OD x 0.020" ID x 30' high-pressure tubing, rated to 5,000 psi, orange
7605026	Fittings Kit, contains 10-32 short nuts and ferrules to plumb the injection valve, for use with C-96 autosamplers
7605027	Needle, pkg of 1, 45 µl needle, for use with C-96 autosamplers
7605028	Prep Kit Needle, pkg of 1, needle for large sample volume, for use with C-96 autosamplers
7605017	Analytical Bio Kit, includes 250 µl syringe, 500 µl buffer tubing, 100 and 200 µl PEEK sample loops, standard sample needle, 6 mm fitting wrench, for use with C-96 autosamplers
7885011	NGC Autosampler, includes NGC SIM and connector cable
7885012	NGC Autosampler with Cooling, includes NGC SIM and connector cable

bio-rad.com/fractioncollectors

Fraction Collectors

Model 2110 Fraction Collector

This easy-to-use fraction collector provides multiple collection modes for chromatographic separations. Key features include:

- Time or drop collection modes (or volume collection mode when connected to the Model EP-1 Econo[™] pump, BioLogic[™] LP system, or BioLogic DuoFlow[™] system)
- Collection of 1 drop (~50 µl) to 9 ml fractions in 80 test tubes or microtubes (with optional adaptor)
- Small (Econo-Column[®]) chromatography columns can be mounted to drop-forming arm to minimize dead volume
- Manual-advance tube changes
- Coldroom compatibility
- Small footprint of 24 x 33 cm
- Meets IEC 61010 and CSA 22.2 certification

For More Information Web: bio-rad.com/model2110



Ordering Information					
Catalog #	Description				
7318122	Model 2110 Fraction Collector, 100/120 V				
7318120	Model 2110 Fraction Collector, 220/240 V				
Accessories					
7318130	Carousel, 80-tube capacity				
7318135	Micro Tube Adaptor, 80 microtube capacity				
7318136	Instrument Dust Cover				
7318131	Replacement Drop Formers, 2				
7318261*	System Cable 1, 8-pin mini-DIN to DB-9 connector				
7318265*	System Cable 5, DB-9 connector to bare wires				
7319010*	System Cable 22, Y-cable connecting Econo gradient pump to Model 2110 fraction collector				
Tubes					
2239750	Clear Polystyrene Tubes, 13 x 100 mm, 9 ml nominal capacity, 1,000				
2239751	Natural Polypropylene Tubes, 13 x 100 mm, 9 ml nominal capacity, 1,000				
2239500	Micro Test Tubes, capless, 1.5 ml, polypropylene, natural, graduated, 500				
* For more info	ormation, refer to the Cable Guide on page 134.				

Fraction Collectors

bio-rad.com/fractioncollectors

BioFrac[™] Fraction Collector

The easy-to-program BioFrac fraction collector can be used for basic or complex fraction collection schemes. Off-the-shelf racks extend the versatility of collection schemes and provide cost-effective storage of samples. Off-the-shelf racks are autoclavable, easy to assemble, and lie flat, using little storage space

Key features include:

- Collection in time or drop mode (or volume mode when connected to an NGC[™], BioLogic DuoFlow[™], or BioLogic[™] LP chromatography system, or Model EP-1 Econo[™] pump)
- Collection of peaks by peak detection, time windows (up to 20), or a combination of both
- Drop arm movement in column, row, or serpentine pattern movements for microplates or Titertube[®] tubes
- A dispenser arm that is manually adjustable to tube heights ≤150 mm
- Numerous off-the-shelf racks to accommodate tubes (12–20 mm diameter), Eppendorf or other microtubes (0.5, 1.5, or 2.0 ml), or scintillation vials
- Multirun feature that allows overlay of fractions
- IEC 6101A 22.2 certification

Optional Components

- BioFrac ice bath/microplate rack with tube grips that can hold 13 mm tubes
- BioFrac prep-20 preparative rack with up to 20 collection ports for collection from bottles to carboys
- Microplate drophead kit for precise collection of small volumes into microplates

For More Information Web: bio-rad.com/biofrac

Request or download bulletin: 2711



Flexible rack options. The ice bath/microplate rack is used to collect fractions in chilled test tubes (A) or up to four microplates (B) (shown using the optional 25 μ l drophead). The prep adaptor rack (C) is used for preparative fractionation into 1–20 collection vessels of any size. The BioFrac fraction collector holds up to four H4-high racks (D). The BioFrac fraction collector accepts a variety of off-the-shelf racks.



bio-rad.com/fractioncollectors

Catalog #	Description
7410002	BioFrac Fraction Collector, input voltage 100/240 V, includes power cord, rack set F1
	(2 x flatpack, 13 mm), BioFrac diverter valve, fittings kit
Accessories	
7410010	Rack Set F1, 2 x flatpack, with numbered tube positions, each holds 90 tubes, 12-13 mm diameter
7410011	Rack Set F2, 2 x flatpack, each holds 60 tubes, 15–16 mm diameter, for total of up to 120-tube collection
7410012	Rack Set F3, 2 x flatpack, each holds 40 tubes, 18–20 mm diameter, for total of up to 80-tube collection
7410013	Rack Set H1, 4 x flatpack, each holds 42 capless 1.5 ml Eppendorf/microtubes for total of up to 168-microtube collection
7410014	Rack Set H2, 4 x flatpack, each holds 63 capless 0.5 ml Eppendorf/microtubes for total of up to 252-microtube collection
7410015	Rack Set H3, 4 x flatpack, each holds 30 reduced-volume scintillation vials, 16 mm diameter, for total of up to 120-vial collection
7410016	Rack Set H4, 4 x flatpack, each holds 6 scintillation vials, 30 mm diameter, for total of up to 24-vial collection
7410020	BioFrac H4-High Rack Set , 4 x flatpack, each holds 6 centrifuge tubes, 30 mm diameter, for total of up to 24-vial collection
7410017	BioFrac Ice Bath/Microplate Rack , holds 120 tubes, 12–13 mm diameter; with the following capabilities: up to 4 SBS-format microplates in 96-, 48-, 24-, or 12-well configurations; Titertube microtube collection, 8 x 12, 96-tube configuration
7410018	BioFrac Prep-20 Preparative Rack, for fractionation into 1-20 collection vessels of any size
7410007	BioFrac Fraction Collector Fittings Kit, includes replacement fittings and tubing for setup of the fraction collector to the BioLogic LP or BioLogic DuoFlow chromotography system
7410088	BioFrac Microplate Drophead Kit, includes preassembled drophead nut with 0.020" ID Tefzel tubing; delivers approximately 25 µl per drop
7318263*	System Cable 3, 8-pin mini-DIN to 8-pin mini-DIN
7318286*	System Cable 15, 15-pin D to mini-DIN
7318287*	System Cable 16, 8-pin mini-DIN to 8-pin standard DIN
7318290	BioFrac Accessory Cable , 15-pin D to bare wires, for connecting BioFrac fraction collector to other equipment; for input or output signals
Tubes	
2239750	Clear Polystyrene Tubes, 13 x 100 mm, 9 ml nominal capacity, 1,000
2239751	Natural Polypropylene Tubes, 13 x 100 mm, 9 ml nominal capacity, 1,000
2239500	Micro Test Tubes, capless, 1.5 ml, polypropylene, natural, graduated, 500

For NGC system–compatible products, see pages 117–118 for ordering information.

Chromatography Accessories

Cables

Refer to the guide to select cables to link chromatography system components together or to link components from other manufacturers to a Bio-Rad chromatography system. Numbers in the table are cable numbers.

For More Information

Web: bio-rad.com/chromaccessories

Cable Guide

					Cor	nection to					
Connection From	BioLogic I DuoFlow [™] Workstation	BioLogic™ LP System	BioLogic DuoFlow Controller	BioLogic QuadTec™ UV/Vis Detector	Non-BioLogic System Compromise	Non-BioLogic System Detectors	Model 2110 Fraction Collector	BioFrac [™] Fraction Collector	Model EM-1 Econo [™] UV Monitor	Model EP-1 Econo Pump	Econo Gradient Pump
BioLogic DuoFlow workstation			17, 18, 19, or 21	17, 18, 25, or 26			5	17, 18, 19, or 21		7	17, 18, 19, or 21
Model 2110 fraction collector	5	1			5				1	1	22
BioFrac fraction collector	17, 18, 19, or 21	3, 15			*	*				3, 15	23
Isco Retriever II collector	12								12		
Gilson FC 203 fraction collector		14								14	
GE Healthcare FRAC-100 fraction collector		9								9	
Model EG-1 Econo gradient monitor					7						
Model EM-1 Econo* UV monitor						4			3		
Model EP-1 Econo pump		7			7		1	3, 15	3		
Econo gradient pump	17, 18, 19, or 21						22	23			

* For replacement of the Model 2128 accessory cable, order the BioFrac accessory cable.

Catalog #	Description	
7318261	System Cable 1, 8-pin mini-DIN to DB-9 connector	
7318262	System Cable 2, 8-pin mini-DIN to 8-pin standard DIN	
7318263	System Cable 3, 8-pin mini-DIN to 8-pin mini-DIN	
7318264	System Cable 4, 8-pin mini-DIN to banana plug cable	
7318265	System Cable 5, DB-9 connector to bare wires	
7318267	System Cable 7, 8-pin mini-DIN to bare wires	
7318268	System Cable 8, 8-pin standard DIN to DB-9 connector	
7318286	System Cable 15, 15-pin D to mini-DIN	
7318287	System Cable 16, 8-pin mini-DIN to 8-pin standard DIN	
7500650	System Cable 17, bus communication cable, 1.2 m (4')	
7500651	System Cable 18, bus communication cable, 3.7 m (12')	
	-	continu

Ordering Information						
Catalog #	Description					
7500652	System Cable 19, bus communication cable, 9.2 m (30')					
7500655	System Cable 21, BioLogic HR system communication cable, 30 m (100')					
7319010	System Cable 22, Y-cable for connecting Econo gradient pump to Model 2110 fraction collector					
7601307	System Cable 25 (BioLogic QuadTec RS-232), connects BioLogic QuadTec to ICM					
7601321	System Cable 26 (ICM Power), connects to 12 V power on BioLogic DuoFlow workstation					
7602004	System Cable 30, bus communication cable, 0.3 m (1')					
7602032	System Cable 31, USB cable					
7318290	BioFrac Accessory Cable, 15-pin D to bare wires, for connecting BioFrac fraction collector					
7885013	NGC Autosampler Cables, for connection with the NGC SIM					
For NGC syste	ems ordering information see page 114.					

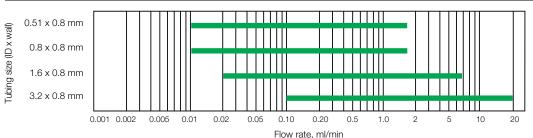
For BioLogic DuoFlow systems ordering information see page 123.

Low-Pressure Tubing

- Silicone tubing contains no cytotoxic extractables and has excellent wetting properties. Autoclavable and heatable for pyrogen removal. May be damaged by concentrated acids and bases
- Tygon tubing clear and tough, tolerates greater pressures than silicone; transparent; should not be autoclaved; may be damaged by high concentrations of alcohol
- PharMed tubing has a wider range of chemical compatibility than silicone or Tygon and is ideal for use in pump heads of the Model EP-1 Econo[™] pump, Econo gradient pump, and BioLogic[™] LP system; lasts ten times longer than Tygon or silicone
- **PTFE tubing** chemically inert; can be used with virtually any reagent, stable up to 400°C

Pump Tubing Kits

Precut tubing for the Model EP-1 Econo pump, Econo gradient pump, and BioLogic LP system is available in PharMed and silicone with a choice of 0.8, 1.6, or 3.2 mm ID. Each kit contains 20 pieces of precut pump tubing and four sets of luer lock fittings and tubing retainers.



Tubing Size Selection Chart

Tubing size selection. Comparison of flow rate ranges of various tubing sizes (ID) when used in the Econo gradient pump, the Model EP-1 Econo pump, and the BioLogic LP system.

Tubing Material Comparison

	Silicone	Tygon	PharMed	PTFE
Appearance	Translucent	Clear	Off-white	Translucent
Flexibility	Excellent	Excellent	Excellent	Fair
Autoclavability	Yes	No	Yes	Yes
Chemical compatibility	Fair	Fair	Good	Excellent
Performance in peristaltic pumps	Good	Fair	Excellent	Not acceptable

Ordering Info	ormation
Catalog #	Description
Silicone Tubir	ng
7318210	Silicone Tubing, 0.8 mm ID/0.8 mm wall, 10 m
7318211	Silicone Tubing, 1.6 mm ID/0.8 mm wall, 10 m
7318212	Silicone Tubing, 3.2 mm ID/0.8 mm wall, 10 m
Tygon Tubing	
7318213	Tygon Tubing, 0.51 mm ID/0.8 mm wall, 10 m
7318214	Tygon Tubing, 0.8 mm ID/0.8 mm wall, 10 m
7318215	Tygon Tubing, 1.6 mm ID/0.8 mm wall, 10 m
PharMed Tub	ing
7318207	PharMed Tubing, 0.8 mm ID/1.0 mm wall, 10 m
7318208	PharMed Tubing, 1.6 mm ID/1.0 mm wall, 10 m
7318209	PharMed Tubing, 3.2 mm ID/1.0 mm wall, 10 m
Pump Tubing	Kits
7318240	Pump Tubing Kit, 0.8 mm ID silicone, 20 precut lengths and 4 sets of fittings, for use with EP-1 Econo pump
7318241	Pump Tubing Kit, 1.6 mm ID silicone, 20 precut lengths and 4 sets of fittings, for use with EP-1 Econo pump
7318242	Pump Tubing Kit, 3.2 mm ID silicone, 20 precut lengths and 4 sets of fittings, for use with EP-1 Econo pump
7318247	Pump Tubing Kit, 0.8 mm ID PharMed, 20 precut lengths and 4 sets of fittings
7318248	Pump Tubing Kit, 1.6 mm ID PharMed, 20 precut lengths and 4 sets of fittings
7318249	Pump Tubing Kit, 3.2 mm ID PharMed, 20 precut lengths and 4 sets of fittings
7319007	Econo Gradient Pump Tubing Kit, includes 2 each of 0.8, 1.6, and 3.2 mm PharMed tubing, for use with Econo gradient pump

High-Pressure Tubing and Tubing Kits

- **PTFE FEP tubing** recommended for pre-pump connections; can withstand medium pressure; translucent, semiflexible, chemically inert, and autoclavable
- **Tefzel or PEEK tubing** recommended for post-pump connections; both withstand high pressure and are

chemically inert and autoclavable. Tefzel is translucent and slightly flexible. PEEK is opaque; the color indicates the inside diameter

 Tubing kits — set of premade tubing with fittings to simplify setup of the BioLogic DuoFLow[™] system

Ordering Information

Catalog #	Description
7500603	PTFE FEP Tubing, 1/8" (0.125", 3.2 mm) OD x 0.062" (1.6 mm) ID, 15' (4.6 m),
	for pre-pump buffer inlet lines to the pump heads
7500602	Tefzel Tubing, 1/16" (0.062", 1.6 mm) OD x 0.020" (0.5 mm) ID, 30' (9.1 m),
	for system connections post-pump
7600604	PEEK Tubing, orange, 1/16" OD x 0.020" ID x 30', rated to 5,000 psi
7600605	PEEK Tubing, green, 1/16" OD x 0.030" ID x 30', rated to 3,000 psi
7600650	F10 Tubing Kit, includes precut and fitted PTFE, Tefzel, and orange PEEK tubing for installation of
	BioLogic DuoFlow basic chromatography system running at flow rates <40 ml/min
7600652	F40 Tubing Kit, includes precut and fitted PTFE, Tefzel, and green PEEK tubing for installation of
	BioLogic DuoFlow basic chromatography system running at flow rates ≥40 ml/min
7602046	pH Tubing Kit, includes orange and green PEEK 1/4–28 prefitted tubing lengths for connection of the
	pH flow cell to the chromatography system
7602002	BioLogic Maximizer Tubing Kit, includes 4 PTFE FEP prefitted tubing lengths for connection of solvent
	vials to the BioLogic Maximizer mixer; color coding indicates buffer solution
7602003	BioLogic Maximizer Interconnect Tubing, includes 2 PEEK prefitted tubing lengths for connection of
	BioLogic DuoFlow pumps to the BioLogic Maximizer valve system

Medium- and High-Pressure Fittings

The BioLogic DuoFlow[™] fittings kit includes all parts necessary to connect medium- and high-pressure columns to medium-pressure chromatography systems.

For More Information

Request or download bulletin: column connection instructions - 5326

Ordering Info	rmation		
Catalog #	Diagram	Description	Quantity
Medium- and 7600550	High-Pressure F	Fittings Kit BioLogic System Fittings Kit, includes PEEK and Tefzel nuts, ferrules, unions, plugs, and luer syringe	1
Individual Me	dium- and High-	Pressure Fittings	
7885015		PEEK Nut , 1/8", 10	10
7885007	-	10-32 PEEK Union , 1/16", 0.020	1
7885008	<u></u>	Fittings Tightener, (short)	1
7885010		Adaptor, FEM Slip Luer-FEM 10-32 + Adap, Quick Con, M Luer-FEM 10-32	1
7320113		Luer to BioLogic System Fittings Kit, includes 1/4–28 female to male luer, 1/4–28 female to female luer, to connect 1 cartridge to a BioLogic DuoFlow system	1
7500556		Ferrule and Lock Ring, for 1/16" OD (1.6 mm) tubing	10
7500559		Tefzel Cap, 1/4–28 female connection, to plug unused tubing	5
7500560		BioLogic Fittings Tool	1
7500561		Tefzel Union Adaptor , 1/4–28 to M6, to connect 1 M6 column to a BioLogic DuoFlow system	2
7500562		Tefzel Union, 1/4–28 to 1/4–28 to extend tubing	5
7500563		Tefzel Plug, 1/4–28 male connection, to plug unused ports on valves and columns	5
7500564		HPLC Column to BioLogic System Adaptors, 2 fittings to connect 1 HPLC column (10-32) to a BioLogic DuoFlow system	2
7500565	110	Econo-Column to BioLogic System Fittings Kit, 2 fittings to connect 1 Econo-Column (luer) column to a BioLogic DuoFlow system	1 set
7500566		Bottle Cap Kit, includes 2 bottle caps, 2 plugs	1 set
7500567		UNO M6 Fittings Kit, includes 2 nuts and 4 ferrules to connect UNO column to an FPLC system	1 set
7500568	() • •	UNO 10-32 Fittings Kit, includes 2 nuts and 4 ferrules to connect UNO column to an HPLC system	1 set
7500569		Delrin Nut, for 1/16" OD (1.6 mm) tubing	10
7500570		Delrin Nut, for 1/8" OD (3.2 mm) tubing	5
7500571		Ferrule and Lock Ring, for 1/8" OD (3.2 mm) tubing	5
7500703	(Inline Filter Kit, includes 1 inline filter and 2 replacement frits	1
7500704		Replacement Frits, for inline filter kit	5
7500553		1/8" OD (3.2 mm) Pre-Pump Fittings, includes Delrin nut, ferrules, lock ring	5
7500554		1/16" OD (1.6 mm) Post-Pump Fittings, includes Delrin nut, ferrules, lock ring	10
7601308		Long Fingertight Fittings, 10-32 x 0.82", for PEEK and Tefzel tubing	4
7601311	- HILE	Long Fingertight Fittings, 10-32 x 1.03", for PEEK and Tefzel tubing	4

Low-Pressure Fittings

The low-pressure system fittings kit is useful to adapt various tubing sizes, to make liquid connections, and to direct and stop liquid flow.

For More Information

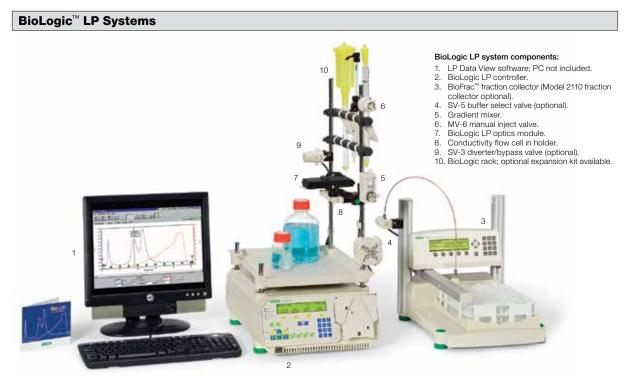
Request or download bulletin: column connection instructions - 5326

Catalog #		Description			
Medium- and High-Pressure Fittings Kit 7318220 Low-Pressure System Fittings Kit, polycarbonate/polypropylene, 250 pieces 7319006 Econo Gradient Pump Fittings Kit, includes 32 fittings, 12 tubing retainers					
Catalog #	Diagram	Description	Quantity	Material	
Individual I	Low-Pressure Fitting	S			
7318221*		0.8 mm Barb to Female Luer	25	Polypropylene	
7318222*	a 1	1.6 mm Barb to Female Luer	25	Polypropylene	
7318223*		3.2 mm Barb to Female Luer	25	Polypropylene	
7318224		0.8 mm Barb to Male Luer	25	Polypropylene	
7318225	~	1.6 mm Barb to Male Luer	25	Polypropylene	
7318226		3.2 mm Barb to Male Luer	25	Polypropylene	
7318228		Female Luer to Female Luer	10	Polypropylene	
7318230		Male Luer to Male Luer	10	Polypropylene	
7318232		Female Luer Plug	25	Polypropylene	
7318233	Þ	Male Luer Plug	25	Polypropylene	
7318229		Female Luer T-Connector	10	Polypropylene	
7328302		0.8 mm Barb T-Connector, recommended for minimal dead-volume connection	25	Polypropylene	
7328300	0-14-0	0.8 mm Barb to Barb Connector , recommended for minimal dead-volume connection	25	Polypropylene	
7328103		3-Way Stopcock, 2 female luer to male luer	10	Polycarbonate/ polypropylene	
7328107		3-Way Stopcock, nylon, solvent resistant	10	Nylon/polypropylene	
7328102		2-Way Stopcock, female luer to male luer	10	Polycarbonate/ polypropylene	
7323245	Ĩ.	Luer Tubing Adaptor, with 5' of 0.8 mm ID PTFE tubing	5	Polypropylene/PTFE	
7328202		Double Luer Tubing Adaptor, with 5' of 0.8 mm ID PTFE tubing	1	Polypropylene/PTFE	
7320111		Luer to M6 Adaptor Fittings Kit, includes luer to M6 fittings to connect 1 cartridge to an FPLC system	1	PEEK/Tefzel	
7320112		Luer to 10-32 Adaptor Fittings Kit, includes luer to 10-32 fittings to connect 1 cartridge to an HPLC system	1	Polypropylene/PTFE	
7320113		Luer to BioLogic System Fittings Kit, includes 1/4–28 female to male luer, 1/4–28 female to female luer to connect 1 cartridge to a BioLogic DuoFlow system	1	Polypropylene/PTFE	

Low-Pressure Chromatography Systems

Bio-Rad offers the BioLogic low pressure system and components for protein purification. All are capable of operating from 30–45 psi (2–3.4 bar) with flow rates ranging from 0.002–40 ml/min.

	Flow Rate	Pressure Limit	Techniques	UV Detection	Conductivity	pH Monitor	Sample Loading	Fraction Collection	Gradient
BioLogic [™] LP dual peristaltic pump	0.04–40 ml/min	30 psi/ 2 bar	Affinity, ion- exchange, size exclusion/desalting, HIC, CHT [™]	254 and 280 nm	0–500 ms/cm	-	Custom-sized loops and MV-6 manual sample inject valve	External; Model 2110 or BioFrac [™] fraction collector	•
Econo gradient pump	0.002–40 ml/min	30 psi/ 2 bar	Affinity, ion exchange, size exclusion/desalting, HIC, CHT [™]	254 and 280 nm	0–500 ms/cm with EG monitor	_	Custom-sized loops and MV-6 manual sample inject valve	External; Model 2110 or BioFrac fraction collector	•



The BioLogic LP low-pressure chromatography system offers high performance, versatility, ease of use, and affordability. Its compact design minimizes the workspace required in the coldroom or on the laboratory bench. The BioLogic LP system includes features such as: LP Data View[™] software — easy-to-use software designed for the BioLogic LP system. The software captures data, multitasks, and prints data from any computer that runs Windows XP or Windows 7 operating systems; requires use of one serial port

- Methods storage the system stores up to 50 methods; each method can include up to 50 pump steps and 50 fraction collection steps
- Buffer selection select up to four buffers and completely automate sample separation with the addition of an SV-5 buffer select valve; the valve can also be used to automatically load large sample volumes
- Detection capabilities the system includes both 254 and 280 nm filters for nucleic acid and protein detection and a conductivity cell to monitor gradient progress
- A high-flow pump the system houses a peristaltic pump with a flow rate range of 0.05–40 ml/min (20 ml/min per channel; dual-channel peristaltic pump) and maximum backpressure of 30 psi (0.2 MPa). The system

is compatible with Econo-Column[®] low-pressure chromatography columns, Bio-Rad chomatography resins, GE Healthcare HiTrap cartridges, SOURCE resins, and all other low-pressure chromatography resins

- Fraction collection the system offers both simple and sophisticated fraction collection choices. Collect into eighty 13 x 100 mm tubes or micro tubes using the Model 2110 fraction collector (page 131), or collect into virtually any size container, from microplates to carboys, using the BioFrac[™] fraction collector (page 132); in addition, the BioLogic LP system supports the use of other fraction collectors
- IEC 61010 safety certification

For More Information

Web: bio-rad.com/biologiclp Request or download bulletins: system information — 2038 and 2327; column connection instructions — 5326

Catalog #	Description					
7318300	Standard BioLogic LP System, 100/120 V, includes BioLogic LP controller, BioLogic rack, accessory kit with					
	MV-6 manual inject valve, proportioning valve/mixer, UV optics, conductivity cell, tubing and fittings, column and conductivity cell holder, starter kit					
7318301	Standard BioLogic LP System, 220/240 V, includes same as #7318300					
7318302	BioLogic LP System with Model 2110 Fraction Collector, 110/120 V, includes standard BioLogic LP system,					
	SV-3 diverter/bypass valve, system cable 1					
7318303	BioLogic LP System with Model 2110 Fraction Collector, 220/240 V					
7318304	BioLogic LP System with BioFrac Fraction Collector, 110/120 V, includes standard BioLogic LP system,					
	system cables 3 and 15					
7318305	BioLogic LP System with BioFrac Fraction Collector, 220/240 V					
7318336	BioLogic LP System with Model 2110 Fraction Collector and LP Data View Software, 110/120 V,					
	includes SV-3 diverter/bypass valve, system cable 1, 25' serial cable					
7318337	BioLogic LP System with Model 2110 Fraction Collector and LP Data View Software, 220/240 V					
7318338	BioLogic LP System with BioFrac Fraction Collector and LP Data View Software, 110/120 V,					
7318339	includes system cables 3 and 15, 25 serial cable BioLogic LP System with BioFrac Fraction Collector and LP Data View Software, 220/240 V					
Pump Tubing						
7318320*	MV-6 Manual Inject Valve, 6 ports					
7318321*	SV-5 Buffer Select Valve, 5-port, 4-position solenoid random-access valve, 30 psi (2 bar) limit					
7318322*	SV-3 Diverter/Bypass Valve, 3-way valve					
7318323	Gradient Mixer					
7318324	BioLogic LP Optics Module					
7318165	UV Flow Cell, replacement					
7318166	Lamp, replacement					
7318167	Filter Assembly, 254 and 280 nm					
7318155	Conductivity Flow Cell					
7318350	BioLogic LP Starter Kit, includes buffers, standard, anion exchange cartridge					
* Ear mara inf	ormation, see page 141.					

• Automatically records run events such as Start, End, Fraction Advance, Hold, Pause, and Continue

Prints customized reports

For More Information

Exports data to other applications

Web: bio-rad.com/biologicLPcomponents Request or download bulletin: 2038

BioLogic[™] LP Data View[™] Software

BioLogic LP Data View software allows complete freedom to rescale chromatogram axes both during and after a run, to multitask during chromatogram data capture, and to print using any dedicated or networked printer.

LP Data View software:

- Runs on Windows XP or Windows 7 operating systems; requires use of one serial or USB port
- Automatically records method information for each run and allows notes to be recorded with data

Ordering Information

Catalog #	Description
7318365	LP Data View Software for the BioLogic LP System, includes software CD, cable adaptor

BioLogic[™] LP Valves

Bio-Rad offers three valve options for the BioLogic LP system.

Buffer Selection and Automated Sample Loading Valve

The optional SV-5 buffer select valve expands the preparative purification capabilities of the BioLogic LP system, allowing it to control up to four buffers and to automatically inject large-volume samples. The SV-5 valve attaches directly to the BioLogic rack and is controlled by the BioLogic LP system.

Manual Sample Injection Valve

Ordering Information

The MV-6 injection valve has six ports with female luer fittings. It accommodates user-made loops of any volume. The MV-6 valve mounts directly on the BioLogic system rack and the Econo[™] gradient pump rack.

Fraction Collection/Column Bypass Valve

The optional SV-3 diverter/bypass valve is a two-position solenoid valve controlled through the Econo gradient pump, the Model EP-1 Econo pump, or the BioLogic LP system. When connected to the BioLogic LP system,



the SV-3 valve directs effluent flow from the column to a bypass position, or from the fraction collector to a waste position. The function of the valve is determined by the mini-DIN connection on the rear of the instrument and by the plumbing of the valve. When connected to either the Model EP-1 Econo pump or the Econo gradient pump, the SV-3 valve functions only as a fraction collector diverter valve. The SV-3 valve connects directly to the BioLogic system rack and the Econo gradient pump rack.

Catalog #	Description
7318321	SV-5 Buffer Select Valve, 5-port, 4-position solenoid random-access valve, 30 psi (2 bar) limit
7318320	MV-6 Manual Inject Valve, 6 ports
7318322	SV-3 Diverter/Bypass Valve, 3-way valve

bio-rad.com/lowpressure

Econo[™] Gradient Pump

The Econo gradient pump is suited for any low-pressure protein purification application. It is the only stand-alone peristaltic pump capable of both isocratic and gradient elution. The Econo gradient pump works seamlessly with other Bio-Rad instruments such as the Model 2110 and BioFrac[™] fraction collectors, the EM-1 UV monitor, and the EG-1 gradient monitor. Configure the system according to your needs and budget using the Econo gradient pump as a starting point.

The Econo gradient pump is a two-channel bidirectional pump that is ideal for preparative applications and for purification of recombinant proteins.

- Simple setup and programming
- Flow rates of 0.1–40 ml/min
- Control of a gradient mixer for binary gradient formation
- Control of an optional fraction collector and diverter valve
- Automated calibration procedures for a variety of tubing sizes
- Maximum pressure of 30 psi
- Compatible with the BioLogic DuoFlow[™] chromatography systems

For More Information

Web: bio-rad.com/econogradient Request or download bulletin: 2438

Econo gradient pump and Model 2110 fraction collector: 1. Econo gradient pump. 2. Gradient mixer. 3. MV-6 manual sample inject valve. 4. Econo-Column® column with flow adaptor. 5. SV-3 diverter/bypass valve. 6. Model 2110 fraction collector.

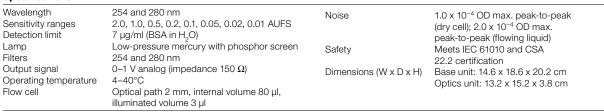
Catalog #	Description				
7319001	Econo Gradient Pump, 100/120 V, includes tubing and fittings kits				
7319002	Econo Gradient Pump, 220/240 V				
Combinatio	n Systems				
7319030	Econo Gradient Pump Combo 1, 100/120 V, includes Econo gradient pump, gradient mixer valve				
7319032	Econo Gradient Pump Combo 1, 220/240 V				
7319034	Econo Gradient Pump Combo 2, 100/120 V, includes Econo gradient pump, gradient mixer valve,				
	MV-6 manual inject valve, rack with column clamps				
7319036	Econo Gradient Pump Combo 2, 220/240 V				
7319038	Econo Gradient Pump Combo 3, 100/120 V, includes Econo gradient pump, gradient mixer valve,				
	rack with column clamps				
7319040	Econo Gradient Pump Combo 3, 220/240 V				
Valves					
7318322	SV-3 Diverter/Bypass Valve, 3-way valve				
7318323	Gradient Mixer				
7318320	MV-6 Manual Inject Valve, 6 ports				
Cables*					
7319010	System Cable 22, Y-cable for connecting Econo gradient pump to Model 2110 fraction collector				
Accessories					
7319004	Econo Gradient Pump Rack, preassembled				
7319006	Econo Gradient Pump Fittings Kit, includes 32 fittings, 12 tubing retainers				
7319007	Econo Gradient Pump Tubing Kit, includes 2 each of 0.8, 1.6, and 3.2 mm PharMed tubing				
* For more inf	ormation, refer to the Cable Guide on page 134.				

Model EM-1 Econo[™] UV Monitor

The Model EM-1 Econo UV monitor is a single-wavelength detector for flowthrough monitoring of effluents from chromatographic columns, centrifugation gradients, and other devices. The monitor consists of a control unit and an optics module that includes both 254 and 280 nm filters and a 2 mm pathlength flow cell.

- Portable optics module with detection close to the column outlet to maximize resolution
- Autozero functionality
- Coldroom compatibility
- LED display of absorbance

Specifications



For More Information

Web: bio-rad.com/modelem1

Ordering Information				
Catalog #	Description			
7318160	Model EM-1 Econo UV Monitor, 100/120 V, includes control module, optics module, filters for 254 and 280 nm wavelengths, system cable 4, fittings kit			
7318162	Model EM-1 Econo UV Monitor, 220/240 V			
Accessories				
7318165	UV Flow Cell, replacement			
7318166	Lamp, replacement			
7318167	Filter Assembly, 254 and 280 nm			

Process-Scale Separations

Bio-Rad has extensive experience serving the separation technology community with process resins that offer optimal solutions for your separation needs. To order Bio-Rad process-scale resins, contact your local Bio-Rad sales representative.

Process Resin Selection Guide

	Available in Process Scale	Foresight [™] Prepacked Columns and Plates	Resin Sampler Pack	Other Prepacked Columns	
Resin	Page #	Page #	Page #	Page #	
Affinity					
Nuvia [™] IMAC	71			91	
Profinity [™] IMAC	72			91	
UNOsphere SUPrA [™] rProtein A	78	94–95	88	91	
Affi-Prep [®] Protein A	79			91	
Affi-Gel [®] 10/15	83				
Affi-Gel Blue	80			92	
DEAE Affi-Gel Blue	80			91	
CM Affi-Gel Blue	81				
Affi-Prep polymyxin	82				
Affi-Gel boronate	81				
Affi-Gel HZ	84				
Affi-Gel 102	84				
Analytical Grade Resins					
AG [®] 1, 4	61				
AG 50W	61				
AG 501	61				
Chelex®	61				
Hydrophobic Interaction					
Macro-Prep [®] methyl HIC	87				
Macro-Prep t-butyl HIC	87				
BioBeads [™] SM-2	87				
	01				
lon Exchange Nuvia [™] Q	57	04.05			
	57	94-95			
Nuvia S	57	94-95			
Nuvia HR-S	57 57	94–95 94–95	88	91–92	
UNOsphere [™] Q					
JNOsphere S	57	94–95	88	92	
Macro-Prep High Q Macro-Prep DEAE	59 59		88 88	92 92	
Viacro-Prep DEAE	59		88	92	
Macro-Prep Filgh S Macro-Prep CM	59		00	91	
	09				
Mixed-Mode					
Nuvia [™] cPrime [™]	65	94-95		91	
CHT™ Type I	66	94-95	88	91	
	66	94-95	88	91	
	67	94–95		91–92	
Bio-Gel® HT/HTP	69			04.00	
CFT™ Type II	68		88	91–92	
Size Exclusion					
Bio-Gel A	86				
Bio-Gel P	85				
Bio-Beads SM-2	87				
Bio-Beads S-X	86				

For product applications and descriptions, please refer to the chromatography resin/media selection guide on pages 55–56.

Process-Scale Chromatography Resin

Nuvia[™] resins — a family of next-generation ion-exchange products built on an industry proven rigid polymer base matrix. Nuvia Q and S resins offer superior flow properties and low nonspecific binding while delivering high capacity and unique selectivity. Nuvia HR-S is a high-resolution cation exchanger capable of separating very challenging high molecular weight impurities. Nuvia resins bring together a unique set of properties specifically designed to meet the demands of current and future downstream processes. Nuvia resins are flexible and robust with a large operational window, making them effective in capture and/or polish steps.

For More Information Web: bio-rad.com/nuvia

UNOsphere™ resins — specialized for fast mass transfer, UNOsphere resins deliver high binding capacity at high flow rates while maintaining low backpressure. These robust polymeric resins formed by single-step polymerization carry either ionic (UNOsphere Q and S) or affinity (UNOsphere SUPrA[™]) functionality, making them ideal for the efficient purification of biopharmaceutical molecules from feed stream at any stage of the downstream process.

For More Information Web: bio-rad.com/processIEX

Macro-Prep® resins — polymeric methacrylate resins are available with strong or weak ion exchange functionalities. These rigid macroporous hydrophilic resins provide excellent dynamic binding capacity, resolution, and throughput at high flow rates for the purification of biomolecules. Macro-Prep resins are an excellent choice for process-scale applications such as blood fractionation purification.

For More Information Web: bio-rad.com/processIEX

CHT[™] **ceramic hydroxyapatite media** — CHT is a robust mixed-mode media with unique separation properties that delivers exceptional selectivity for purification of biomolecules. As a proven scalable polishing step in mAb and vaccine purification, CHT effectively eliminates common feedstream contaminants, such as aggregates, leached Protein A, DNA, and host cell proteins, in a single step. This provides you the flexibility to maximize your process economics. Use **CFT**[™] **ceramic fluoroapatite** for protein separations requiring acidic-buffered conditions.

For More Information Web: bio-rad.com/processCHT MPC[™] media — MPC is a fluorinated derivative of ceramic hydroxyapatite providing the same robust impurity clearance as CHT Type I, 40 µm. Use MPC to maximize your process economics for specialty protein purification applications. Contact your local Bio-Rad representative for additional information.

For More Information Web: bio-rad.com/MPC

Nuvia[™] cPrime[™] resin — this resin is designed for process-scale purification of a wide variety of therapeutic proteins. The unique selectivity allows method developers to use hydrophobic and cation exchange interaction modes to achieve effective purification. The resins have a large design space for binding and elution, allowing for the development of highly robust methods in a commercial manufacturing setting. Nuvia cPrime is built on a rigid, mechanically and chemically stable macroporous base matrix with a particle size optimized to deliver exceptional flow properties, fast mass transfer, and stability.

For More Information Web: bio-rad.com/nuvia

CFT[™] ceramic fluoroapatite media — this chemically pure form of fluoroapatite is a rigid, spherical, and macroporous media used in the purification of biologically significant compounds. It is ideally suited for the bioprocessing industry. CFT can be used under stringent conditions to separate acidic proteins requiring buffered conditions as low as pH 5.6. CFT has high binding capacity and may be used reproducibly over an extended number of chromatography runs. When CFT is used, process engineers can perform purifications across a range of lower pH values to obtain optimal and reproducible results for the targeted biomolecule.

For More Information Web: bio-rad.com/processCFT

AG[®] **resin** — AG resins are a highly referenced and extensively used line of chromatography resins for the separation of low molecular weight molecules, such as inorganic ions, organic acids, peptides, and carbohydrates, from biopharmaceutical preparations and ancillary buffers used in biomanufacturing. They are highly processed to remove impurities. Biotechnology-grade AG resins are further treated to reduce bioburden to extremely low levels, making them suitable for process-scale purification of biopharmaceuticals.

For More Information Web: bio-rad.com/processAG **Chelex® resin** — these unique chelating resins bind polyvalent cations with high selectivity and are used to remove metal ions from samples and buffers. They are extensively used in environmental applications, such as glyphosate isolation. Chelex resins are made from a styrene divinylbenzene support coupled to paired iminodiacetate ions.

For More Information Web: bio-rad.com/processAG **Bio-Beads[™] SM-2 resin** — nonpolar polystyrene-based resin for hydrophobic interaction chromatography, Bio-Beads are used extensively for the removal of nonpolar detergents from biological preparations for manufacturing at both laboratory- and process-scale. The resin is reusable and can be easily cleaned with alcohol solutions followed by a distilled water rinse.

For More Information Web: bio-rad.com/processHIC

Chromatography Resin Screening Tools

Foresight[™] Prepacked Plates and Columns

Foresight plates and columns are prepacked with a range of Bio-Rad's process chromatography resins, offering process scientists convenience and reliability for their highthroughput experimentation needs. Their robust design allows process scientists to use the prepacked formats through the entire purification development cycle from high-throughput media screening and small-scale method development to scale-up optimization.

- Prepacked and ready-to-use formats are designed to save process development time
- Different experimental conditions can be evaluated to better define an operational window
- High-throughput experiments with minimal sample requirements can be performed
- Available in a variety of chromatography resin modes designed for large-scale bioprocess
- Compatible with robotic liquid handling workstations

For More Information Web: bio-rad.com/foresight



Chromatography Resins/Media Available in Foresight Formats

Mode
Strong anion
Strong cation
rProtein A
Strong anion
Strong cation
Mixed-mode hydrophobic: cationic
Strong cation
Mixed-mode metal affinity: cationic
Mixed-mode metal affinity: cationic
Mixed-mode metal affinity: cationic

Ordering In	formation	
Catalog #	Description	
Foresight Pl	ates, 2 x 96-Well	
7324714	Foresight UNOsphere Q, 20 µl	
7324710	Foresight UNOsphere S, 20 µl	
7324709	Foresight UNOsphere SUPrA, 20 µl	
7324703	Foresight Nuvia Q, 20 µl	
7324701	Foresight Nuvia S, 20 µl	
7324707	Foresight Nuvia HR-S, 20 µl	
7324705	Foresight Nuvia cPrime, 20 µl	
7324716	Foresight CHT Type I, 40 µm, 20 µl	
7324718	Foresight CHT Type II, 40 µm, 20 µl	
7324785	Foresight MPC Type I, 40 µm, 20 µl	
		continues

continues

bio-rad.com/process

Ordering Information		
Description	1 ml	5 ml
Foresight Columns		
Foresight UNOsphere Q	7324732	7324752
Foresight UNOsphere S	7324730	7324750
Foresight UNOsphere SUPrA	7324729	7324749
Foresight Nuvia Q	7324721	7324741
Foresight Nuvia S	7324720	7324740
Foresight Nuvia HR-S	7324723	7324743
Foresight Nuvia cPrime	7324722	7324742
Foresight CHT Type I, 40 µm	7324735	7324755
Foresight CHT Type II, 40 µm	7324736	7324756
Foresight MPC Type I, 40 µm	7324737	7324757
Foresight RoboColumn Units, 1 row of 8 columns*		
Foresight UNOsphere Q RoboColumn Unit	7324819	7324820
Foresight UNOsphere S RoboColumn Unit	7324813	7324814
Foresight UNOsphere SUPrA RoboColumn Unit	7324834	7324835
Foresight Nuvia Q RoboColumn Unit	7324804	7324805
Foresight Nuvia S RoboColumn Unit	7324801	7324802
Foresight Nuvia HR-S RoboColumn Unit	7324831	7324832
Foresight Nuvia cPrime RoboColumn Unit	7324807	7324808
Foresight CHT Type I, 40 µm RoboColumn Unit	7324822	7324823
Foresight CHT Type II, 40 µm RoboColumn Unit	7324825	7324826
Foresight MPC Type I, 40 µm RoboColumn Unit	7324828	7324829
* Foresight RoboColumn units are to be used with robotic liqui	d handling workstations.	

Please visit bio-rad.com/foresight for more information on prepacked columns and plates.

Chromatography: Laboratory and Process Separations Subject Index

Subject Index

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Electrophoresis and Blotting

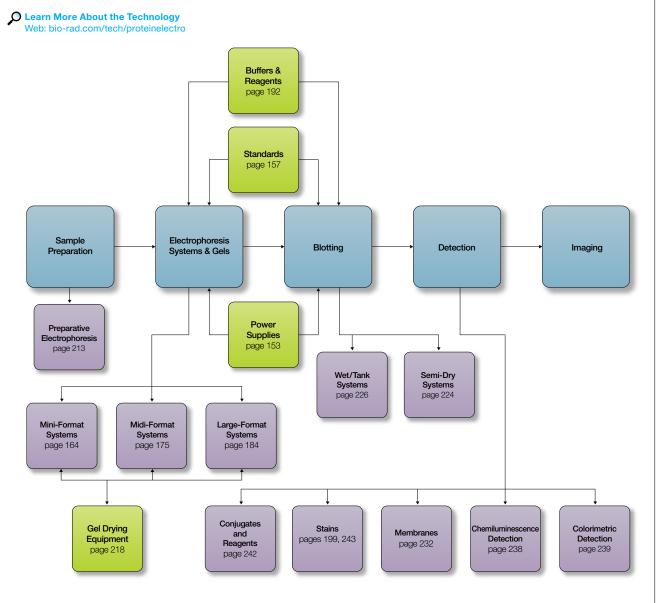
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Electrophoresis and Blotting Solutions

Bio-Rad offers a complete solution for all of your electrophoresis and blotting needs, from sample preparation to imaging. Built on over 50 years of pioneering expertise, our innovative products offer reliable, reproducible results for all of your applications.

Protein Electrophoresis

A complete suite of electrophoresis products, from cells and precast gels to buffers and reagents, is available for the separation of proteins.



Overview of Vertical Gel Electrophoresis Systems

The Mini-PROTEAN[®], Criterion[™], PROTEAN[®] II, and PROTEAN[®] Plus systems all consist of electrophoresis cells and blotting equipment. These systems provide:

- A choice of four size formats with options to meet your specific needs for resolution, capacity, and processing speed
- Cell designs that eliminate current leakage to provide the most reproducible gels and consistent run times
- Dodeca[™] cells for high-throughput 2-D separations in mini-, midi-, and large-format gel sizes

Vertical Electrophoresis System Selection Guide

	Mini-PROTEAN System	Criterion System (Midi)	PROTEAN II System (Large)	PROTEAN Plus System (Large)
Advantages	Run 1–4 precast or handcast gels in mini format with the Mini-PROTEAN Tetra cell Wing clamp assembly allows easy, fast setup and leak-free operation Minimize reagent cost and waste Fastest turnaround of 2-D data for 2-D-in-a-day capability Run up to 12 mini handcast or precast gels with the Mini-PROTEAN [®] Dodeca [™] cell	Fast setup with drop-in gel and cell design (precast or handcast) Run 1–2 precast Criterion or handcast gels with the Criterion cell Integrated upper buffer chamber ensures leak-free operation Optimal combination of pl separation and fast run times Capability for <1 hr 2-D runs for 2-D-in-a-day results Run up to 12 midi handcast or precast gels with the Criterion Dodeca cell	Large-format gel system offers greater resolution over smaller formats and can be used with handcast gels Versatility to perform 1-D or 2-D gel electrophoresis Can accommodate up to 4 gels and is available in xi or XL format for running a variety of gel sizes Multi-cell is available for running up to 6 gels	Offers maximum resolution in a single gel and the longest range of MW separation Run up to 12 gels with the PROTEAN Plus Dodeca cell
Compatible (Precast Handcast	Gel Formats Mini-PROTEAN precast gels (page 168) Ready Gel [®] precast gels (page 171) Mini-PROTEAN empty cassettes (pages 168, 173) Mini-PROTEAN casting plates (page 166)	Criterion, Criterion™ TGX™, and Criterion XT precast gels (page 177) Criterion empty cassettes (page 182)	PROTEAN II casting plates (page 187)	PROTEAN Plus casting equipment (page 190)
Electrophore	s is Cells Mini-PROTEAN Tetra (page 164) Mini-PROTEAN 3 Dodeca (page 167)	Criterion (page 175) Criterion Dodeca (page 176)	PROTEAN II xi/XL (page 184) PROTEAN II xi/XL multi-cells (pages 186)	PROTEAN Plus Dodeca (page 189)

continues

Vertical Electrophoresis System Selection Guide (cont.) **PROTEAN II System PROTEAN Plus System Mini-PROTEAN System Criterion System** Gel Dimensions (W x L x thickness) Mini-PROTEAN precast gels: Criterion precast gels: 8.6 x 7.2 x 0.1 cm 13.3 x 8.7 x 0.1 cm Ready Gel precast gels: 8.3 x 6.4 x 0.1 cm Gel Cassette Dimensions 15.0 x 10.6 cm 20.0 x 18.3 cm $(W \times L)$ 10.0 x 8.0 cm 18.5 x 20.5 cm 20.0 x 20.5 cm 25.0 x 20.5 cm **Compatible Transfer Systems** Wet/tank transfer Mini Trans-Blot® cell (page 226) Criterion wire blotter (page 227) Trans-Blot cell (page 228) Trans-Blot Plus cell (page 229) Criterion blotter (page 227) Trans-Blot Plus cell (page 229) Criterion plate blotter (page 227) Trans-Blot® cell (page 228) Trans-Blot cell (page 228) Trans-Blot Plus cell (page 229) Trans-Blot SD cell (page 225) Trans-Blot SD cell (page 225) Trans-Blot SD cell (page 225) Semi-dry transfer Trans-Blot Turbo (page 224) Trans-Blot Turbo (page 224)

Precast Gels

Bio-Rad offers a broad range of precast gels, including two size formats of polyacrylamide gels, for a number of vertical protein and nucleic acid electrophoresis applications, and one set of agarose gels for horizontal nucleic acid electrophoresis. These gels are part of complete systems of compatible electrophoresis and blotting cells. Refer to the following table to select the appropriate gel type and buffers for your polyacrylamide gel–based applications.

Availability of Precast Gel Types Based on Application

	Mini-	Ready			Sample	
Gel Type	PROTEAN	Gel	Criterion	Application	Buffer	Running Buffer
TGX	•		•	SDS-PAGE Native PAGE	Laemmli Native	Tris/glycine/SDS Tris/glycine
Tris-HCl		•	•	SDS-PAGE Native PAGE	Laemmli Native	Tris/glycine/SDS Tris/glycine
Stain-Free [™]	•		•	SDS-PAGE	Laemmli	Tris/glycine/SDS
Bis-Tris			•	SDS-PAGE for small to large proteins	XT	XT MOPS or XT MES
Tris-acetate	•		•	SDS-PAGE for large proteins Native PAGE	XT Native	XT Tricine Tris/glycine
Tris-Tricine	•		•	SDS-PAGE for peptides, small proteins	Tricine	Tris/Tricine/SDS
IEF		•	•	IEF	IEF	Anode and cathode buffer
TBE	•		•	dsDNA separation	Nucleic acid	Tris/boric acid/EDTA
TBE-urea	•	•	•	ssDNA and RNA separation	TBE-urea	Tris/boric acid/EDTA
Zymogram		•	•	Protease detection	Zymogram	Tris/glycine/SDS

In general, single-percentage gels will best separate bands that are close in MW. If your sample contains a broad range of MWs, a gradient gel allows both high- and low-MW bands to be resolved on the same gel. Molecules with a range of sizes can be separated on linear gradient gels because the larger pore sizes allow resolution of larger molecules, while pore sizes that decrease toward the bottom of the gel restrict excessive separations of small molecules.

Power Supplies

Bio-Rad offers a complete line of power supplies that are certified to IEC 1010-1, EN 61010 — the most rigorous international safety standard — to ensure the highest personal and environmental protection.

Technique and Recommended				ns** (Initial)		al Condition	ns** (Final)	Typical Run	PowerPac [™] Power	
Apparatus	(W x L x Thickness),* Qty	W	V	mA	W	V	mA	Time	Supply	
Laemmli (SDS), O'Farrell S	Second Dimension (SDS)									
PROTEAN [®] II xi cell	160.0 x 160.0 x 1.5 mm, 2 gels	_	100	35(C)	_	350	35(C)	5 hr	HV or Universal	
PROTEAN II XL cell	183.0 x 200.0 x 1.5 mm, 2 gels		100	35(C)	_	350	35(C)	5 hr	HV or Universal	
Criterion [™] cell	133.0 x 87.0 x 1.0 mm, 2 gels	_	200(C)	200	_	200(C)	80	55 min	Basic or HC	
Criterion cell	133.0 x 87.0 x 1.0 mm, 2 gels	_	300(C)	224	_	300(C)	164	20–26 min	Basic, HV, or Universi	
Mini-PROTEAN® Tetra cell	83.0 x 73.0 x 1.0 mm, 4 gels	_	200(C)	240	_	200(C)	120	35–45 min	Basic or HC	
Mini-PROTEAN Tetra cell	83.0 x 73.0 x 1.0 mm, 4 gels	_	300(C)	360	-	300(C)	228	15 min	Basic, HV, or Univers	
Mini-PROTEAN Tetra cell	83.0 x 73.0 x 1.0 mm, 4 gels	_	400(C)	456	_	400(C)	416	10 min	HV or Universal	
High-Throughput Electrop			()			()				
PROTEAN Plus	200.0 x 205.0 x 1.0 mm, 12 gels		200(C)	1,000	_	200(C)	350	6 hr	HC or Universal	
Dodeca™ cell	250.0 x 205.0 x 1.0 mm, 12 gels		200(C) 200(C)	1,000	_	200(C) 200(C)	350	6 hr	HC or Universal	
	256.0 x 230.0 x 1.0 mm, 12 gels		150(C)	1,200	_	150(C)	300	18–20 hr	HC or Universal	
PROTEAN II xi/XL multi-cell	160.0 x 200.0 x 1.5 mm, 6 gels	_	150	480(C)	-	500	480(C)	5 hr	Universal	
Criterion [™] Dodeca [™] cell	133.0 x 87.0 x 1.0 mm, 12 gels	-	200(C)	1,000–1,400	-	200(C)	400-500	55 min	HC or Universal	
Mini-PROTEAN 3 Dodeca cell	83.0 x 73.0 x 1.0 mm, 12 gels	-	200(C)	600	-	200(C)	360	45 min	HC or Universal	
EF, O'Farrell First Dimens	sion									
PROTEAN II xi cell	150.0 x 1.5 mm tubes, 4 (minimum)	-	800(C)	3.5	-	800(C)	<1	16 hr	HV or Universal	
Mini-PROTEAN II tube cell	75.0 x 1.0 mm tubes, 8 (minimum)	-	750(C)	1	-	750(C)	<1	3–4 hr	HV or Universal	
Preparative PAGE										
Model 491 prep cell	_	10(C)	300	40	10(C)	400	30	3–8 hr	HV or Universal	
Mini prep cell	_	1(C)	200	5	1(C)	300	3	3–8 hr	HV or Universal	
Protein Electroelution										
Model 422	6 samples	_	200	60(C)	_	150	60(C)	3–4 hr	Basic, HV.	
electro-eluter	0 samples		200	00(0)		100	00(0)	0-411	or Universal	
									or or ivereda	
Polyacrylamide Analytica			100(0)			100(0)				
Model 111 mini IEF cell	125.0 x 65.0 x 0.4 mm	-	100(C)	6	—	100(C)	4	15 min	HV or Universal	
		-	200(C)	6	-	200(C)	4	15 min		
		-	450(C)	4	-	450(C)	1	1 hr		
DNA Restriction Analysis										
Sub-Cell [®] GT cell	150.0 x 200.0 x 5.0 mm	-	80(C)	55	_	80(C)	60	4 hr	Basic or HC	
Mini-Sub [®] cell GT cell	70.0 x 100.0 x 5.0 mm	-	50(C)	25	-	50(C)	30	2 hr	Basic	
Wide Mini-Sub cell GT cell	150.0 x 100.0 x 5.0 mm	-	50(C)	35	-	50(C)	40	2 hr	Basic	
DNA Sequencing Sequi-Gen [®] GT system	380.0 x 500.0 x 0.4 mm	80(C)	1.850	30	80(C)	1.850	30	2–4 hr	HV	
1	000.0 X 000.0 X 0.4 Mill	00(0)	1,000	00	00(0)	1,000	30	2-*4111		
SSCP										
Sequi-Gen GT system	210.0 x 400.0 x 0.4 mm	40(C)	1,800	20	40(C)	1,800	20	2–3 hr	HV	
Microsatellite Mapping										
Sequi-Gen GT system	210.0 x 400.0 x 0.4 mm	50(C)	2,100	25	50(C)	2,100	25	2–3 hr	HV	
Mutation Detection										
DCode [™] system	100.0 x 75.0 x 1.0 mm, 2 gels	_	130(C)	-	-	130(C)	_	2.5 hr	Basic or HV	

continues

Power Supply Selection Guide (cont.)

Technique and								Typical	PowerPac
Recommended	Gel or Tube Size	Typica	I Conditions*	* (Initial)	Typica	al Conditions*	* (Final)	Run	Power
Apparatus	(W x L x Thickness)*, Qty	w	v	mA	w	v	mA	Time	Supply
Western Blotting									
Mini Trans-Blot® cell	83.0 x 73.0 x 0.75 mm, 2 gels	_	100(C)	250	_	100(C)	450	1 hr	HC
Criterion blotter	-								
Wire electrodes	133.0 x 87.0 x 1.0 mm, 2 gels	_	100(C)	250	_	100(C)	450	1 hr	HC
Plate electrodes	133.0 x 87.0 x 1.0 mm, 2 gels	_	100(C)	650	_	100(C)	1,600	30 min	HC
Trans-Blot [®] cell	_								
Wire electrodes	200.0 x 160.0 x 1.5 mm, 1 gel	—	60(C)	210-250	_	60(C)	210-250	5 hr	HC
Plate electrodes	200.0 x 160.0 x 1.5 mm, 1 gel	—	100-150(C)	1,000–1,600	_	100–150(C)	1,000–1,600	1–5 hr	HC
High-intensity transfer	200.0 x 160.0 x 1.5 mm, 1 gel	—	50-100(C)	1,600	_	50–100(C)	1,600	30 min	HC
Trans-Blot Plus cell	265.0 x 280.0 x 1.5 mm, 3 gels	-	100(C)	3,000	_	100(C)	3,000	30 min–1 hr	HC
Semi-Dry Blotting									
Trans-Blot SD cell									
Protein	250.0 x 180.0 x 1.5 mm	_	15(C)	500	_	15(C)	200	15–30 min	HC
DNA/RNA	150.0 x 150.0 x 6.0 mm	_	15	650(C)	-	25	650(C)	10–30 min	HC

* Sizes shown are typical for the corresponding apparatus. For running conditions for additional sizes, see the product instruction manuals.

** (C) = constant; typical conditions are listed as guidelines only and can vary based on sample, buffers, etc.

PowerPac Power Supply Specifications

	PowerPac Basic	PowerPac HC	PowerPac HV	PowerPac Universal
Output range (programmable) Volts Current Power	10–300 V 4–400 mA 75 W (maximum)	5–250 V 0.01–3.0 A 1–300 W	20–5,000 V 0.01–500 mA 1–400 W	10–500 V 0.01–2.5 A 1–500 W
Type of output (with automatic crossover)	Constant voltage or constant current	Constant voltage, constant current, or constant power	Constant voltage, constant current, constant power, or constant temperature	Constant voltage, constant current, or constant power
Timer	1–999 min	1 min–99 hr, 59 min	1 min–99 hr, 59 min	1 min–99 hr, 59 min
Volt-hour control	-	_	• (99,000 V-hr)	• (99,000 V-hr)
Pause/resume function	•	•	•	•
Display	3-digit LED	16-character x 2-line LCD	128 x 64 pixel, backlit graphics LCD	128 x 64 pixel, backlit graphics LCD
Programmable methods	-	1 method up to 3 steps, no storage capability	Stores 9 methods, each with up to 9 steps	Stores 9 methods, each with up to 9 steps
Real-time clock	-	-	•	•
Automatic recovery after power failure	•	•	•	•
Data transfer/archiving	-	-	•	 (optional)
Temperature control	-	-	Via temperature probe; 30–90°C ± 2°C	-
Microampere readout	-	-	•	-
Safety features	No-load detection; sudden load change detection; overload/ short-circuit detection; overvoltage protection	No-load detection; sudden load change detection; ground leak detection; overload/short-circuit detection; overvoltage protection	No-load detection; sudden load change detection; ground leak detection; arc detection; overload/short-circuit detection; overvoltage protection	No-load detection; sudden load change detection; ground leak detection; overload/short-circuit detection; overvoltage protection
Operating conditions	0–40°C; 0–95% humidity	0–40°C; 0–95% humidity	0–40°C; 0–95% humidity	0–40°C; 0–95% humidity
Stackable	•	•	•	•
Number of output jacks	4 sets in parallel	4 sets in parallel	4 sets in parallel	4 sets in parallel
Regulatory	EN-61010, CE	EN-61010, CE	EN-61010, CE	EN-61010, CE
Q/OQ protocols	-	-	 (optional) 	• (optional)
Input power (actual)	90–120 or 198–264 VAC, 50/60 Hz, autoswitching	90–120 or 198–264 VAC, 50/60 Hz, autoswitching	90–120 or 198–264 VAC, 50/60 Hz, autoswitching	90–120 or 198–264 VAC, 50/60 Hz, autoswitching
Dimensions (W x D x H)	21.0 x 24.5 x 6.5 cm	25.0 x 28.5 x 8.0 cm	27.5 x 34.0 x 10.0 cm	27.5 x 34.0 x 10.0 cm
Weight	1.1 kg (2.4 lb)	2.0 kg (4.4 lb)	2.85 kg (6.3 lb)	2.5 kg (5.5 lb)

bio-rad.com/powersupplies

1645059

1645097

1645099

1655058

PowerPac[™] Basic	Power Supply	See Also
	 Recommended for basic applications Compact, stackable Constant voltage or constant current output For More Information Request or download bulletin: 6371	Mini-PROTEAN Tetra cell: page 164. Criterion cell: page 175. Sub-Cell systems: page 244.
Ordering Information Catalog # Description	n	
645050 PowerPac	Basic Power Supply, 100–120/220–240 V	
PowerPac [™] HC Hi	igh-Current Power Supply	See Also
SC R DURATE	 Recommended for high-current applications Output of 250 V, 3.0 A, 300 W 2-line, 16-character LCD for programming Constant voltage, constant power, or constant current output For More Information Request or download bulletin: 6371	Criterion blotter: page 227. Mini Trans-Blot cell page 226. Trans-Blot cell: page 228. Trans-Blot Plus cell page 229. Dodeca cells: pages 167, 175, 189
Ordering Information Catalog # Descriptior	n	
645052 PowerPac	C HC Power Supply, 100–120/220–240 V	
PowerPac [™] HV Hi	gh-Voltage Power Supply	See Also
	Ideal for IEF and DNA sequencingOutput of 5,000 V, 500 mA, and 400 W	Model 491 prep ce and mini prep cell: page 215.
	Optional temperature probe monitors gel temperature between 30–90°C during electrophoresis. The probe attaches to the glass plate and sends temperature data to the power supply, which adjusts the power output to maintain a constant temperature during electrophoresis.	
	The probe attaches to the glass plate and sends temperature data to the power supply, which	
Ordering Information	The probe attaches to the glass plate and sends temperature data to the power supply, which adjusts the power output to maintain a constant temperature during electrophoresis. For More Information	

PowerPac HV Power Supply with Temperature Probe, 100–120/220–240 V

PowerPac Data Transfer Software, version 2.0

PowerPac HV IQ/OQ Protocol Binder

PowerPac Temperature Probe

Protein Electrophoresis

Power Supplies

See Also

High-throughput electrophoresis systems: pages 167, 175. Western blotting: page 221. Northern and Southern blotting: page 264.

PowerPac[™] Universal Power Supply

- For all applications from mini vertical and high-throughput electrophoresis to blotting
- Protocol binder and test box to support IQ/OQ within GLP- and FDA-regulated environments

Wireless run data transfer software organizes, displays, prints, analyzes, exports, and annotates run data from the power supply. Data can be sent directly to a PC with a peripheral IR receiving device.

For More Information Request or download bulletin: 6371

Ordering Information					
Catalog #	Description				
1645070	PowerPac Universal Power Supply, 100–120/220–240 V				
1645097	PowerPac Data Transfer Software, version 2.0				
1645069	PowerPac Universal IQ/OQ Protocol Binder and Test Box				

PowerPac[™] Adaptor



- Convert non–IEC-certified electrophoresis cells to fit output terminals of PowerPac power supplies
- Available in two sizes that fit most 2 and 4 mm banana plugs
- Compatible with the discontinued PowerPac 200, 300, 1000, and 3000 power supplies

Ordering Information

(Catalog #	Description
1	1645062	PowerPac Adaptor, 2 mm
1	1645064	PowerPac Adaptor, 4 mm

Protein Standards

Standards are an integral part of every electrophoresis experiment because they help identify and characterize the molecules separated in a gel. Prestained and unstained MW standards are available for SDS-PAGE, IEF, 2-D PAGE, and western blotting. For migration charts with different types of gels, see pages 169 (Mini-PROTEAN[®] TGX[™] gels), 171 (Ready Gel[®] gels), and 178–179 (Criterion[™] gels).

For More Information

Request or download bulletins: 2414, 2998, and 3118

Protein Standards Selection Guide

	Precision Plus Protein [™] Standards						Prestained Natural Standards			Unstained Natural Standards			Specialty Standards				
	WesternC [™]	Kaleidoscope™	Dual Xtra	Dual Color	All Blue	Unstained	Broad Range	Low Range	High Range	Natural Kaleidoscope	Broad Range	Low Range	High Range	Polypeptide	Ē	2-D	Standard Plugs***
Molecular weight (MW)/pl range, kD	10–250 kD	10–250 kD	2–250 kD	10–250 kD	10–250 kD	10–250 kD	6.9–210 kD	14–97 kD	45–200 kD	7.6–216 kD	6.5–200 kD	14–97 kD	45–200 kD	1.4–26.6 kD	4.45– 9.6 pl	17.5–76 kD 4.5–8.5 pl	10–250 kD
Number of proteins	10	10	12	10	10	10	8	6	4	7	9	6	5	6	9	7	10
Electrophoresis																	
SDS-PAGE	•	•	•	•	•	•	•	•	•	•	•	•	•	•	-	-	•
Accurate MW estimation	•	•	•	•	•	•	-	-	-	-	•	•	•	•	-	-	•
Multicolored	•	•	•	•	-	-	-	-	-	•	-	-	-	-	-	-	-
Coomassie staining	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Fluorescent staining	-	-	-	-	-	•	-	-	-	-	•	•	•	•	-	•	•
2-D electrophoresis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-
IEF	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	-	-
Plug format for use in gels with no reference well	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Blotting																	
Monitoring transfer efficiency	•	•	•	•	•	-	•	•	•	•	-	-	-	-	-	-	-
Coomassie staining	•	•	•	•	•	•	•	•	•	•	•	•	•	•	-	•	•
Fluorescent staining	-	-	-	-	-	•	-	-	-	-	•	•	•	•	-	•	•
Fluorescent blotting*	•	•	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-
Immunodetection**	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	-	•
Catalog Numbers																	
Single unit	1610385	1610375	1610377	1610374	1610373	1610363	1610318	1610305	1610309	1610324	1610317	1610304	1610303	1610326	1610310	1610320	1610378
Value pack of 5 units	1610398	1610395	1610397	1610394	1610393	1610396	-	-	-	-	-	-	-	-	-	-	-

* These standards have fluorescent properties and can be used for fluorescent blotting applications. See bulletin 5723 for details on using Precision Plus Protein[™] WesternC[™] standards for fluorescent multiplexing. Precision Plus Protein Dual Xtra standards (#1610377) are recommended for fluorescent blot analysis of proteins between 5–250 kD.

** Immunodetection via addition of a Precision Protein[™] StrepTactin and horseradish peroxidase (HRP) or StrepTactin and alkaline phosphatase (AP) conjugate, which will bind to the internal *Strep*-tags on the proteins.

*** 24 unstained plugs for 2-D gels.

Recombinant Prestained and Unstained Standards

Precision Plus Protein[™] standards offer accurate and consistent recombinant protein standards for electrophoresis and western blotting experiments. These protein standards offer a good balance between band sharpness and brightness, accurate MW estimation, reproducible migration patterns, and excellent blotting results.

Precision Plus Protein[™] Standards

See Also

Vertical electrophoresis

systems: pages 164–191.

Horizontal

systems: pages 244-252.

Protein

page 199.

Gel Doc EZ

electrophoresis

Electrophoresis

electrophoresis stains:

Protein blotting stains: page 243.

imaging system: page 283.

ChemiDoc MP

imaging system: page 282.

and blotting buffers: pages 192, 236. Precision Plus Protein standards contain up to 12 recombinant bands that exhibit reproducible and consistent migration regardless of staining. This family of standards includes six unique options – one unstained, four prestained (All Blue, Dual Color, Dual Xtra, Kaleidoscope[™]), and one multi-application standard, WesternC[™]. Features include:

- Reproducible and accurate migration pattern, allowing MW estimation
- Exceptional band sharpness, providing clear confirmation of electrophoretic separation
- Strep-tag affinity sequence, allowing detection and MW determination on western blots
- Natural fluorescence properties, allowing fluorescent and multiplex fluorescent detection
- Superior compatibility with TGX Stain-Free[™] precast gels (Unstained and All Blue)

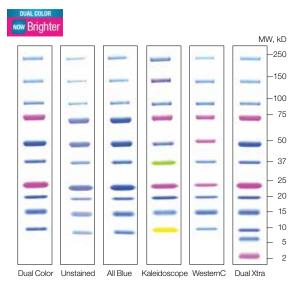
New and Improved Dual Color Standard

- Brighter for easier identification of target proteins
- Stronger band intensity throughout blot development
- Sharper for more accurate molecular weight estimation

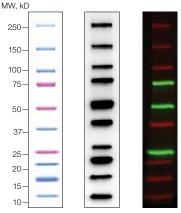
Precision Plus Protein[™] WesternC[™] Standards

Precision Plus Protein WesternC is a versatile, multiapplication protein standard offering colorimetric, chemiluminescent, and fluorescent properties all in one. WesternC contains ten prestained bands from 10–250 kD that provide electrophoretic confirmation on a gel, verification of transfer efficiency on a blot, and detection and MW estimation on fluorescent western blots. Features include:

- Reproducible and accurate migration pattern, allowing MW estimation
- Exceptional band sharpness, providing clear confirmation of electrophoretic separation
- Chemiluminescent detection and MW determination on western blots when probed with StrepTactin conjugates
- Fluorescent and multiplex fluorescent detection when excited with red (~635 nm) or green (~532 nm) channels
- Prestained blue standards, with three pink high-intensity reference bands at 25, 50, and 75 kD
- Ready-to-use formulation



The Precision Plus Protein standards family.



Prestained Chemiluminescent Fluorescent

Precision Plus Protein WesternC standard and its multiple applications offer many detection options.

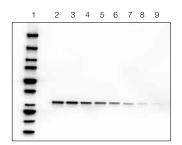
For More Information

Request or download bulletins: 2847, 5561, and 5576; multiplex fluorescence detection — 5685 and 5723

bio-rad.com/proteinstandards

Protein Electrophoresis

Protein Standards



Western blot detection of 27 kD protein and Precision Plus Protein WesternC standards using the Immun-Star[™] WesternC[™] chemiluminescence detection kit. Maximum sensitivity achievable with the Immun-Star WesternC kit is in the mid-femtogram range. A gel run with 5 µl of Precision Plus Protein WesternC standards (lane 1) and a dilution series of *E. coli* lysate containing an overexpressed 27 kD protein (lanes 2–9) was transferred to a nitrocellulose membrane. The dilutions were: 200, 150, 100, 75, 50, 25, 12, and 6 ng. The blot was probed with a primary antibody specific for the 27 kD protein, then incubated with StrepTactin-horseradish peroxidase (HRP) and a secondary antibody conjugated to HRP. After incubation in the Immun-Star WesternC detection solution for 5 min, the blot was imaged using the ChemiDoc[™] XRS system.

For More Information Web: bio-rad.com/pppstandards

Precision Plus Protein Standard Plugs for 2-D Gels

Precision Plus Protein standard plugs allow easy, quick, and clean loading of MW standards on any gel. The plugs are especially useful for vertical 2-D gels with no reference well. Precision Plus Protein unstained standards are cast in 1 mm thick agarose plugs for easy storage, handling, and loading. Load concentrations have been optimized for SYPRO Ruby, Silver Stain Plus[™], and Bio-Safe[™] Coomassie stains.

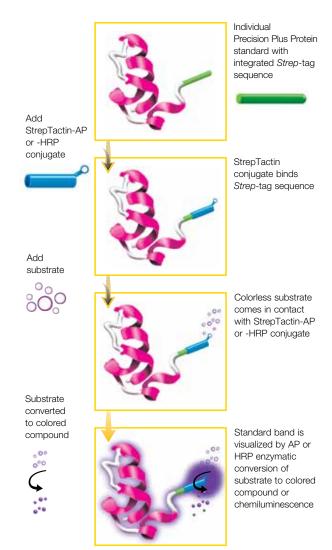
Precision Plus Protein standard plugs come in easy-to-use snap-off molds in packs of 24 (one application per plug). Advantages include:

- Unchanging MWs, so band sizes are easy to remember
- A ready-to-use, load-and-go format just snap, twist, and load the plug onto a gel
- Strep-tag amino acid sequence for detection and MW estimation on western blots



Precision Plus Protein Standard Plugs

For More Information Web: bio-rad.com/standardplugs Request or download bulletin: 3036



Overview of the StrepTactin detection system.

Protein Standards

bio-rad.com/proteinstandards

Product	Volume	Number of Applications	Shelf Life
Unstained	1 ml	100	1 year at –20°C
All Blue	500 µl	50	6 months at 4°C or 1 year at –20°C
Dual Color	500 µl	50	6 months at 4°C or 1 year at –20°C
Kaleidoscope	500 µl	50	1 year at –20°C
Dual Xtra	500 µl	50	6 months at 4°C or 1 year at –20°C
WesternC	250 µl	50	1 year at –20°C
WesternC pack*	250 µl standard 125 µl HRP conjugate	50	1 year at –20°C
Unstained plugs	24 plugs	24	1 month at 4°C (once opened)

..... .

* WesternC pack comes with WesternC protein standard and StrepTactin-HRP conjugate, needed for colorimetric or chemiluminescent blot detection. StrepTactin-AP conjugate also available (#1610382).

Catalog #	Description
1610363	Precision Plus Protein Unstained Standards, 1,000 µl, 100 applications
1610396	Precision Plus Protein Unstained Standards Value Pack, 5 x 1,000 μl, 500 applications
1610373	Precision Plus Protein All Blue Standards, 500 µl, 50 applications
1610393	Precision Plus Protein All Blue Standards Value Pack , 5 x 500 μl, 250 applications
1610374	Precision Plus Protein Dual Color Standards, 500 µl, 50 applications
1610394	Precision Plus Protein Dual Color Standards Value Pack , 5 x 500 μl, 250 applications
1610375	Precision Plus Protein Kaleidoscope Standards, 500 µl, 50 applications
1610395	Precision Plus Protein Kaleidescope Standards Value Pack, 5 x 500 µl, 250 applications
1610385*	Precision Plus Protein WesternC Pack, 250 µl WesternC standard, 125 µl HRP conjugate, 50 applications
1610398*	Precision Plus Protein WesternC Pack, Value Pack, 5 x 250 µl WesternC standard, 5 x
	125 μl HRP conjugate, 250 applications
1610376*	Precision Plus Protein WesternC Standards, 250 μl, 50 applications
1610399*	Precision Plus Protein WesternC Standards Value Pack, 5 x 250 µl, 250 applications
1610377	Precision Plus Protein Dual Xtra Standards, 500 µl, 50 applications
1610397	Precision Plus Protein Dual Xtra Standards Value Pack, 5 x 500 µl, 250 applications
StrepTactin	Conjugates for Precision Plus Protein Standards
1610380	Precision Protein StrepTactin-HRP Conjugate, 300 μl, 150 applications
1610381	Precision Protein StrepTactin-HRP Conjugate, 125 µl, 50 applications
1610382	Precision Protein StrepTactin-AP Conjugate, 300 µl, 150 applications
Precision Pl	us Protein Standard Plugs
1610378	Precision Plus Protein Standard Plugs, unstained, 24 applications
Clarity West	ern ECL Substrate
1705060	Clarity Western ECL Substrate, 200 ml
1705061	Clarity Western ECL Substrate, 500 ml
* Note that Ot	epTactin (-HRP or -AP) conjugate is needed for colorimetric or chemiluminescence blots.

Natural Prestained Standards

Prestained standards for SDS-PAGE and western blotting provide a quick and easy way to monitor protein separation during electrophoresis and to assess transfer efficiency on blots. Each lot of Kaleidoscope and SDS-PAGE prestained standards is individually calibrated for estimating the MW of sample proteins. For optimal results with TGX[™] precast gels, Precision Plus Protein standards (see page 158) will provide increased accuracy and consistency.

For More Information Web: bio-rad.com/naturalstandards

Natural prestained standards are available while supplies last.

Protein Standards

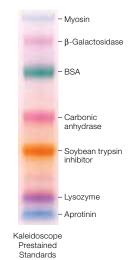
Kaleidoscope[™] Standards

Kaleidoscope prestained broad range standards have individually colored proteins to allow instant orientation on SDS-PAGE gels and western blots.

Calibrated MWs of Kaleidoscope Standards

Protein	Color	MW Prestained
Myosin	Blue	216,000
β-Galactosidase	Magenta	132,000
BSA	Green	78,000
Carbonic anhydrase	Violet	45,700
Soybean trypsin inhibitor	Orange	32,500
Lysozyme	Purple	18,400
Aprotinin	Blue	7,600

MWs are of representative lots; actual weights may vary. Lot-specific MWs are included with each vial.



Ordering Information

Catalog #	Description
1610324	Kaleidoscope Prestained Standards, broad range, 500 µl
Standards hav	e a shelf life of 3 years at -20°C; shipped at room temperature

Prestained SDS-PAGE Standards

Bio-Rad's original prestained SDS-PAGE standards are available in broad, low, and high ranges.

Calibrated MWs of	f Prestained SDS-PAGE Standards

Protein	Broad Range	Low Range	High Range
Myosin	209,000	_	204,000
β-Galactosidase	124,000	_	123,000
Phosphorylase b	_	103,000	—
BSA	80,000	77,000	80,000
Ovalbumin	49,100	50,000	48,000
Carbonic anhydrase	34,800	34,300	_
Soybean trypsin inhibitor	28,900	28,800	—
Lysozyme	20,600	20,700	_
Aprotinin	7,100	_	_

MWs are of representative lots; actual weights may vary 1 of-specific MWs are included

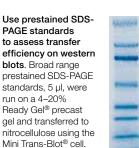
Ordering I

Catalog # 1610318 1610305

Inform	nation
	Description
	Prestained SDS-PAGE Standards, broad range, 500 µl
	Prestained SDS-PAGE Standards, low range, 500 µl

1610309 Prestained SDS-PAGE Standards, high range, 500 µl

Standards have a shelf life of 3 years at -20°C; shipped at room temperature.



– Myosin β-Galactosidase

- BSA
- Ovalbumin
- Carbonic anhydrase Soybean trypsin inhibitor
- Lysozyme
- Aprotinin

See Also

Protein electrophoresis stains: page 199. Protein blotting stains: page 243. Electrophoresis and blotting buffers: pages 192, 236. Gel Doc EZ imaging system: page 283.

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Natural Unstained Standards

Unstained standards allow accurate MW determination on SDS-PAGE gels. Every batch is tested for proper mobility, providing a reliable control for gel-to-gel variability.

Specifications

	Volume, µl	Applications* (Number of Mini Gels)
SDS-PAGE standards	200	800-1,600
Polypeptide standards	200	800

* Number of applications depends on staining method.

For More Information

Web: bio-rad.com/naturalstandards

Natural unstained standards are available while supplies last.

A SDS-PAGE standards provide accurate MW determinations. A, high range SDS-PAGE standards stained with Coomassie Brilliant Blue R-250 stain; B, polypeptide SDS-PAGE standards stained with Coomassie Brilliant Blue G-250 stain.



				Ranges	Available*	
Protein	Source	MW, kD	Broad	Low	High	Polypeptide
Myosin	Rabbit skeletal muscle	200.0	•		•	
β-Galactosidase	E. coli	116.3	•		•	
Phosphorylase b	Rabbit muscle	97.4	•	•	•	
Serum albumin	Bovine	66.2	•	•	•	
Ovalbumin	Hen egg white	45.0	•	•	•	
Carbonic anhydrase	Bovine	31.0	•	•		
Triosephosphate isomerase	Rabbit	26.6				•
Trypsin inhibitor	Soybean	21.5	•	•		
Myoglobin	Equine	17.0				•
α-Lactalbumin	Bovine	14.5				•
Lysozyme	Hen egg white	14.4	•	•		
Aprotinin	Bovine pancreas	6.5	•			•
Insulin B chain, oxidized	Bovine	3.5				•
Bacitracin	Bacillus licheniformis	1.4				•

* SDS-PAGE - broad, low, high, and polypeptide.

See Also

Vertical electrophoresis pages 164–191. Electrophoresis and blotting buffers: pages 192, 236. Protein electrophoresis stains: page 199. Protein blotting stains: page 243.

Unstained SDS-PAGE Standards

SDS-PAGE Standards

SDS-PAGE standards are blended to give uniform band intensities when stained with Coomassie Brilliant Blue R-250 or zinc stains. SDS-PAGE standards are available in broad, low, high, and polypeptide MW ranges, allowing calibration in almost any percentage gel.

Polypeptide SDS-PAGE Standards

Polypeptide SDS-PAGE standards are for MW determination of peptides and small proteins resolved on Tricine gels. Consisting of six polypeptides with molecular masses ranging from ~1.4 to ~26.6 kD, polypeptide SDS-PAGE standards stain uniformly with Coomassie Brilliant Blue G-250 stain.

Ord	ering	ı Into	orma	tion

Catalog #	Description
1610317	SDS-PAGE Standards, broad range, 200 µl
1610304	SDS-PAGE Standards, low range, 200 µl
1610303	SDS-PAGE Standards, high range, 200 µl
1610326	Polypeptide SDS-PAGE Standards, 200 µl

Specialty Standards (IEF and 2-D SDS-PAGE)

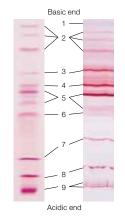
IEF Standards

IEF standards allow dependable and reproducible pl calibration in native polyacrylamide or agarose IEF gels. IEF standards are a mixture of nine native proteins with pls ranging from 4.45–9.6. To monitor focusing, five of the nine proteins are naturally colored. The standards are provided in a stable aqueous solution and require no reconstitution or dilution prior to use.

Constituent Proteins of IEF Standards*

Protein	Color	pl
1. Cytochrome c	Red	9.6
2. Lentil lectin (3 bands)	—	7.8, 8.0, 8.2
3. Human hemoglobin C	Red	7.5
4. Human hemoglobin A	Red	7.1
5. Equine myoglobin (2 bands)	Brown	6.8, 7.0
6. Human carbonic anhydrase	_	6.5
7. Bovine carbonic anhydrase	—	6.0
8. β-Lactoglobulin B	_	5.1
9. Phycocyanin (3 bands)	Blue	4.45, 4.65, 4.75

* Because the IEF standards are in native form, they cannot be used with reducing or denaturing agents such as urea, β -mercaptoethanol, or dithiothreitol. For calibration of IEF tube gels containing urea, use 2-D SDS-PAGE standards.



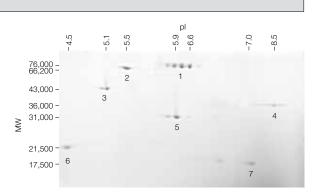
IEF standards stained with IEF gel stain. Run on Criterion[™] Tris-HCI (**left**) and Ready Gel[®] IEF gels (**right**).

c	Ordering Inform	nation
C	Catalog #	Description
1	610310	IEF Standards, 250 µl

2-D SDS-PAGE Standards

2-D SDS-PAGE protein standards provide calibrated references for the pl and MW of proteins in 2-D SDS-PAGE applications. These standards consist of seven reduced, denatured proteins that can be visualized with silver or Coomassie Blue stains and require no dilution prior to use.

Protein	pl	MW, kD
1. Hen egg white conalbumin	6.0, 6.3, 6.6	76
2. Bovine serum albumin (BSA)	5.4, 5.5, 5.6	66
3. Bovine muscle actin	5.0, 5.1	43
4. Rabbit muscle GAPDH	8.3, 8.5	36
5. Bovine carbonic anhydrase	5.9, 6.0	31
6. Soybean trypsin inhibitor	4.5	21.5
7. Equine myoglobin	7.0	17.5



Migration pattern of 2-D SDS-PAGE standards. First dimension separation was performed with 7 cm ReadyStrip[™] IPG strips. Second dimension separation was achieved with the Mini-PROTEAN[®] II cell.

Ordering Information

1610320 2-D SDS-PAGE Standards , 500 μl	Catalog #	Description
	1610320	2-D SDS-PAGE Standards, 500 μl

The Mini-PROTEAN® system includes the four-gel Mini-PROTEAN Tetra cell and the high-throughput, 12-gel Mini-PROTEAN[®] 3 Dodeca[™] cell. The systems are compatible with mini handcast or precast gels.

See Also

PowerPac Basic and PowerPac HC power supplies: page 155. Premixed buffers and buffer reagents: page 192. Mini-PROTEAN precast gels: page 168.

Mini-PROTEAN® Tetra Cell

The Mini-PROTEAN Tetra cell is ideal for vertical mini gel electrophoresis. This electrophoresis cell accommodates 1-4 precast or handcast gels. Easy to assemble, the Mini-PROTEAN Tetra cell has a patented sealing mechanism* that prevents assembly errors. The Mini-PROTEAN Tetra cell offers the following advantages:

Loading and Running

- Patented sample loading guides** prevent skipped or repeated loading lanes
- Cell runs up to four gels (10.0 x 8.3 cm) using two running modules

Modular Cells for Many Applications

 Interchangeable modules convert a Mini-PROTEAN Tetra cell into a Mini Trans-Blot® electrophoresis transfer cell for western blotting

Gel Casting

- Ground glass plates with permanently bonded spacers and improved casting gaskets guarantee perfect alignment and leakproof casting
- Casting frames*** with simple cam closure provide precision alignment on any flat surface
- Side-by-side casting stand*** allows access to both gels simultaneously, and the spring-loaded lever creates a tight seal against the silicon rubber gasket
- Plastic combs*** do not inhibit polymerization and have built-in ridges to eliminate air contact during gel casting for uniform gel polymerization
- Glass plates and combs are labeled with thickness and number of wells for instant identification
- Thick glass spacer plates reduce breakage

Configuring Your Own Electrophoresis Cell

You can choose one of the preset configurations such as #1658000 (10-well, 0.75 mm) or #1658001 (10-well, 1.0 mm). To configure your own electrophoresis cell, order the Mini-PROTEAN Tetra cell (#1658004) and select a casting module from the ordering information (see page 166).

For More Information

Web: bio-rad.com/tetra Request or download bulletin: 5535

*U.S. patents 6,436,262, ** 5,656,145, and *** 6,162,342.

Mini-PROTEAN Tetra cell components: 6. Spacer plates.

- 1. Lid and tank. 2. Combs.
- Ready Gel[®] precast gels.
 Mini-PROTEAN[®] TGX[™]
- precast gels.
- 5. Gel releasers.
- 7. Short plates. 8. Sample loading guides. 9. Casting frame.





Mini Trans-Blot electrophoresis transfer cell components:

- 1. Lid. 2. Tank
- 3. Electrode assembly.
- 4. Companion running
- module. 5. Mini Trans-Blot module



Maximum Sample Volume per Well for Mini-PROTEAN Tetra Combs

Number or Ty		-		Comb Thie		
5	/pe of Wells	Well Width, mm	0.75 mm	1.0 m	m	1.5 mm
-		12.70	70 µl	105 µ	l.	160 µl
9		5.08	33 µl	44 J	l	66 µl
10		5.08	33 µl	44 J	l	66 µl
15		3.35	20 µl	26 μ	ul	40 µl
PG		6.20	-	420 μ		730 µl
Prep/2-D		0.20		120 }	<u>a</u> 1	100 µi
Reference we		3.10	13 µl	17 µ	ul.	30 µl
Sample well		67.44	310 µl	400 μ		680 µl
		-	F			F
pecifications						
lumber of gels	1–4		Total buffer volum	0	00 ml	
recast gels	Mini-PROTEA	N and Ready Gel	Total buffer volum	e for 4 gels 1,	000 ml	
andcast gels	Cast using Mi	ni-PROTEAN spacer plates	Typical run times f	or SDS-PAGE 35	5–45 min (at 200 V c	onstant)
assette size (N	V x L) Precast: 10.0	x 8.3 cm	Recommended p	ower supply Se	e Power Supplies Se	election Guide, p. 1
alass plate size	(W x L) Short plate: 10	0.1 x 7.3 cm	Dimensions (W x I	_ x H) 12	2.0 x 16.0 x 18.0 cm	
-		10.1 x 8.2 cm	Weight	,	kg (2.2 lb)	
atalog # 658000FC	Description Mini-PROTEAN Te	tra Cell, 10-well, 0.75 mm thickn	ess; 4-gel system includ	les 5 combs, 1 se	et of glass	
1658001FC 1658002FC*	plates (5 short plate electrode assembly, Mini-PROTEAN Te	tra Cell, 10-well, 1.0 mm thickne es and 5 spacer plates), 2 castin companion running module, tan tra Cell, 10-well, 0.75 mm thickn	ng stands, 4 casting fran nk, lid with power cables	nes, sample loadi , mini cell buffer c	ng guide, lam	
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The catalog numbers above with an "FC" suffix come with a 10% TGX Stain-Free™ FastCast™ kit (1610182). To place an order without a FastCast kit, remove the "FC" suffix from the catalog number.

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Description		0.75 mm	1.0 mm	1.5 mm	
Casting Mod	dules**				
5-Well		1658008	1658013	1658019	
9-Well		1658009	1658014	1658020	
10-Well		1658010	1658015	1658021	
15-Well		1658011	1658016	1658022	
Prep/2-D Wel	1	1658012	1658017	1658023	
IPG Well		-	1658018	1658024	
Mini-PROTE	AN Combs (5) for Hand (Casting with Glass Plates			
5-Well		1653352	1653357	1653363	
9-Well		1653353	1653358	1653364	
10-Well		1653354	1653359	1653365	
15-Well		1653355	1653360	1653366	
	Reference Well	1653356	1653361	1653367	
IPG Well		_	1653362	1653368	
Catalog #	Description				
1658051	el Accessories and Repla Mini-PROTEAN Tetra	Cell Casting Stand, 2 core, inc	ludes clamps for use with the		
1000001	Mini-PROTEAN Tetra d	-	indes clamps for use with the		
1658052		Cell Casting Stand, 1 core, inc	ludes clamps for use with the		
ICCOCC					
	MINI-PROTEAN Tetra d	cell casting modules			
1653303		ell casting modules			
	Mini-PROTEAN Cast	ing Stand with Gaskets			
1653304	Mini-PROTEAN Cast Mini-PROTEAN Cast	ing Stand with Gaskets ing Frame	ıt. 2		
1653304 1653305	Mini-PROTEAN Cast Mini-PROTEAN Cast Mini-PROTEAN Cast	ing Stand with Gaskets	it, 2		
1653304 1653305 1653308	Mini-PROTEAN Cast Mini-PROTEAN Cast Mini-PROTEAN Cast Short Plates, 5	ing Stand with Gaskets ing Frame ing Stand Gaskets, replacemer	, 		
1653304 1653305 1653308 1653149	Mini-PROTEAN Cast Mini-PROTEAN Cast Mini-PROTEAN Cast Short Plates, 5 Replacement Gasket	ing Stand with Gaskets ing Frame ing Stand Gaskets, replacemer s, for electrophoresis clamping f	, 		
1653304 1653305 1653308 1653149 1653310	Mini-PROTEAN Cast Mini-PROTEAN Cast Mini-PROTEAN Cast Short Plates, 5 Replacement Gasket Spacer Plates with 0.	ing Stand with Gaskets ing Frame ing Stand Gaskets, replacemer is, for electrophoresis clamping f 75 mm Integrated Spacers, 5	, 		
1653304 1653305 1653308 1653149 1653310 1653311	Mini-PROTEAN Cast Mini-PROTEAN Cast Mini-PROTEAN Cast Short Plates, 5 Replacement Gasket Spacer Plates with 0. Spacer Plates with 1.	ing Stand with Gaskets ing Frame ing Stand Gaskets, replacemer s, for electrophoresis clamping f	, 		
1653304 1653305 1653308 1653149 1653310 1653311 1653312	Mini-PROTEAN Cast Mini-PROTEAN Cast Mini-PROTEAN Cast Short Plates, 5 Replacement Gasket Spacer Plates with 0. Spacer Plates with 1. Spacer Plates with 1.	ing Stand with Gaskets ing Frame ing Stand Gaskets, replacemer s, for electrophoresis clamping f 75 mm Integrated Spacers, 5 0 mm Integrated Spacers, 5 5 mm Integrated Spacers, 5	, 		
1653304 1653305 1653308 1653149 1653310 1653311 1653312 Other Repla	Mini-PROTEAN Cast Mini-PROTEAN Cast Mini-PROTEAN Cast Short Plates, 5 Replacement Gasket Spacer Plates with 0. Spacer Plates with 1. Spacer Plates with 1.	ing Stand with Gaskets ing Frame ing Stand Gaskets, replacemer s, for electrophoresis clamping f 75 mm Integrated Spacers, 5 0 mm Integrated Spacers, 5 5 mm Integrated Spacers, 5	, 		
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1653304 1653305 1653308 1653149 1653310 1653311 1653312 Other Repla 1658037 1658038 1658039 1658040 1658041 1653201	Mini-PROTEAN Cast Mini-PROTEAN Cast Mini-PROTEAN Cast Short Plates, 5 Replacement Gasket Spacer Plates with 0. Spacer Plates with 1. Spacer Plates with 1. Spacer Plates with 1. Cement Parts and Acces Mini-PROTEAN Tetra Mini-PROTEAN Tetra Buffer Tank, replacen Buffer Tank and Lid, Cell Lid with Power C Sample Loading Guid	ing Stand with Gaskets ing Frame ing Stand Gaskets, replacemen rs, for electrophoresis clamping f 75 mm Integrated Spacers, 5 0 mm Integrated Spacers, 5 5 mm Integrated Spacers, 5 5 mm Integrated Spacers, 5 socies telectrode Assembly to Companion Running Module tent replacement cables de, 9-well (red)	, 		
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1653304 1653305 1653308 16533149 1653310 1653311 1653312 Dther Repla 1658037 1658037 1658039 1658040 1658040 1658041 1653201 1653146 1653203	Mini-PROTEAN Cast Mini-PROTEAN Cast Mini-PROTEAN Cast Short Plates, 5 Replacement Gasket Spacer Plates with 0. Spacer Plates with 1. Spacer Plates with 1. Spacer Plates with 1. Cement Parts and Access Mini-PROTEAN Tetra Buffer Tank, replacem Buffer Tank and Lid, Cell Lid with Power C Sample Loading Guid Sample Loading Guid	ing Stand with Gaskets ing Frame ing Stand Gaskets, replacemen 75 mm Integrated Spacers, 5 0 mm Integrated Spacers, 5 5 mm Integrated Spacers, 5 5 mm Integrated Spacers, 5 5 mm Integrated Spacers, 5 sories a Electrode Assembly a Companion Running Module nent replacement ables de, 9-well (red) de, 10-well (yellow) de, 12-well (green)	, 		
1653304 1653305 1653308 16533149 1653310 1653311 1653312 Other Repla 1658037 1658038 1658040 1658041 16553201 1653203 1653203 1653132	Mini-PROTEAN Cast Mini-PROTEAN Cast Mini-PROTEAN Cast Short Plates, 5 Replacement Gasket Spacer Plates with 0. Spacer Plates with 1. Spacer Plates with 1. Spacer Plates with 1. Cement Parts and Access Mini-PROTEAN Tetra Mini-PROTEAN Tetra Buffer Tank, replacem Buffer Tank and Lid, Cell Lid with Power C Sample Loading Guid Sample Loading Guid Sample Loading Guid	ing Stand with Gaskets ing Frame ing Stand Gaskets, replacemen is, for electrophoresis clamping f 75 mm Integrated Spacers, 5 0 mm Integrated Spacers, 5 5 mm Integrated Spacers, 5 5 mm Integrated Spacers, 5 isories I Electrode Assembly Companion Running Module nent replacement cables de, 9-well (red) de, 10-well (yellow) de, 12-well (green) de, 15-well (blue) s, 2 (compatible with Mini-PROTI	rame, green, 2	3 Dodeca cell,	
1653303 1653304 1653305 1653308 1653308 1653310 1653311 1653312 Other Repla 1658037 1658038 1658039 1658041 1653201 1653146 1653132 1653130 1653130 16533203 1653330	Mini-PROTEAN Cast Mini-PROTEAN Cast Mini-PROTEAN Cast Short Plates, 5 Replacement Gasket Spacer Plates with 0. Spacer Plates with 1. Spacer Plates with 1. Spacer Plates with 1. Spacer Plates with 1. Cement Parts and Access Mini-PROTEAN Tetra Mini-PROTEAN Tetra Buffer Tank, replacem Buffer Tank, replacem Buffer Tank and Lid, Cell Lid with Power C Sample Loading Guid Sample Loading Guid Sample Loading Guid Sample Loading Guid Sample Loading Guid Sample Loading Guid	ing Stand with Gaskets ing Frame ing Stand Gaskets, replacemen is, for electrophoresis clamping f 75 mm Integrated Spacers, 5 0 mm Integrated Spacers, 5 5 mm Integrated Spacers, 5 5 mm Integrated Spacers, 5 isories I Electrode Assembly Companion Running Module nent replacement cables de, 9-well (red) de, 10-well (yellow) de, 12-well (green) de, 15-well (blue) s, 2 (compatible with Mini-PROTI	rame, green, 2	3 Dodeca cell,	

Mini-PROTEAN[®] 3 Dodeca[™] Cell

The Mini-PROTEAN 3 Dodeca cell runs up to 12 mini gels under identical conditions in just 35 minutes. Eliminate gel-to-gel variation by hand casting gels 12 at a time using the Mini-PROTEAN 3 multi-casting chamber (see page 174) and Model 485 gradient former (see page 174). Alternatively, use precast gels. Features of the Mini-PROTEAN 3 Dodeca cell include:

- Built-in cooling coil to prevent overheating
- Stirbar capability helps maintain uniform buffer tank temperatures for run reproducibility
- Easy assembly facilitated by a patented* electrophoresis clamping frame
- Convenient buffer draining via the built-in quick-connect drain port



For More Information Web: bio-rad.com/dodeca Request or download bulletin: 2571

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Specifications	
Number of gels	1–12
Precast gels	Mini-PROTEAN and Ready Gel®
Handcast gels	Cast using Mini-PROTEAN 3 spacer plates and the Mini-PROTEAN 3 multi-casting chamber
Cassette size (W x L)	10.0 x 8.3 cm
Gel thickness	0.5, 0.75, 1.0, or 1.5 mm (precast gels are available only in 1.0 mm)
Total buffer volume	3.4-4.4 L
Typical running conditions	200 V constant, 600 mA, 120 W maximum
Cooling	Built-in cooling coil attaches easily to external refrigerated circulator (circulator must be purchased separately; recommended flow rate 10–15 L/min, recommended cooling capacity ≥250 W at 20°C)
Recommended power supply	PowerPac [™] HC
Dimensions (W x L x H)	16.2 x 41.5 x 15.0 cm
Weight	5 kg (11 lb)

* U.S. patent 6,436,262.

Ordering Information

Catalog #	Description
1654100	Mini-PROTEAN 3 Dodeca Cell, includes electrophoresis tank with built-in cooling coil, lid with power cables, 6 electrophoresis clamping frames, 2 buffer dams, drain line, 2 gel releasers
654101	Mini-PROTEAN 3 Dodeca Cell with Multi-Casting Chamber, same as #1654100 with multi-casting chamber, 15 separation sheets, 8 acrylic blocks, tapered luer connector, stopcock valve
655132	Mini-PROTEAN 3 Dodeca Cell and 6-Row AnyGel Stand, includes #1654100 and #1655131
Replacement	Parts and Accessories
654102	Replacement Electrophoresis Clamping Frame
653149	Replacement Gaskets, for electrophoresis clamping frame, green, 2
654103	Lower Electrode Assembly with Platinum Wire
654104	Replacement Drain Line
654105	Replacement Cooling Coil, includes connector tubing
652948	Replacement Power Cables, for lid
653320	Gel Releasers, 5
1653130	Mini Cell Buffer Dams, 2 (compatible with Mini-PROTEAN Tetra cell, Mini-PROTEAN 3 Dodeca cell, and the discontinued Mini-PROTEAN 3 cell)
1655131	AnyGel Stand, 6-row, holds 6 PROTEAN gels, 12 Criterion gels, or 18 Ready Gel mini gels

See Also PowerPac HC power supply: page 155. Mini-PROTEAN

precast gels: page 168.

AnyGel stands:

page 173.

Protein Electrophoresis

Mini-Format 1-D Electrophoresis Systems

Mini-PROTEAN® Precast Gels

Mini-PROTEAN[®] TGX[™] Precast Gels

Long shelf life Mini-PROTEAN TGX precast gels accelerate electrophoresis and blotting while delivering superior performance. TGX gels maintain cooler temperatures at high voltages, allowing run times as short as 15 minutes. The gels are designed to provide Laemmli-like separation patterns using the standard Tris/glycine/SDS running buffer system. Mini-PROTEAN gels are compatible with the Mini-PROTEAN Tetra (1–4 gels) and Dodeca (1–12 gels) cells. These gels can also be used in the earlier Mini-PROTEAN 3 cell model. Gel opening lever (4560000) sold separely.

Mini-PROTEAN TGX gels provide:

- Run times as short as 15 min
- Transfer times as short as 3 min with the Trans Blot[®] Turbo[™] transfer system
- 12-month shelf life
- Laemmli format
- Inexpensive buffer system, low running costs
- Bottom-open cassette design for simple gel handling and blotting

For More Information Web: bio-rad.com/tgx Request or download bulletins: 5535 and 5871

Mini-PROTEAN[®] TGX Stain-Free[™] Precast Gels

Mini-PROTEAN TGX Stain-Free precast gels combine TGX formulation with a proprietary compound that facilitates protein visualization in less than 5 minutes using Bio-Rad's stain-free enabled imaging systems (see page 282).

Mini-PROTEAN TGX Stain-Free precast gels eliminate the need for staining, reducing the time to results and improving the ease of downstream processing. In addition to the 12-month shelf life, Laemmli buffer system, and fast run times of the TGX formulation, the Mini-PROTEAN TGX Stain-Free gels provide:

- Complete protein separation, gel imaging, and data
 analysis in 20 min
- · Sensitivity comparable to that of Coomassie stain
- Better reproducibility and quantitation compared to staining procedures
- Capability of using the same gel for chromatography, western blotting, standard staining methods, and mass spectrometry analysis

For More Information Web: bio-rad.com/ministainfree



Empty Cassettes for Hand Casting

Single-use empty Mini-PROTEAN cassettes are available to hand cast gels. For added convenience, cast your gels using AnyGel[™] stands or the Mini-PROTEAN casting stand.

Mini-PROTEAN Gels

Mini-PROTEAN Tris-Tricine Precast Gels

 Designed for separation of peptides and small proteins with MWs <10,000

Mini-PROTEAN TBE and TBE-Urea Precast Gels

- Ideal for the separation of DNA and RNA
- TBE gels are suitable for electrophoresis of nucleic acids from 50–2,000 bp
- TBE-urea gels are best suited for the separation of ssDNA and ssRNA between 60–200 bp

For More Information Web: bio-rad.com/mpgels

bio-rad.com/minielectro

Mini-Format 1-D Electrophoresis Systems

Gel Cassette Specifications

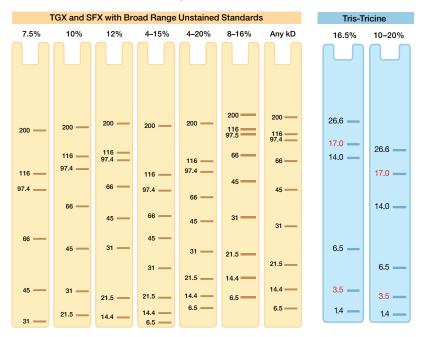
Gel dimensions (W x L x thickness)	86.0 x 72.0 x 1.0 mm
Gel cassette dimensions (W x L x thickness)	101.0 x 89.0 x 4.6 mm
Cassette material	Styrene copolymer
Comb material	Polycarbonate
Gel storage conditions	Store flat at 4°C; do not freeze

Mini-PROTEAN Precast Gel Selection Guide

	TGX, TGX Stain-Free	Tris-Tricine	TBE, TBE-Urea
Shelf Life at Recommended Temperature*	12 months	8–12 weeks	8–12 weeks
Recommended Buffers Sample (dilute 1:1 with sample)	Laemmli	Tricine	Nucleic acid, TBE-urea
Running	Tris/glycine/SDS	Tris/Tricine/SDS	Tris/boric acid/EDTA (TBE)

* From date of manufacture.

Mini-PROTEAN Precast Gel Migration Charts



bio-rad.com/minielectro

Ordering Information

						-
	8+1-Well*	10-Well	10-Well	12-Well	15-Well	IPG Well [†]
Description	30 µl	30 µl	50 µl	20 µl	15 µl	7 cm IPG Strip
Mini-PROTEAN TGX	Precast Gels**					
7.5% Resolving Gel	4561029	4561023	4561024	4561025	4561026	4561021
10% Resolving Gel	4561039	4561033	4561034	4561035	4561036	4561031
12% Resolving Gel	4561049	4561043	4561044	4561045	4561046	4561041
4–15% Resolving Gel	4561089	4561083	4561084	4561085	4561086	4561081
4–20% Resolving Gel	4561099	4561093	4561094	4561095	4561096	4561091
8–16% Resolving Gel	4561109	4561103	4561104	4561105	4561106	4561101
Any kD Resolving Gel	4569039	4569033	4569034	4569035	4569036	4569031
Mini-PROTEAN TGX	Stain-Free Preca	st Gels**				
7.5% Resolving Gel	4568029	4568023	4568024	4568025	4568026	4568021
10% Resolving Gel	4568039	4568033	4568034	4568035	4568036	4568031
12% Resolving Gel	4568049	4568043	4568044	4568045	4568046	4568041
4–15% Resolving Gel	4568089	4568083	4568084	4568085	4568086	4568081
4–20% Resolving Gel	4568099	4568093	4568094	4568095	4568096	4568091
8–16% Resolving Gel	4568109	4568103	4568104	4568105	4568106	4568101
Any kD Resolving Gel	4568129	4568123	4568124	4568125	4568126	4568121
Empty Cassettes and	d Combs					
Mini-PROTEAN Empty Cassette***	-	4560003	_	4560005	4560006	4560001
Combs (for Mini-PROTEAN empty cassettes)	_	4560013	_	4560015	4560016	4560011

* Multichannel pipet compatible.

** Mini-PROTEAN TGX and TGX Stain-Free gels are available in 10-packs (catalog numbers listed) or 2-packs (add an "S" to the end of the catalog number listed).

*** Includes 50 empty cassettes. Combs sold separately in 50 pack.

⁺ IPG well only, no reference well. If a protein standard is needed on gel, order Precision Plus Protein Standard plugs, #1610378.

Catalog #	Description	
4560000	Mini-PROTEAN Precast Gel Opening Lever	
Premixed Bu	ffers for Mini-PROTEAN TGX Gels*	
1610737	2x Laemmli Sample Buffer, 30 ml	
1610747	4x Laemmli Sample Buffer, 10 ml	
1610738	2x Native Sample Buffer, 30 ml	
1610732	10x Tris/Glycine/SDS, 1 L	
1610734	10x Tris/Glycine, 1 L	
* For 5 L volur	ne of the running buffers, see page 193.	

Applications Guide

1658100	Mini-PROTEAN Gel Instruction Manual and Application Guide, online	
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Description	10-Well 30 μl	10-Well 50 μl	12-Well* 20 μl	15-Well 15 μl	IPG Well** 7 cm IPG Strip	
Mini-PROTEAN Precast Gels (2 per p	ackage)					
5% TBE	4565013	4565014*	4565015*	4565016	_	
10% TBE	4565033	4565034*	4565035	4565036	_	
15% TBE	4565053*	4565054	4565055*	4565056	_	
4–20% TBE	4565093*	4565094*	4565095*	4565096*	_	
10% TBE-Urea	4566033*	_	_	4566036*	_	
15% TBE-Urea	4566053*	_	4566055*	4566056*	_	
16.5% Tris-Tricine	4563063	4563064	4563065*	4563066	_	
10–20% Tris-Tricine	4563113	4563114	4563115*	4563116*	_	
* Please allow up to 2 weeks for deliver	ry.					

** IPG well only, no reference well. If a protein standard is needed on gel, order Precision Plus Protein standard plugs, #1610378.

bio-rad.com/minielectro

Ready Gel[®] Precast Gels

Proteins and nucleic acids can be separated by Ready Gel precast gels using the Mini-PROTEAN[®] Tetra electrophoresis cell (1–4 gels; page 164) or, for high-throughput applications, the Mini-PROTEAN[®] 3 Dodeca[™] cell (1–12 gels; page 167). Ready Gel precast gels are available in six buffer formulations for a variety of applications. Refer to the Bio-Rad website for migration charts.

For More Information Web: bio-rad.com/readygel Download bulletin: Ready Gel Application Guide (LIT188)



See Also

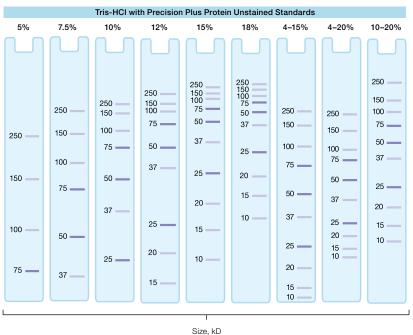
ReadyStrip IPG strips: page 205. Standards: page 157. Electrophoresis stains: page 199. Mini Trans-Blot cell: page 226. Blot detection: page 237. PowerPac Basic and PowerPac HC power supplies: page 155. Imaging systems: page 280. Premixed buffers: page 192.

Specifications

Gel dimensions (W x L x thickness) Cassette dimensions (W x L x thickness) Gel storage conditions Gel shelf life* 8.3 x 6.4 x 0.1 cm
10.0 x 8.0 x 0.4 cm
Store flat at 4°C; do not freeze
8–12 weeks for Tris-HCl, Tris-Tricine, zymogram, TBE, TBE-urea; ~26 weeks for IEF

* From date of manufacture.

Ready Gel Migration Charts

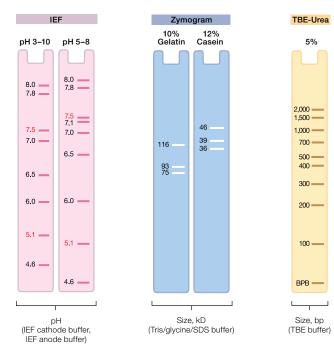


(Tris/glycine/SDS buffer)

Protein Electrophoresis

Mini-Format 1-D Electrophoresis Systems

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Ordering Information

Description	ντουντούν 10-Well 30 μl	uuuuuuuu 15-Well 15 μl	10-Well 50 µl
Ready Gel Tris-HCl Gels			
5% Resolving Gel	_	_	1611213
7.5% Resolving Gel	_	_	1611154
10% Resolving Gel	_	_	1611155
12% Resolving Gel	_	_	1611156
15% Resolving Gel	1611103	_	1611157
18% Resolving Gel	_	_	1611219
4–15% Linear Gradient	_	1611122	1611158
4–20% Linear Gradient	1611105	1611123	1611159
10–20% Linear Gradient	_	1611124	1611160
Ready Gel IEF Gels			
pH 5–8	1611112	_	_
Ready Gel Zymogram Gels			
10% Zymogram Gel with Gelatin	_	_	1611167
12% Zymogram Gel with Casein	—	_	1611168*
Ready Gel TBE-Urea Gels			
5% TBE-Urea Gel	1611115*	-	_
* Please allow up to 2 weeks for delivery.			

continues

bio-rad.com/minielectro

Mini-Format 1-D Electrophoresis Systems

Ordering In	formation
Catalog #	Description
Premixed Bu	Iffers for Tris-HCI Gels
1610737	2x Laemmli Sample Buffer, 30 ml
1610747	4x Laemmli Sample Buffer, 10 ml
1610738	2x Native Sample Buffer, 30 ml
1610732	10x Tris/Glycine/SDS, 1 L
1610734	10x Tris/Glycine, 1 L
1610772	10x Tris/Glycine/SDS, 5 L cube
1610771	10x Tris/Glycine, 5 L cube
Premixed Bu	Iffers for Tris-Tricine Gels for Peptides
1610739	2x Tricine Sample Buffer, 30 ml
1610744	10x Tris/Tricine/SDS, 1 L
Premixed Bu	Iffers for IEF Gels
1610763	IEF Sample Buffer, 30 ml
1610761	10x IEF Anode Buffer, 250 ml
1610762	10x IEF Cathode Buffer, 250 ml
Premixed Bu	Iffers for Zymogram Gels
1610764	Zymogram Sample Buffer, 30 ml
1610765	10x Zymogram Renaturation Buffer, 125 ml
1610766	10x Zymogram Development Buffer, 125 ml
Premixed Bu	Iffers for TBE and TBE-Urea Gels
1610767	5x Nucleic Acid Sample Loading Buffer, 10 ml
1610768	2x TBE-Urea Sample Buffer, 30 ml
1610770	10x Tris/Boric Acid/EDTA (TBE), 5 L cube
Accessories	
1610992	Ready Gel Key Knife, free upon request with Ready Gel purchase

Mini-PROTEAN® Hand Casting Accessories

Empty Cassettes

Single-use empty Mini-PROTEAN cassettes are available for hand casting a mini gel.

AnyGel[™] Stands

AnyGel stands are convenient for storing glass plates of any size gel. They are available as single row or six-row stands.

Features of the six-row stand:

- Perfect for high-volume, 2-D proteomics studies accommodates up to 6 PROTEAN[®], 12 Criterion[™], or 18 Mini-PROTEAN mini gels
- Facilitates loading IPG strips on both large format gels and Criterion gel sizes using a front clamp that slants the gel to an ideal angle (can also be used to load tube gels)
- A stair-step design and clear clamps so gels are clearly visible while casting and loading

The single-row AnyGel stand is ideal for processing a few gels at a time. It accommodates one PROTEAN gel, two Criterion gels, or three Mini-PROTEAN mini gels.



AnyGel Single-Row Stand with Mini-PROTEAN Cassettes

See Also

Acrylamide gelcasting reagents: page 195. Buffers: page 193.

bio-rad.com/minielectro

Mini-PROTEAN 3 Multi-Casting Chamber

Use the Mini-PROTEAN 3 multi-casting chamber to cast up to 12 gels of 0.75, 1.0, or 1.5 mm thickness simultaneously. Acrylic blocks act as space fillers when fewer than 12 gels are cast. You can cast gradient gels through a bottom filling port with the Model 485 gradient former (see below) to ensure reproducibility. Gels cast in the multi-casting chamber can be run on any of the Mini-PROTEAN electrophoresis systems including the Mini-PROTEAN Tetra cell and the Mini-PROTEAN 3 Dodeca cell.

Model 485 Gradient Former

The Model 485 gradient former allows you to pour linear, concave, or convex exponential acrylamide gradients for PAGE. Its 40–175 ml capacity is designed to pour up to 12 gradient gels in the Mini-PROTEAN 3 multi-casting chamber. The optional exponential piston is required to form concave or convex exponential acrylamide gradients.

For More Information Web: bio-rad.com/mphandcast



Mini-PROTEAN 3 Multi-Casting Chamber



Model 485 Gradient Former

Ordering In	formation	
Catalog #	Description	
Mini-PROTE	EAN Empty Cassettes and Combs	
4560003	Mini-PROTEAN Empty Cassettes, 10-well, 50	
4560005	Mini-PROTEAN Empty Cassettes, 12-well, 50	
4560006	Mini-PROTEAN Empty Cassettes, 15-well, 50	
4560001	Mini-PROTEAN Empty Cassettes, IPG-well, 7 cm IPG strip, 50	
4560013	Mini-PROTEAN Combs, 10-well, 50	
4560015	Mini-PROTEAN Combs, 12-well, 50	
4560016	Mini-PROTEAN Combs, 15-well, 50	
4560011*	Mini-PROTEAN Combs, IPG, 50	
AnyGel Star	nds and Accessories	
1654131	AnyGel Stand, single-row, holds 1 PROTEAN gel, 2 Criterion gels, or 3 Mini-PROTEAN or Ready Gel mini gels	
1655131	AnyGel Stand, 6-row, holds 6 PROTEAN gels, 12 Criterion gels, or 18 Mini-PROTEAN or Ready Gel mini gels	
1654132	Replacement Clamps, 2	
AnyGel Star	nds and Electrophoresis Cells	
1655134	PROTEAN Plus Dodeca Cell (100/120 V) and Two 6-Row AnyGel Stands,	
	includes #1654150 and two #1655131	
1655135	PROTEAN Plus Dodeca Cell (220/240 V) and Two 6-Row AnyGel Stands,	
	includes #1654151 and two #1655131	
1655133	Criterion Dodeca Cell and 6-Row AnyGel Stand, includes #1654130 and #1655131	
1656020	Criterion Cell and Single-Row AnyGel Stand, includes #1656001 and #1654131	
Mini-PROTE	EAN 3 Multi-Casting Chambers	
1654110**	Mini-PROTEAN 3 Multi-Casting Chamber, includes 15 separation sheets, 8 acrylic blocks,	
	tapered luer connector, stopcock valve (order glass plates and combs separately)	
1654111**	Mini-PROTEAN 3 Multi-Casting Chamber, 0.75 mm, includes 15 sets of glass plates	
1654112**	Mini-PROTEAN 3 Multi-Casting Chamber, 1.0 mm, includes 15 sets of glass plates	
1654113**	Mini-PROTEAN 3 Multi-Casting Chamber, 1.5 mm, includes 15 sets of glass plates	
1654116**	Mini-PROTEAN 3 Multi-Casting Chamber, 0.5 mm, includes 15 sets of glass plates	
Mini-PROTE	EAN 3 Multi-Casting Chamber Accessories	
1654114	Acrylic Blocks, 6.0 mm, 8	
1654115	Separation Sheets, 15	
1653320	Gel Releasers, 5	
1652913	Replacement Gaskets, for Mini-PROTEAN 3 multi-casting chamber, includes 3' of tubing	
		continues

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Catalog #	Description
Combs**, ***	and Glass Plates for 2-D Electrophoresis
1653308	Short Plates, 5
1653310	Spacer Plates with 0.75 mm Integrated Spacers, 5
1653311	Spacer Plates with 1.0 mm Integrated Spacers, 5
1653312	Spacer Plates with 1.5 mm Integrated Spacers, 5
1653362	Mini-PROTEAN Comb, IPG well, 1.0 mm
1653368	Mini-PROTEAN Comb, IPG well, 1.5 mm
1653356	Mini-PROTEAN Comb, prep/2-D well, 0.75 mm
1653361	Mini-PROTEAN Comb, prep/2-D well, 1.0 mm
1653367	Mini-PROTEAN Comb, prep/2-D well, 1.5 mm
Model 485 G	radient Former
1654120	Model 485 Gradient Former, 40–175 ml, includes body with valve stem and tubing connection kit
1654122	Model 485 Gradient Former and Mini-PROTEAN 3 Multi-Casting Chamber,
	ncludes #1654120 and #1654110
Model 485 G	aradient Former Accessories
1652006	Exponential Piston, for Model 385 and Model 485 gradient formers
1652007	Gradient Pouring Needles, 2
1652008	Tubing Connection Kit, includes stopcock, luer taper coupling, tubing (1/8" ID, 3'), Y-connector
	560011 is an IPG well only, no reference well. If a protein standard is needed on gel, order Precision Plus Protein lugs #1610378.
** Order com	bs separately (see combs for use with glass plates on page 166) in the Mini-PROTEAN Tetra cell section.
	vell comb configurations, refer to page 166.

Midi-Format 1-D Electrophoresis Systems

The Criterion[™] and the Criterion[™] Dodeca[™] electrophoresis cells accommodate precast or handcast Criterion gels that are wider and longer than traditional mini gels for increased throughput and separation.

Criterion[™] Cell and Criterion[™] Dodeca[™] Cell

Criterion Cell

The Criterion electrophoresis cell is dedicated to running one or two midi gels* (13.3 x 8.7 cm), which are wider and longer than traditional mini gels (8.6 x 7.2 cm). With a single Criterion gel, you can run up to 26 samples in less than 1 hour or accommodate 11 cm ReadyStrip[™] IPG strips for 2-D applications.

- Compact size that requires only 1 L of running buffer
- Built-in wedge on the lid to open gel cassettes in a single step
- Locator slots built into the tank walls to easily and quickly slide cassettes into position

For More Information Web: bio-rad.com/criterioncell Request or download bulletin: 2710

* U.S. patent 6,093,301.



See Also

Criterion precast gels and empty cassettes: page 177. Criterion blotter: page 227. PowerPac Basic and PowerPac HC power supplies: page 155. Dodeca stainers: page 182. AnyGel stands: page 182.

Protein Electrophoresis

Midi-Format 1-D Electrophoresis Systems

See Also

PowerPac Basic and PowerPac HC power supplies: page 155. Criterion precast gels and accessories: page 177. Trans-Blot Plus cell: page 229. Dodeca stainers: page 182. Imaging systems: page 280. Imaging software: page 292.

Criterion Dodeca Cell

The Criterion Dodeca cell has the capacity to run up to 12 handcast or Criterion precast gels* simultaneously. Criterion gels accommodate 11 cm ReadyStrip IPG strips.

- Locator slots to slide cassettes into place without alignment hassles or bulky clamps
- Built-in cooling coil to prevent overheating and ensure the highest resolution
- Stirbar capability to maintain uniform buffer tank temperatures for reproducible runs
- A cassette opener built into the cell for easy gel access
- Convenient buffer draining via the built-in quick-connect drain port



For More Information Web: bio-rad.com/criteriondodeca Request or download bulletin: 2622

* U.S. patent 6,093,301.

Specifications	Criterion Cell	Criterion Dodeca Cell
Number of gels	1–2	1–12
Precast gels	Criterion precast gels	Criterion precast gels
Handcast gels	Gels prepared in Criterion empty cassettes	Gels prepared in Criterion empty cassettes
Gel size (W x L)	13.3 x 8.7 cm	13.3 x 8.7 cm
Gel thickness	1.0 mm	1.0 mm
Total buffer volume	1 L	6 L
Typical running conditions	200 V constant	200 V constant; 1 A maximum; 200 W maximum
Recommended power supply	PowerPac [™] Basic or PowerPac HC	PowerPac HC or PowerPac Universal
Dimensions (W x L x H)	14.4 x 22.3 x 19.5 cm	18.8 x 49.0 x 19.2 cm
Weight	0.86 kg (1.9 lb)	4.8 kg (11 lb)

Catalog #	Description
Criterion Ce	ll and Systems
1656001	Criterion Cell, includes electrophoresis buffer tank, lid with power cables, 3 sample loading guides
	(12+2 well, 18-well, 26-well)
1656019	Criterion Cell and PowerPac Basic Power Supply, 100–120/220–240 V, includes #1656001 and #1645050
1656020	Criterion Cell and Single-Row AnyGel Stand, includes #1656001 and #1654131
Criterion Ce	II and Blotter Systems
1656024	Criterion Cell/Plate Blotter System, includes #1656001 and #1704070
1656025	Criterion Cell/Wire Blotter System, includes #1656001 and #1704071
Replacemer	t Parts
1656002	Criterion Replacement Electrophoresis Buffer Tank, with lower electrodes
1656003	Criterion Replacement Lid, with upper electrodes
1656004	Criterion Replacement Upper Electrode, includes prestrung platinum wire
1656005	Criterion Replacement Lower Electrode, includes prestrung platinum wire
1652948	Replacement Power Cables, for lid
1654131	AnyGel Stand, single-row, holds 1 PROTEAN gel, 2 Criterion gels, or 3 Mini-PROTEAN or Ready Gel mini gels
Criterion Do	deca Cell
1654130	Criterion Dodeca Cell, includes electrophoresis buffer tank with built-in cooling coil, lid with power cables
1654138	Criterion Dodeca Cell and PowerPac HC Power Supply, includes #1654130 and #1645052
1654139	Criterion Dodeca Cell and PowerPac Universal Power Supply, includes #1654130 and #1645070
1655133	Criterion Dodeca Cell and 6-Row AnyGel Stand, includes #1654130 and #1655131
Replacemer	t Parts
1654104	Replacement Drain Line
1654135	Lower Electrode with Platinum Wire
1654136	Replacement Cooling Coil, includes connector tubing
1654137	Replacement Lid
1652948	Replacement Power Cables, for lid

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Protein Electrophoresis Midi-Format 1-D Electrophoresis Systems

Criterion[™] Precast Gels

Criterion precast gels include a broad selection of midi polyacrylamide gels in single-use cassettes. This gel size provides reproducible, high-resolution results with fast setup, loading, and run times. The gels are wider and longer than traditional mini gels for high-throughput electrophoresis. Criterion gels are packaged and sold in individual units: 1–2 gels can be run in the Criterion cell (page 175) and 1–12 gels can be run in the highthroughput Criterion Dodeca cell (page 176).

- Fast run times and 12-month shelf life for Criterion[™] TGX[™] gels
- Room temperature storage and 12-month shelf life for Criterion XT Bis-Tris gels
- Formats that run up to 26 samples on a single gel without reducing sample volume or sacrificing speed
- A patented* cassette design including an integral upper buffer chamber that never leaks and requires no tools to open
- Sample wells that are outlined and numbered for easy loading
- Multichannel pipet–compatible combs

Criterion TGX Precast Gels

These precast gels use the Laemmli buffer system and have a 12-month shelf life. And they maintain cooler temperatures at elevated voltages, allowing for reduced run times.

- Run times as short as 20 min
- Transfer times as short as 7 min with the Trans-Blot[®] Turbo[™] system
- 12-month shelf life
- Laemmli format, no special buffers required
- Integrated upper buffer chamber

Criterion TGX Precast Gel Specifications

Gel dimensions (W x L)	13.3 x 8.7 cm; 1.0 mm thick
Cassette dimensions (W x L)	15.0 x 10.6 cm; 5.3 mm thick
Cassette material	Styrene copolymer
Comb material	Polycarbonate
Gel storage conditions	Store flat at 4°C; do not freeze
Shelf life at recommended temperature*	12 months
Recommended sample buffer (dilute 1:1 with sample)	Laemmli sample buffer: 62.5 mM Tris-HCl, pH 6.8, 2% SDS, 25% glycerol, 0.01% bromophenol blue
Recommended running buffer (Tris/glycine/SDS)	25 mM Tris, 192 mM glycine, 0.1% SDS, pH 8.3
Run times	42–50 min at 200 V 20–26 min at 300 V

* From date of manufacture.

* U.S. patent 6,093,301.



Available Chemistries

IEF	pH 3–10, 5–8
Stain-Free	10%, 4–20%, 8–16% Tris-HCl
TBE	5%, 10%, 15%, 4–20%
TBE-urea	5%, 10%, 15%
TGX	7.5%, 10%, 12%, 18% resolving 4–15%, 4–20%, 8–16%, 10–20% linear gradient Any kD™
TGX Stain-Free [™]	7.5%, 10%, 12%, 18%, 4–15%, 4–20% 8–16%, 10–20% linear gradient Any kD
Tris-acetate	7%, 3–8% resolving
Tris-HCI	5%, 7.5%, 10%, 12.5%, 15%, 18% resolving 4–15%, 4–20%, 8–16%, 10–20%, 10.5–14% linear gradient
Tris-Tricine	16.5%, 10–20%
XT (Bis-Tris)	10%, 12%, 4–12% resolving
Zymogram	10% with gelatin, 12.5% with casein

See Also

Premixed buffers: page 192. ReadyStrip IPG strips: page 205. Criterion blotter: page 227. PowerPac power supplies: page 155. Dodeca stainers: page 182. Criterion staining trays: page 182. Standards: page 157. Electrophoresis stains: page 199.

Midi-Format 1-D Electrophoresis Systems

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Criterion[™] TGX Stain-Free[™] Precast Gels

Criterion TGX Stain-Free precast gels combine TGX formulation with a proprietary compound that facilitates protein visualization in less than 5 minutes using Bio-Rad's stain-free enabled imaging systems (see page 280).

Criterion TGX Stain-Free precast gels eliminate the need for staining. In addition to the 12-month shelf life, Laemmli buffer system, and fast run times of the TGX formulation, the Criterion TGX Stain-Free gels provide:

- Complete protein separation, gel imaging, and data analysis in 25 min
- Comparable sensitivity to Coomassie stain
- Better reproducibility and quantitation compared to staining procedures
- Use of the same gel for chromatography, western blotting, standard staining methods, and mass spectrometry analysis

For More Information Web: bio-rad.com/midistainfree

Request or download bulletin: 5974

Extended Shelf-Life Criterion XT Gels for SDS-PAGE and Native PAGE

Criterion XT gels are formulated at near-neutral pH to ensure longer shelf life (12 months for Bis-Tris gels, 8 months for Tris-acetate gels) and improved protein stability. Criterion XT gels are run using optimized sample and running buffers — without the need for antioxidant addition — for sharp bands and minimal preparation time. Like traditional Laemmli systems, Criterion XT gels use discontinuous buffer that forms moving boundaries to stack and then separate proteins.

Criterion XT Bis-Tris gels are formulated by using a Bis-Tris buffer system (pH 6.4) for separation of proteins by MW. By selecting from two running buffers (MOPS or MES) you can expand the separation capability of a single Bis-Tris gel type.

For More Information Web: bio-rad.com/criteriongels

Criterion Stain Free[™] Precast Gels

Criterion Stain Free gels have Tris-HCl formulation for PAGE applications and a proprietary compound that facilitates protein visualization using a stain-free enabled imager (Gel Doc[™] EZ or ChemiDoc[™] MP imaging system). The stain-free technology allows direct visualization, analysis, and documentation of protein samples in PAGE gels without staining, destaining, and gel drying procedures.

For More Information

Web: bio-rad.com/criterionstainfree

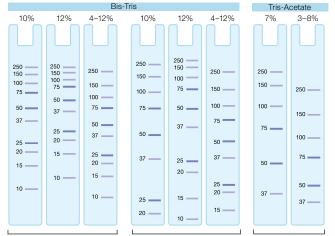


Specifications

•	
Gel dimensions	13.3 x 8.7 cm (W x L); 1.0 mm thick
Cassette dimensions	15.0 x 10.6 cm (W x L); 5.3 mm thick
Cassette material	Styrene copolymer
Comb material	Polycarbonate
Storage tray material	PET
Gel storage conditions	Store flat; do not freeze Room temperature for Bis-Tris gels 4°C for all other gel types
Gel shelf life*	12 months for TGX and Bis-Tris gels 8 months for Tris-acetate gels 12 weeks for Tris-HCI, Tris-Tricine, zymogram, TBE, TBE-urea gels 26 weeks for IEF gels
Buffer volume	Upper, 60 ml; lower, 400 ml

* From date of manufacture.

Criterion XT Migration Charts (with Precision Plus Protein[™] Unstained Standards)



Size, kD (XT MES buffer)

Size, kD (XT MOPS buffer) Size, kD (XT Tricine buffer)

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Midi-Format 1-D Electrophoresis Systems

Criterion Migration Charts (with Precision Plus Protein Unstained Standards)

5%	7.5%	10%	12.5%	15%	18%	4–15%	4–20%	8–16%	10–20%	10.5–14%
പ										
				250	250 150 100 75					250—
		250——	250—— 150——	250 150 100	¹⁰⁰ 75			250	250	150——
	250	150—	100	75	50 37	250—	250	100 ——	150 100	100
		100	75—	50	5/		150	75 —	75	75
250—	150——	75—	50	37——	25	150——	100	50 — 37 —	50	50
	100——	75—			20——	100——	75	3/	37 ——	50
		50	37——	25	15——	75	50	25 —	25	37——
150 ——	75—	50		20——		50	37	20	20	
		37—	25—		10——	37	25 20		15——	25—
			20—	15——			15—	15 ——	10—	20——
100	50—					25 20	10——	10 —		15
	37		15 10	10——		15 10				10
75 —		25—	10			10				10

Tris-HCI Gels

Criterion[™] TGX[™] and TGX Stain-Free Migration Charts (with Precision Plus Protein Unstained Standards)

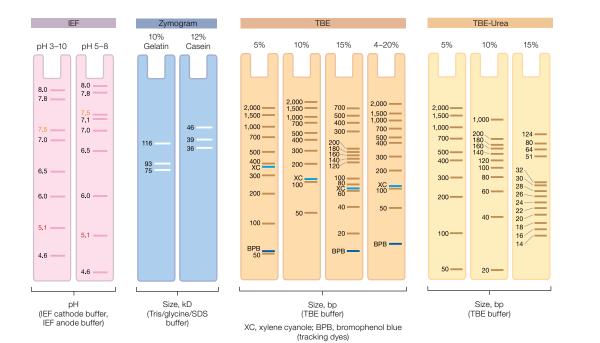
7.5%	10%	12%	18%	4–15%	4–20%	8–16%	10–20%	Any kD [™]
	250	250 150 100	250 150 100 75			250	250	250
150	150	75	50	250	250	150 — 100 —	150 100 75	150
100	75	50 —	37 —	150	150	75 —	50	75 —
75	50	37 —	25	100 	75	50 —	37	50 —
75	37-	25	20	/5	50	37 —	25	37 —
50 —	37	20	15	50	37	25	20	25
37	25		10	37	25 20	20 —	15	20 —
	20	15		25 20 	15	15	10	15
25	15	10		15 	10	10		10

Criterion TGX and TGX Stain-Free Migration Charts (with Broad Range Unstained Protein Standards)

7.5%	10%	12%	18%	4–15%	4–20%	8–16%	10–20%	Any kD
200 — 116 — 97.5 —	200	200 — 116 — 97.5 — 66 — 45 —	200 116 97.5 66 45 31	200 — 116 — 97.5 —	200 — 116 — 97.5 — 66 —	200 116 97.5 66 45	200 — 116 — 97.5 66 — 45 —	200 116 97.5 66 45
66 	45 31 	31	21.5 14.4 	66 — 45 — 31 —	45 31 	31	31 <u>21.5</u>	31
31 —	21.5 —— 14.4 ——	14.4 — 6.5 —	6.5	21.5 14.4 6.5	21.5 14.4 6.5	14.4 6.5 	6.5	14.4 — 6.5 —

Midi-Format 1-D Electrophoresis Systems

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Ordering Information

	anesta asses	er er			2001	
Description	12+2-Well*, ** 45 μl	18-Well 50 μl	26-Well* 15 µl	Prep+2-Well** 800 μl	IPG+1-Well** 11 cm IPG Strip	
Criterion TGX Precast Gels						
7.5% Resolving Gel	5671023	5671024	5671025	_	_	
10% Resolving Gel	5671033	5671034	5671035	_	_	
12% Resolving Gel	5671043	5671044	5671045	_	_	
18% Resolving Gel	5671073	5671074	5671075	5671072	5671071	
4–15% Linear Gradient	5671083	5671084	5671085	5671082	5671081	
4–20% Linear Gradient	5671093	5671094	5671095	5671092	5671091	
8–16% Linear Gradient	5671103	5671104	5671105	5671102	5671101	
10–20% Linear Gradient	5671113	5671114	5671115	5671112	5671111	
Any kD Gel	5671123	5671124	5671125	5671122	5671121	
Criterion TGX Stain-Free Precast Gels	5					
7.5% Gel	5678023	5678024	5678025	_	_	
10% Gel	5678033	5678034	5678035	_	_	
12% Gel	5678043	5678044	5678045	_	_	
18% Gel	5678073	5678074	5678075	5678072	5678071	
4–15% Gel	5678083	5678084	5678085	5678082	5678081	
4–20% Gel	5678093	5678094	5678095	5678092	5678091	
8–16% Linear Gradient	5678103	5678104	5678105	5678102	5678101	
10–20% Linear Gradient	5678113	5678114	5678115	5678112	5678111	
Any kD Gel	5678123	5678124	5678125	5678122	5678121	
Criterion XT Bis-Tris Gels***						
10% Resolving Gel	3450111	3450112	3450113	-	3450115	
12% Resolving Gel	3450117	3450118	3450119	3450120 [†]	3450121	
4–12% Resolving Gel	3450123	3450124	3450125	3450126†	3450127	
						continue

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Protein Electrophoresis

Midi-Format 1-D Electrophoresis Systems

Ordering Information

Description	12+2-Well*, ** 45 μl	18-Well 50 μl	26-Well* 15 μl	Prep+2-Well** 800 µl	IPG+1-Well** 11 cm IPG Strip	
Criterion XT Tris-Acetate Gels						
7% Resolving Gel	3450135	3450136 [†]	3450137 [†]	_	_	
3–8% Resolving Gel	3450129	3450130	3450131	-	3450133†	
Criterion Tris-HCI Gels						
5% Resolving Gel	3450001	3450002	3450003+	_	_	
7.5% Resolving Gel	3450005	3450006	3450007	3450008	_	
10% Resolving Gel	3450009	3450010	3450011	3450012†	3450101	
12.5% Resolving Gel	3450014	3450015	3450016	3450017†	3450102	
15% Resolving Gel	3450019	3450020	3450021	3450022†	_	
18% Resolving Gel	3450023	3450024	3450025	3450026†	_	
4–15% Linear Gradient	3450027	3450028	3450029	3450030+	3450103	
4–20% Linear Gradient	3450032	3450033	3450034	3450035	3450104	
8–16% Linear Gradient	3450037	3450038	3450039	3450040+	3450105	
10–20% Linear Gradient	3450042	3450043	3450044	3450045†	3450107	
10.5–14% Linear Gradient	3459949	3459950	3459951	_	3450106	
Criterion Stain Free Gels						
10% Tris-HCI Gel	3451012	3451018	_	_	_	
4–20% Tris-HCl Gel	3450412	3450418	3450426	_	_	
8–16% Tris-HCl Gel	3458162	_	3458166	_	3458161	
Criterion Tris-Tricine Gels						
16.5% Tris-Tricine	3450063	3450064	3450065†	3450066†	_	
10–20% Tris-Tricine	3450067	3450068	3450069	_	_	
Criterion IEF Gels						
pH 3–10	3450071+	3450072†	3450073 [†]	_	_	
pH 5–8	_	3450076†	_	_	_	
Criterion Zymogram Gels						
10% Zymogram Gel with Gelatin	3450079 [†]	3450080+	3450081+	_	_	
12.5% Zymogram Gel with Casein	3450082 [†]	3450083†	3450084 [†]	_	_	
Criterion TBE Gels						
5% TBE Gel	3450047	3450048	3450049	_	_	
10% TBE Gel	3450051	3450052	3450053	_	_	
15% TBE Gel	3450055 ⁺	3450056	3450057	_	_	
4–20% TBE Gel	3450059 ⁺	3450060 ⁺	3450061 ⁺	_	_	
Criterion TBE-Urea Gels						
5% TBE-Urea Gel	_	3450086†	_	_	_	
10% TBE-Urea Gel	3450088 ⁺	3450089 ⁺	3450090†	_	_	
15% TBE-Urea Gel	3450091	3450092	3450093 ⁺	_	_	
	0400081	0400082	0400080'	_	_	
Criterion Empty Cassettes 1.0 mm thick, 10 sets	3459901	3459902	3459903	3459904	3459906	
·	0408801	0403302	0409900		0408800	
Loading Guides	1050000	1050007	1050000			
Criterion Sample Loading Guide ^{††}	1656006	1656007	1656008	_	-	
						continue

Midi-Format 1-D Electrophoresis Systems

See Also

Premixed running buffers: page 192.

Ordering Inf	ormation
Catalog #	Description
Criterion XT	Buffers and Reagents
1610788***	XT MOPS Running Buffer, 20x, 500 ml
1610789***	XT MES Running Buffer, 20x, 500 ml
1610790	XT Tricine Running Buffer, 20x, 500 ml
1610791	XT Sample Buffer, 4x, 10 ml
1610792	XT Reducing Agent, 20x, 1 ml
1610793***	XT MOPS Buffer Kit, includes 500 ml of 20x XT MOPS running buffer, 10 ml of 4x XT sample buffer, 1 ml of 20x XT reducing agent
1610796***	XT MES Buffer Kit, includes 500 ml of 20x XT MES running buffer, 10 ml of 4x XT sample buffer, 1 ml of 20x XT reducing agent
1610797	XT Tricine Buffer Kit , includes 500 ml of 20x XT Tricine running buffer, 10 ml of 4x XT sample buffer, 1 ml of 20x XT reducing agent

Application Guide

4110001 Criterion Precast Gel Application Guide, available online

- * Multichannel pipet compatible. ** Includes reference well(s), 15 µl. *** Purchase of this product is accompanied by a limited license under
- U.S. patents 6,143,154; 6,096,182; 6,059,948; 5,578,180; 5,922,185; 6,162,338; and 6,783,651 and corresponding foreign patents.

⁺ Please allow up to 2 weeks for delivery. ⁺⁺ U.S. patent 5,656,145.

Criterion[™] Accessories

Empty Cassettes

Single-use empty Criterion cassettes are available for hand casting gels. For added convenience, cast your gels using AnyGel[™] stands.

For More Information Request or download bulletins: 2710, 2911, and 2912

AnyGel Stands

AnyGel stands are convenient for storing glass plates of any size gel. They are available as single-row or six-row stands. See the Mini-PROTEAN[®] precast gel section, page 168.

Criterion Staining Trays

Criterion staining/blotting trays are plastic trays specifically designed for staining one or two Criterion gels or performing western blot detection. Tray dimensions are optimized for Criterion gel staining and for blot detection. These dimensions provide a working volume of up to 500 ml.

Dodeca[™] High-Throughput Stainers

Dodeca stainers are high-throughput gel staining devices available in two sizes: the small size accommodates up to 24 Criterion gels while the large size can accommodate up to 12 large-format gels. The stainers eliminate risk of gel breakage from excessive handling. Features of the stainers include:

- A patented* shaking rack designed to hold the staining trays at an angle to allow air bubbles to escape, ensure uniform gel staining, and protect gels from breaking
- Compatibility with Bio-Safe[™] Coomassie, Coomassie, Oriole[™], SYPRO Ruby, Flamingo[™], and silver stains

* U.S. patent 6,843,593.



- Dodeca stainer components:
- 1. Shaker motor
- 2. Lid with shaker control unit and
- integrated reagent access door.
- Tray attachments.
- 4. Stack of staining trays (including white development tray).
- 5. Shaking rack designed with built-in handles for
- easy placement into the solution tank.
- 6. Gel clip.
- 7. Solution tank with incorporated drain ports.
- A white development tray that allows easy monitoring of the final development step during the staining process
- A reagent access door integrated into the lid to add staining solutions without disturbing the gels
- Boxes for convenient storage of gels (optional)

Stainer Compatibility with Different Gel Sizes

	Gel Siz	ze (W x L)	Gel Format			
Large Dodeca			PROTEAN [®] Plus precast			
0		20.5 cm	PROTEAN Plus handcast (requires one attachment per tray)			
Small Dodeca	Small Dodeca stainer 20.0 x 20.5 cm		PROTEAN Plus handcast			
18.5 18.3 16.0		20.0 cm	PROTEAN II XL handcast			
		19.3 cm	PROTEAN II XL precast			
		20.0 cm	PROTEAN II xi handcast			
		16.0 cm	PROTEAN II xi handcast and precast			
	13.3 x 8	3.7 cm	Criterion (up to 24 gels, requires one attachment per tray)			
Specificatio	ıs					
Number of gel	3	1–12 large format	gels in the large Dodeca stainer; 1–24 Criterion gels in the small Dodeca stain			
		(minimum of 4 gel	s recommended for silver staining)			
Shaker device		Built-in shaker mo	tor			
Maximum stair	ning solution volume	10 L for the large I	Dodeca stainer, 7 L for the small Dodeca stainer			
5		•	l Coomassie Brilliant Blue G-250 stain, Coomassie Brilliant Blue R-250 stain,			
			SYPRO Ruby protein gel stain, Oriole and Flamingo fluorescent gel stains, Dodeca silver stain kit			
Dimensions (W	(xLxH)	41.3 x 46.2 x 38.9	cm for both the large and small Dodeca stainers			
Neight (empty)	,		9.1 kg (20 lb) for the large Dodeca stainer			
. signi (ompty)			e small Dodeca stainer			
Judovina Infa	rmation					
Ordering Info Catalog #	Description					
-	s and Accessories					
1654131	AnyGel Stand, single-row, holds 1 PROTEAN gel, 2 Criterion gels, or 3 Mini-PROTEAN or Ready Gel mini gels					
1655131	AnyGel Stand, 6-row, holds 6 PROTEAN gels, 12 Criterion gels, or 18 Mini-PROTEAN or Ready Gel mini gels					
1654132	Replacement Clamps,	2				
Criterion Stai	ning Trays					
3459921	Criterion Staining/Blot	ting Trays, with lids, 2				
3459920	Criterion Staining/Blot	ting Trays, with lids, 12				
Dodeca Stain	ers, Accessories, and Re	placement Parts				
1653400		•	ays (12 clear, 1 white), 12 tray attachments, shaking rack,			
	solution tank, lid with shaker motor, shaker control unit, gel clip					
1653401			ays (12 clear, 1 white), 12 Criterion tray attachments,			
	shaking rack, solution ta	nk, lid with shaker motor,	shaker control unit, gel clip			
1653403	Dodeca Stainer and Do	odeca Silver Stain Kit, la	arge, 100–240 V, includes large Dodeca stainer (#1653400),			
	Dodeca silver stain kit fo	r the large tank (#161048	D)			
1653404			mall, 100–240 V, includes small Dodeca stainer (#1653401),			
	Dodeca silver stain kit fo	r the small tank (#161048	1)			
1653405			n Kit, large, 100–240 V, includes large Dodeca stainer			
			sufficient for up to 12 large format gels			
			n Kit, small, 100–240 V, includes small Dodeca stainer			
1653406	(#1653401) and staining		sufficient for up to 12 large format gels			
		Dodeca Stainer and SYPRO Ruby Protein Gel Stain Kit, large, 100–240 V, includes large Dodeca stainer				
	Dodeca Stainer and S		(#1653400) and SYPRO staining solution for a large tank, sufficient for up to 12 large format gels			
1653407	Dodeca Stainer and SY (#1653400) and SYPRO	staining solution for a larg				
653407	Dodeca Stainer and SY (#1653400) and SYPRO Dodeca Stainer and SY	staining solution for a larg (PRO Ruby Protein Gel	Stain Kit, small, 100–240 V, includes small Dodeca stainer			
1653407 1653408	Dodeca Stainer and SY (#1653400) and SYPRO Dodeca Stainer and SY (#1653401) and SYPRO	staining solution for a larg /PRO Ruby Protein Gel staining solution for a sm	Stain Kit, small, 100–240 V, includes small Dodeca stainer all tank, sufficient for up to 12 large format gels			
653407 653408 653429	Dodeca Stainer and SY (#1653400) and SYPRO Dodeca Stainer and SY (#1653401) and SYPRO Storage Box, large, hold	staining solution for a larg (PRO Ruby Protein Gel staining solution for a sm ds up to 4 gels on large s ⁻	Stain Kit, small, 100–240 V, includes small Dodeca stainer all tank, sufficient for up to 12 large format gels aining trays			
653407 653408 653429 653430	Dodeca Stainer and SV (#1653400) and SYPRO Dodeca Stainer and SV (#1653401) and SYPRO Storage Box, large, hold Storage Box, small, hold	staining solution for a larc (PRO Ruby Protein Gel staining solution for a sm ds up to 4 gels on large s ds up to 4 gels on small s	Stain Kit, small, 100–240 V, includes small Dodeca stainer all tank, sufficient for up to 12 large format gels aining trays			
653407 653408 653429 653430 653416	Dodeca Stainer and SV (#1653400) and SYPRO Dodeca Stainer and SV (#1653401) and SYPRO Storage Box, large, hold Storage Box, small, hold Dodeca Stainer Tray, s	staining solution for a larc (PRO Ruby Protein Gel staining solution for a sm ds up to 4 gels on large s ds up to 4 gels on small s mall, replacement, 2	Stain Kit, small, 100–240 V, includes small Dodeca stainer all tank, sufficient for up to 12 large format gels iaining trays taining trays			
653407 653408 653429 653430 653416 653420	Dodeca Stainer and SV (#1653400) and SYPRO Dodeca Stainer and SV (#1653401) and SYPRO Storage Box, large, hold Storage Box, small, hold Dodeca Stainer Tray, s Dodeca Stainer White	staining solution for a larg (/PRO Ruby Protein Gel staining solution for a sm ds up to 4 gels on large s ds up to 4 gels on small s mall, replacement, 2 Development Tray , sma	Stain Kit, small, 100–240 V, includes small Dodeca stainer all tank, sufficient for up to 12 large format gels aining trays taining trays			
653407 653408 653429 653430 653416 653420 653420 653422	Dodeca Stainer and SY (#1653400) and SYPRO Dodeca Stainer and SY (#1653401) and SYPRO Storage Box, large, hold Storage Box, small, hold Dodeca Stainer Tray, s Dodeca Stainer White Dodeca Stainer Shakir	staining solution for a larg /PRO Ruby Protein Gel staining solution for a sm ds up to 4 gels on large s ds up to 4 gels on small s mall, replacement, 2 Development Tray , sma ng Rack, small, replacem	Stain Kit, small, 100–240 V, includes small Dodeca stainer all tank, sufficient for up to 12 large format gels aining trays taining trays II ent			
1653407 1653408 1653429 1653430 1653416 1653420 1653422 1653423	Dodeca Stainer and SY (#1653400) and SYPRO Dodeca Stainer and SY (#1653401) and SYPRO Storage Box, large, hold Storage Box, small, hold Dodeca Stainer Tray, s Dodeca Stainer White Dodeca Stainer Shakir Dodeca Stainer Shakir	staining solution for a larg /PRO Ruby Protein Gel staining solution for a sm Is up to 4 gels on large s ds up to 4 gels on small s mall, replacement, 2 Development Tray , sma ig Rack , small, replacem in Tank , large, replacem	Stain Kit, small, 100–240 V, includes small Dodeca stainer all tank, sufficient for up to 12 large format gels aining trays taining trays II ent ent			
1653407 1653408 1653429 1653430 1653416 1653420 1653422 1653423 1653423 1653424	Dodeca Stainer and SV (#1653400) and SYPRO Dodeca Stainer and SV (#1653401) and SYPRO Storage Box, large, hold Storage Box, large, hold Storage Box, small, hold Dodeca Stainer Tray, s Dodeca Stainer White Dodeca Stainer Solutio Dodeca Stainer Solutio	staining solution for a larg /PRO Ruby Protein Gel staining solution for a sm Is up to 4 gels on large s cls up to 4 gels on small s mall, replacement, 2 Development Tray , smal g Rack , small, replacem on Tank , large, replacem on Tank , small, replacem	Stain Kit, small, 100–240 V, includes small Dodeca stainer all tank, sufficient for up to 12 large format gels aining trays taining trays II ent ent ent			
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1653407 1653408 1653429 1653430 1653416 1653420 1653422 1653423 1653423 1653424 1653425 1653426	Dodeca Stainer and SV (#1653400) and SYPRO Dodeca Stainer and SV (#1653401) and SYPRO Storage Box, large, hold Storage Box, small, hold Dodeca Stainer Tray, s Dodeca Stainer White Dodeca Stainer Solutio Dodeca Stainer Solutio Dodeca Stainer Solutio Dodeca Stainer Lid wit Dodeca Stainer Lid wit	staining solution for a larg (PRO Ruby Protein Gel staining solution for a sm ds up to 4 gels on large s ds up to 4 gels on small s mall, replacement, 2 Development Tray, sma g Rack, small, replacem on Tank, large, replacem on Tank, small, replacem h Shaker Motor, 100–22 hout Shaker Motor, rep	Stain Kit, small, 100–240 V, includes small Dodeca stainer all tank, sufficient for up to 12 large format gels aining trays taining trays Il ent ont ont ont ont ont ont old V, replacement, fits both tank sizes acement, fits both tank sizes			
1653407 1653408 1653429 1653430 1653420 1653422 1653423 1653423 1653424 1653425 1653426 1653426 1653428	Dodeca Stainer and SV (#1653400) and SYPRO Dodeca Stainer and SV (#1653401) and SYPRO Storage Box, large, hold Storage Box, small, hold Dodeca Stainer Tray, s Dodeca Stainer White Dodeca Stainer Shakir Dodeca Stainer Solutic Dodeca Stainer Solutic Dodeca Stainer Lid wit Dodeca Stainer Lid wit Dodeca Stainer Lid wit	staining solution for a larg (PRO Ruby Protein Gel staining solution for a sm ds up to 4 gels on large s ds up to 4 gels on small s mall, replacement, 2 Development Tray, sma g Rack, small, replacem on Tank, large, replacem on Tank, small, replacem h Shaker Motor, 100–24 hout Shaker Motor, rep r Control Unit, replacem	Stain Kit, small, 100–240 V, includes small Dodeca stainer all tank, sufficient for up to 12 large format gels aining trays taining trays Il ent ont ent ont ont over the state			
1653406 1653407 1653408 1653429 1653430 1653420 1653422 1653422 1653423 1653424 1653424 1653425 1653426 1653428 1653428 1653428 1653428 1653428	Dodeca Stainer and S (#1653400) and SYPRO Dodeca Stainer and S (#1653401) and SYPRO Storage Box, large, hold Storage Box, small, hold Dodeca Stainer Tray, s Dodeca Stainer Tray, s Dodeca Stainer Shakin Dodeca Stainer Solutic Dodeca Stainer Solutic Dodeca Stainer Lid wit Dodeca Stainer Shake Dodeca Stainer Shake Dodeca Stainer Shake	staining solution for a larg (PRO Ruby Protein Gel staining solution for a sm ds up to 4 gels on large s ds up to 4 gels on small s mall, replacement, 2 Development Tray, sma ng Rack, small, replacem on Tank, large, replacem on Tank, small, replacem h Shaker Motor, 100–24 hout Shaker Motor, rep r Control Unit, replacem t, large, for use with large	Stain Kit, small, 100–240 V, includes small Dodeca stainer all tank, sufficient for up to 12 large format gels aining trays taining trays Il ent ont ont ont ont ont ont ont old V, replacement, fits both tank sizes acement, fits both tank sizes			

Large-Format Vertical Electrophoresis Systems

See Also

PowerPac Universal and PowerPac HV power supplies: page 155. PROTEAN i12 IEF cell: page 202. Protein stains: page 199. Buffers and reagents for protein electrophoresis: page 192. Gel clip: page 190. Dodeca stainers: page 182.

PROTEAN® II xi and XL Cells

Large format cells for protein and nucleic acid electrophoresis applications.

1-D Separations

For the first dimension of separation, choose the PROTEAN II xi cell, available in two sizes (16 x 20 or 20 x 20 cm). Up to four* gels can be run at once using the optional notched inner plate and additional spacers. High-resolution vertical agarose electrophoresis of nucleic acids can be done with the optional frosted glass plates. Conversion screws are available to convert the standard 25 mm well depth to 10 mm.

2-D Separations

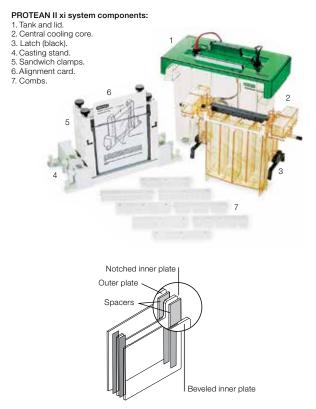
For the second dimension of 2-D electrophoresis, choose the PROTEAN II XL cell. This cell is designed to run up to two* (18.3 x 20 cm) gels at once with 17 and 18 cm ReadyStrip[™] IPG strips. Key features include:

- Leak proof innovative clamps exert uniform pressure along the length of the plates to prevent leaking without the use of grease or agarose plugs
- Sharp bands and spots central cooling core can provide smile-free patterns with as little as 1.5 L of buffer
- Multiple ways to customize choose different combs, spacers, clamps, and glass plates to tailor the system to your needs

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PROTEAN II Conversion Kits for 2-D Applications

Conversion kits allow you to expand the capabilities of the PROTEAN II xi cell. Choose the PROTEAN II xi cell IPG conversion kit for running 17 and 18 cm ReadyStrip IPG strips. Three options are available to accommodate different gel thicknesses. The PROTEAN II xi cell 2-D conversion kit can modify the cell to function as a system for running IEF tube gels.



Optional notched inner plate and additional spacers allow up to four gels to be run in the PROTEAN II xi cell.

* For higher throughput, the PROTEAN II multi-cell provides six-gel capacity.

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Large-Format Vertical Electrophoresis Systems

Specifications

	PROTEAN II xi (16 cm)	PROTEAN II xi (20 cm)	PROTEAN II XL (20 cm)
Number of gels	1–4	1–4	2
Gel size (W x L)	16 x 16 cm (handcast)	16 x 20 cm (handcast)	18.3 x 20 cm (handcast)
Glass plate size (W x L) Inner plate Outer plate	20 x 16 cm 20 x 18.3 cm	20 x 20 cm 20 x 22.3 cm	20 x 20 cm 20 x 22.3 cm
Spacer length	18.3 cm	22.3 cm	22.3 cm
Typical upper buffer volume	350 ml	350 ml	350 ml
Typical lower buffer volume	1.8 L	1.2 L	1.2 L
Typical run times for SDS-PAGE* Without cooling With cooling	4 hr 2.5 hr	5 hr 3.5 hr	5 hr 3.5 hr
Recommended power supply	PowerPac [™] HV or PowerPac Universal	PowerPac HV or PowerPac Universal	PowerPac HV or PowerPac Universal

* For voltage and current settings for electrophoresis applications, see page 153.

Ordering Information

Catalog # Description

PROTEAN I	I xi Cells, for 16 x 16 cm* Gels			
1651801	PROTEAN II xi Cell, without spacers and combs**			
1651802	PROTEAN II xi Cell, 1.5 mm spacers (4), 15-well combs (2)			
1651803	PROTEAN II xi Cell, 1.0 mm spacers (4), 15-well combs (2)			
1651804	PROTEAN II xi Cell, 0.75 mm spacers (4), 15-well combs (2)			
PROTEAN I	l xi Cells, for 16 x 20 cm Gels			
1651811	PROTEAN II xi Cell, without spacers and combs**			
1651812	PROTEAN II xi Cell, 1.5 mm spacers (4), 15-well combs (2)			
1651813	PROTEAN II xi Cell, 1.0 mm spacers (4), 15-well combs (2)			
1651814	1814 PROTEAN II xi Cell, 0.75 mm spacers (4), 15-well combs (2)			
PROTEAN I	I XL Cells, for 18.3 x 20 cm Gels*, Compatible with ReadyStrip IPG Strips			
1653188	PROTEAN II XL Cell, wide-format, 1.0 mm, spacers (4), IPG 2-D combs (2)			
1653189	PROTEAN II XL Cell, wide-format, 1.5 mm, spacers (4), IPG 2-D combs (2)			
1653190	PROTEAN II XL Cell, wide-format, 2.0 mm, spacers (4), IPG 2-D combs (2)			
PROTEAN I	I IPG Conversion Kits, for 2-D (to Convert xi to XL)***			
1651815	PROTEAN II xi Cell 2-D Conversion Kit, converts PROTEAN II xi cell into a tube gel IEF 2-D system,			
	2 tube gel adaptors, 24 glass tubes (1.5 mm diameter, 180 mm length), gaskets, grommets, stoppers			
1653183	PROTEAN II xi Cell IPG Conversion Kit, 1.0 mm spacers			
1653186	PROTEAN II xi Cell IPG Conversion Kit, 1.5 mm spacers			
1653184	PROTEAN II xi Cell IPG Conversion Kit, 2.0 mm spacers			
1651834	PROTEAN II xi Basic Unit with Casting Stand, includes central cooling core, lower buffer chamber, lid with			
	cables, leveling bubble; combine with an IPG conversion kit for a complete 18.3 cm wide format system			
* All cells ind	clude central cooling core with gaskets, lower buffer chamber, lid with cables, 2 sets of glass plates, sandwich			
	, upper buffer dam, casting stand with gaskets, leveling bubble, instructions, and alignment card.			
** Select spa	acers and combs from page 186–187.			
*** All PROTE	AN II xi cell IPG conversion kits include 2 sets of IPG clamps, 2 sets of 20 x 20 cm glass plates, IPG spacers (4).			

*** All PROTEAN II xi cell IPG conversion kits include 2 sets of IPG clamps, 2 sets of 20 x 20 cm glass plates, IPG spacers (4), IPG 2-D combs (2), IPG central cooling core gaskets (2), casting stand gaskets (2), and alignment card.

Large-Format Vertical Electrophoresis Systems

See Also

PowerPac Universal power supply: page 156. Premixed buffers and buffer reagents: page 192. Dodeca stainers: page 182.

PROTEAN® II xi and XL Multi-Cells

The PROTEAN xi and XL multi-cells, which can run up to six gels at once, offer efficient cooling with a combination of two cooling coils and three cooling cores.* Effective cooling enables high-power runs for rapid separation with minimal protein diffusion for sharper bands and spots.

* Requires a refrigerated circulating bath and operation at 4°C for optimal results.

PROTEAN® II xi and XL Accessories

Accessories and replacement parts are available for the PROTEAN II xi and XL systems. There are a wide variety of glass plates, spacers, and combs to choose from. Components can be purchased separately for a truly customized system. Replacement parts are also available to keep your system up and running.

For More Information Web: bio-rad.com/largeelectro Request or download bulletin: 1760



PROTEAN II xi and XL (IPG) component comparison:

1. The 4 mm xi and 13 mm XL clamp notches.

- 2. The 181 mm xi and 198 mm XL central cooling core gaskets. 3. The 153 mm xi and 184 mm XL combs.
- 4. The 19 mm xi and 8 mm XL spacers.

Maximum Sample Volume per Well for PROTEAN II xi and XL Combs*

				Comb Thickness		
Number or Type of Wells	Well Width	0.5 mm	0.75 mm	1.0 mm	1.5 mm	3.0 mm
25	3.5 mm	_	60 µl	80 µl	120 µl	_
20	5.0 mm	54 µl	82 µl	110 µl	164 µl	328 µl
15	6.5 mm	74 µl	110 µl	147 µl	221 µl	442 µl
10	1.0 cm	114 µl	172 µl	229 µl	343 µl	687 µl
5	2.3 cm	-	—	522 µl	783 µl	1.57 ml
3	4.0 cm	-	-	_	1.37 ml	-
Blank	14.5 cm	_	2.44 ml	3.26 ml	4.88 ml	9.76 ml
2-D (IPG well)						
Reference well	3.5 mm	_	_	28 µl	42 µl	84 µl
Sample well	17.8–17.9 cm	_	_			

* At standard 25 mm well depth.

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	ore, 2 I II xi cell only AN II xi cell only DTEAN II xi cell only DTEAN II xi cell only JTEAN II xi cell only J16 cm bevel length, for PROTEAN II xi cell only	set (1 left, 1 right) for central cooling tral cooling core 3" 2 cm, 2, for PROTEA 0 cm, 2, for PROTEA 0 cm, 2, for PROTE x 20 cm, 2, for PR 0 x 20 cm, 2, for PR dures, 16 x 16 cm	Accessories for Running Gels PROTEAN II XL Sandwich Clamps, IPG PROTEAN II XL Replacement Gaskets, and XL Accessories for Running Gels Central Cooling Core, includes 2 gasket Buffer Tank Cell Lid, with power cables Upper Buffer Dam PROTEAN II Latch Assembly Kit, for ce Replacement Platinum Wire, cathode, 1 Replacement Platinum Wire, anode, 24 and XL Casting Apparatus Slab Gel Casting Stand, with gaskets Replacement Gaskets, for casting stand lass Plates* Inner Plates, for 16 x 16 cm gels, 16 x 20 Outer Plates, for 16 x 16 cm gels, 18.3 x 3 pecialty Glass Plates Frosted Inner Plates, for agarose gels, 1 Frosted Inner Plates, for day on gels, 2 Notched Inner Plate, for double-up proce	PROTEAN II XI 1651835 1653182 PROTEAN II xi 1651806 1651807 1651808 1651909 1005430 900768018 900768024 PROTEAN II xi 1651911 1651912 PROTEAN II xi 1651821 1651822 PROTEAN II xi 1651825** 1651826**
	II xi cell only AN II xi cell only DTEAN II xi cell only DTEAN II xi cell only el, 16 cm bevel length, for PROTEAN II xi cell only	tral cooling core tral cooling core " 2 cm, 2, for PROTEA 0 cm, 2, for PROTEA 0 cm, 2, for PROTEA 0 x 20 cm, 2, for PR 1 x 20 cm, 2, for PR dures, 16 x 16 cm	PROTEAN II XL Sandwich Clamps, IPG PROTEAN II XL Replacement Gaskets, and XL Accessories for Running Gels Central Cooling Core, includes 2 gasket Buffer Tank Cell Lid, with power cables Upper Buffer Dam PROTEAN II Latch Assembly Kit, for ce Replacement Platinum Wire, cathode, 1 Replacement Platinum Wire, anode, 24 and XL Casting Apparatus Slab Gel Casting Stand, with gaskets Replacement Gaskets, for casting stand lass Plates* Inner Plates, for 16 x 16 cm gels, 16 x 20 Outer Plates, for 16 x 16 cm gels, 18.3 x 3 pecialty Glass Plates Frosted Inner Plates, for agarose gels, 1 Frosted Inner Plates, for agarose gels, 2 Notched Inner Plate, for double-up proce	1651835 1653182 PROTEAN II xi 1651806 1651807 1651808 1651909 1005430 900768018 900768024 PROTEAN II xi 1651911 1651912 PROTEAN II xi 1651821 1651822 PROTEAN II xi 1651825** 1651825**
	II xi cell only AN II xi cell only DTEAN II xi cell only DTEAN II xi cell only el, 16 cm bevel length, for PROTEAN II xi cell only	tral cooling core tral cooling core " 2 cm, 2, for PROTEA 0 cm, 2, for PROTEA 0 cm, 2, for PROTEA 0 x 20 cm, 2, for PR 1 x 20 cm, 2, for PR dures, 16 x 16 cm	PROTEAN II XL Replacement Gaskets, and XL Accessories for Running Gels Central Cooling Core, includes 2 gasket Buffer Tank Cell Lid, with power cables Upper Buffer Dam PROTEAN II Latch Assembly Kit, for ce Replacement Platinum Wire, cathode, 1 Replacement Platinum Wire, anode, 24 and XL Casting Apparatus Slab Gel Casting Stand, with gaskets Replacement Gaskets, for casting stand lass Plates* Inner Plates, for 16 x 16 cm gels, 16 x 20 Outer Plates, for 16 x 16 cm gels, 18.3 x 3 pecialty Glass Plates Frosted Inner Plates, for agarose gels, 1 Frosted Inner Plates, for agarose gels, 2 Notched Inner Plate, for double-up proce	1653182 PROTEAN II xi 1651806 1651807 1651808 1651909 1005430 900768018 900768024 PROTEAN II xi 1651911 1651912 PROTEAN II xi 1651821 1651822 PROTEAN II xi 1651825** 1651825**
	II xi cell only AN II xi cell only DTEAN II xi cell only DTEAN II xi cell only el, 16 cm bevel length, for PROTEAN II xi cell only	tral cooling core 3" 2 cm, 2, for PROTEA 0 cm, 2, for PROTE 0 x 20 cm, 2, for PR 1 x 20 cm, 2, for PF dures, 16 x 16 cm	nd XL Accessories for Running Gels Central Cooling Core, includes 2 gasket Buffer Tank Cell Lid, with power cables Upper Buffer Dam PROTEAN II Latch Assembly Kit, for ce Replacement Platinum Wire, cathode, 1 Replacement Platinum Wire, anode, 24 nd XL Casting Apparatus Slab Gel Casting Stand, with gaskets Replacement Gaskets, for casting stand lass Plates* Inner Plates, for 16 x 16 cm gels, 16 x 20 Outer Plates, for 16 x 16 cm gels, 18.3 x 3 pecialty Glass Plates Frosted Inner Plates, for agarose gels, 1 Frosted Inner Plates, for agarose gels, 2 Notched Inner Plate, for double-up proce	PROTEAN II xi 1651806 1651807 1651808 1651909 1005430 900768018 900768024 PROTEAN II xi 1651911 1651912 PROTEAN II xi 1651821 1651822 PROTEAN II xi 1651825** 1651825**
	AN II xi cell only DTEAN II xi cell only DTEAN II xi cell only el, 16 cm bevel length, for PROTEAN II xi cell only	tral cooling core 3" 2 cm, 2, for PROTEA 0 cm, 2, for PROTE 0 x 20 cm, 2, for PR 1 x 20 cm, 2, for PF 0 x 20 cm, 2, for PF dures, 16 x 16 cm	Central Cooling Core, includes 2 gasket Buffer Tank Cell Lid, with power cables Upper Buffer Dam PROTEAN II Latch Assembly Kit, for ce Replacement Platinum Wire, cathode, 1 Replacement Platinum Wire, anode, 24 and XL Casting Apparatus Slab Gel Casting Stand, with gaskets Replacement Gaskets, for casting stand lass Plates* Inner Plates, for 16 x 16 cm gels, 16 x 20 Outer Plates, for 16 x 16 cm gels, 18.3 x 3 pecialty Glass Plates Frosted Inner Plates, for agarose gels, 1 Frosted Inner Plates, for agarose gels, 2 Notched Inner Plate, for double-up proce	1651806 1651807 1651808 1651909 1005430 900768018 900768024 PROTEAN II xi 1651911 1651912 PROTEAN II xi 1651821 1651822 PROTEAN II xi 1651825** 1651826**
	AN II xi cell only DTEAN II xi cell only DTEAN II xi cell only el, 16 cm bevel length, for PROTEAN II xi cell only	tral cooling core 3" 2 cm, 2, for PROTEA 0 cm, 2, for PROTE 0 x 20 cm, 2, for PR 1 x 20 cm, 2, for PF 0 x 20 cm, 2, for PF dures, 16 x 16 cm	Buffer Tank Cell Lid, with power cables Upper Buffer Dam PROTEAN II Latch Assembly Kit, for ce Replacement Platinum Wire, cathode, 1 Replacement Platinum Wire, anode, 24 and XL Casting Apparatus Slab Gel Casting Stand, with gaskets Replacement Gaskets, for casting stand lass Plates* Inner Plates, for 16 x 16 cm gels, 16 x 20 Outer Plates, for 16 x 16 cm gels, 18.3 x 3 pecialty Glass Plates Frosted Inner Plates, for agarose gels, 1 Frosted Inner Plates, for agarose gels, 2 Notched Inner Plate, for double-up proce	900768024 PROTEAN II xi 1651911 1651912 PROTEAN II xi 1651821 1651822 PROTEAN II xi 1651825** 1651825**
	AN II xi cell only DTEAN II xi cell only DTEAN II xi cell only el, 16 cm bevel length, for PROTEAN II xi cell only	2 cm, 2, for PROTEA 0 cm, 2, for PROTI 0 x 20 cm, 2, for PR 0 x 20 cm, 2, for PF dures, 16 x 16 cm	Cell Lid, with power cables Upper Buffer Dam PROTEAN II Latch Assembly Kit, for ce Replacement Platinum Wire, cathode, 1 Replacement Platinum Wire, anode, 24 and XL Casting Apparatus Slab Gel Casting Stand, with gaskets Replacement Gaskets, for casting stand lass Plates* Inner Plates, for 16 x 16 cm gels, 16 x 20 Outer Plates, for 16 x 16 cm gels, 18.3 x 3 pecialty Glass Plates Frosted Inner Plates, for agarose gels, 1 Frosted Inner Plates, for agarose gels, 2 Notched Inner Plate, for double-up proce	1651808 1651909 1005430 900768018 900768024 PROTEAN II xi 1651911 1651912 PROTEAN II xi 1651821 1651822 PROTEAN II xi 1651825** 1651825**
	AN II xi cell only DTEAN II xi cell only DTEAN II xi cell only el, 16 cm bevel length, for PROTEAN II xi cell only	2 cm, 2, for PROTEA 0 cm, 2, for PROTI 0 x 20 cm, 2, for PR 0 x 20 cm, 2, for PF dures, 16 x 16 cm	Upper Buffer Dam PROTEAN II Latch Assembly Kit, for ce Replacement Platinum Wire, cathode, 1 Replacement Platinum Wire, anode, 24 and XL Casting Apparatus Slab Gel Casting Stand, with gaskets Replacement Gaskets, for casting stand lass Plates* Inner Plates, for 16 x 16 cm gels, 16 x 20 Outer Plates, for 16 x 16 cm gels, 18.3 x 1 pecialty Glass Plates Frosted Inner Plates, for agarose gels, 1 Frosted Inner Plate, for double-up proce	1651909 1005430 900768018 900768024 PROTEAN II xi 1651911 1651912 PROTEAN II xi 1651821 1651822 PROTEAN II xi 1651825** 1651826**
	AN II xi cell only DTEAN II xi cell only DTEAN II xi cell only el, 16 cm bevel length, for PROTEAN II xi cell only	2 cm, 2, for PROTEA 0 cm, 2, for PROTI 0 x 20 cm, 2, for PR 0 x 20 cm, 2, for PF dures, 16 x 16 cm	PROTEAN II Latch Assembly Kit, for ce Replacement Platinum Wire, cathode, 1 Replacement Platinum Wire, anode, 24 nd XL Casting Apparatus Slab Gel Casting Stand, with gaskets Replacement Gaskets, for casting stand lass Plates* Inner Plates, for 16 x 16 cm gels, 16 x 20 Outer Plates, for 16 x 16 cm gels, 18.3 x 3 pecialty Glass Plates Frosted Inner Plates, for agarose gels, 1 Frosted Inner Plates, for agarose gels, 2 Notched Inner Plate, for double-up proce	1005430 900768018 900768024 PROTEAN II xi 1651911 1651912 PROTEAN II xi 1651821 1651822 PROTEAN II xi 1651825** 1651825**
	AN II xi cell only DTEAN II xi cell only DTEAN II xi cell only el, 16 cm bevel length, for PROTEAN II xi cell only	2 cm, 2, for PROTEA 0 cm, 2, for PROTI 0 x 20 cm, 2, for PR 0 x 20 cm, 2, for PF dures, 16 x 16 cm	Replacement Platinum Wire, cathode, 1 Replacement Platinum Wire, anode, 24 dd XL Casting Apparatus Slab Gel Casting Stand, with gaskets Replacement Gaskets, for casting stand lass Plates* Inner Plates, for 16 x 16 cm gels, 16 x 20 Outer Plates, for 16 x 16 cm gels, 18.3 x 3 pecialty Glass Plates Frosted Inner Plates, for agarose gels, 1 Frosted Inner Plate, for double-up proce	900768018 900768024 PROTEAN II xi 1651911 1651912 PROTEAN II xi 1651821 1651822 PROTEAN II xi 1651825** 1651826**
	AN II xi cell only DTEAN II xi cell only DTEAN II xi cell only el, 16 cm bevel length, for PROTEAN II xi cell only	2 cm, 2, for PROTEA 0 cm, 2, for PROTI 0 x 20 cm, 2, for PR 0 x 20 cm, 2, for PF dures, 16 x 16 cm	Replacement Platinum Wire, anode, 24 nd XL Casting Apparatus Slab Gel Casting Stand, with gaskets Replacement Gaskets, for casting stand lass Plates* Inner Plates, for 16 x 16 cm gels, 16 x 20 Outer Plates, for 16 x 16 cm gels, 18.3 x 3 pecialty Glass Plates Frosted Inner Plates, for agarose gels, 1 Frosted Inner Plate, for double-up proce	1651911 1651912 PROTEAN II xi 1651821 1651822 PROTEAN II xi 1651825** 1651826**
	AN II xi cell only DTEAN II xi cell only DTEAN II xi cell only el, 16 cm bevel length, for PROTEAN II xi cell only	cm, 2, for PROTEA 0 cm, 2, for PROTI x 20 cm, 2, for PR x 20 cm, 2, for PR u x 20 cm, 2, for PR dures, 16 x 16 cm	hd XL Casting Apparatus Slab Gel Casting Stand, with gaskets Replacement Gaskets, for casting stand lass Plates* Inner Plates, for 16 x 16 cm gels, 16 x 20 Outer Plates, for 16 x 16 cm gels, 18.3 x 3 pecialty Glass Plates Frosted Inner Plates, for agarose gels, 1 Frosted Inner Plates, for agarose gels, 2 Notched Inner Plate, for double-up proce	PROTEAN II xi 1651911 1651912 PROTEAN II xi 1651821 1651822 PROTEAN II xi 1651825** 1651826**
	AN II xi cell only DTEAN II xi cell only DTEAN II xi cell only el, 16 cm bevel length, for PROTEAN II xi cell only	cm, 2, for PROTEA 0 cm, 2, for PROTI x 20 cm, 2, for PR x 20 cm, 2, for PR u x 20 cm, 2, for PR dures, 16 x 16 cm	Slab Gel Casting Stand, with gaskets Replacement Gaskets, for casting stand lass Plates* Inner Plates, for 16 x 16 cm gels, 16 x 20 Outer Plates, for 16 x 16 cm gels, 18.3 x 3 pecialty Glass Plates Frosted Inner Plates, for agarose gels, 1 Frosted Inner Plate, for double-up proce	1651911 1651912 PROTEAN II xi 1651821 1651822 PROTEAN II xi 1651825** 1651826**
	AN II xi cell only DTEAN II xi cell only DTEAN II xi cell only el, 16 cm bevel length, for PROTEAN II xi cell only	cm, 2, for PROTEA 0 cm, 2, for PROTI x 20 cm, 2, for PR x 20 cm, 2, for PR u x 20 cm, 2, for PR dures, 16 x 16 cm	Replacement Gaskets, for casting stanc lass Plates* Inner Plates, for 16 x 16 cm gels, 16 x 20 Outer Plates, for 16 x 16 cm gels, 18.3 x 3 pecialty Glass Plates Frosted Inner Plates, for agarose gels, 1 Frosted Inner Plate, for agarose gels, 2 Notched Inner Plate, for double-up proce	1651912 PROTEAN II xi 1651821 1651822 PROTEAN II xi 1651825** 1651826**
	AN II xi cell only DTEAN II xi cell only DTEAN II xi cell only el, 16 cm bevel length, for PROTEAN II xi cell only	cm, 2, for PROTEA 0 cm, 2, for PROTI x 20 cm, 2, for PR x 20 cm, 2, for PR u x 20 cm, 2, for PR dures, 16 x 16 cm	lass Plates* Inner Plates, for 16 x 16 cm gels, 16 x 20 Outer Plates, for 16 x 16 cm gels, 18.3 x 3 pecialty Glass Plates Frosted Inner Plates, for agarose gels, 1 Frosted Inner Plates, for agarose gels, 2 Notched Inner Plate, for double-up proce	1651822
	AN II xi cell only DTEAN II xi cell only DTEAN II xi cell only el, 16 cm bevel length, for PROTEAN II xi cell only	0 cm, 2, for PROT x 20 cm, 2, for PF x 20 cm, 2, for PF dures, 16 x 16 cm	Inner Plates, for 16 x 16 cm gels, 16 x 20 Outer Plates, for 16 x 16 cm gels, 18.3 x pecialty Glass Plates Frosted Inner Plates, for agarose gels, 1 Frosted Inner Plates, for agarose gels, 2 Notched Inner Plate, for double-up proce	1651821 1651822 PROTEAN II xi 1651825** 1651826**
	AN II xi cell only DTEAN II xi cell only DTEAN II xi cell only el, 16 cm bevel length, for PROTEAN II xi cell only	0 cm, 2, for PROT x 20 cm, 2, for PF x 20 cm, 2, for PF dures, 16 x 16 cm	Inner Plates, for 16 x 16 cm gels, 16 x 20 Outer Plates, for 16 x 16 cm gels, 18.3 x pecialty Glass Plates Frosted Inner Plates, for agarose gels, 1 Frosted Inner Plates, for agarose gels, 2 Notched Inner Plate, for double-up proce	1651821 1651822 PROTEAN II xi 1651825** 1651826**
	AN II xi cell only DTEAN II xi cell only DTEAN II xi cell only el, 16 cm bevel length, for PROTEAN II xi cell only	0 cm, 2, for PROT x 20 cm, 2, for PF x 20 cm, 2, for PF dures, 16 x 16 cm	Outer Plates, for 16 x 16 cm gels, 18.3 x 3 pecialty Glass Plates Frosted Inner Plates, for agarose gels, 1 Frosted Inner Plates, for agarose gels, 2 Notched Inner Plate, for double-up proce	PROTEAN II xi 1651825** 1651826**
	TEAN II xi cell only TEAN II xi cell only el, 16 cm bevel length, for PROTEAN II xi cell only	x 20 cm, 2, for PF x 20 cm, 2, for PF dures, 16 x 16 cm	pecialty Glass Plates Frosted Inner Plates, for agarose gels, 1 Frosted Inner Plates, for agarose gels, 2 Notched Inner Plate, for double-up proce	PROTEAN II xi 1651825** 1651826**
	TEAN II xi cell only el, 16 cm bevel length, for PROTEAN II xi cell only	x 20 cm, 2, for PF dures, 16 x 16 cm	Frosted Inner Plates, for agarose gels, 1 Frosted Inner Plates, for agarose gels, 2 Notched Inner Plate, for double-up proce	1651825** 1651826**
	TEAN II xi cell only el, 16 cm bevel length, for PROTEAN II xi cell only	x 20 cm, 2, for PF dures, 16 x 16 cm	Frosted Inner Plates, for agarose gels, 2 Notched Inner Plate, for double-up proce	1651826**
	el, 16 cm bevel length, for PROTEAN II xi cell only	dures, 16 x 16 cm	Notched Inner Plate, for double-up proce	
	-			
				1651833
		20 cm dele*		
		20 cm geis	nd XL Glass Plates, for 16 x 20 or 18.3 Inner Plates, 20 x 20 cm, 2	1651823
			Outer Plates, 22.3 x 20 cm, 2	1651824
2.0 mm	10 mm 15 mm 20 mm	0.75		
3.0 mm	1.0 mm 1.5 mm 3.0 mm	0.75 mm	0.5 mm	Spacer Width
1051015	1051010 1051011 1051015	1051010	pacers (Set of 4)	
1651845		1651842	1651841	16 cm gels
1651850	1651848 1651849 1651850	1651847	1651846	20 cm gels
			ombs**	PROTEAN II xi
1651894	1651892 1651893 1651894	1651891	-	Blank
1651899	1651897 1651898 1651899	-	-	2-D IPG
-	- 1651888 -	-	-	3-Well
1651884	1651882 1651883 1651884	-	-	5-Well
1651879	1651877 1651878 1651879	1651876	1651875	10-Well
1651874	1651872 1651873 1651874	1651871	1651870	15-Well
1651869		1651866	1651865	20-Well
-	1651862 1651863 —	1651861	-	25-Well
2.0 mm	10 mm 15 mm 20 mm			Snacer Width
			Cambo IDC Stein Franzist	· · · · · · · · · · · · · · · · · · ·
1651920	1651929 1652197 1651999		•	
1651839	1051601 1816601 0551601			2-DIPG (with ref
			Description	Catalog #
			Spacers, IPG Strip Format (Set of 4)	-
			•	
			•	
			•	
				•
		, and 2 spacers.	Combs, IPG Strip Format ence well)	25-Well PROTEAN II XI 2-D IPG (with ref Catalog # PROTEAN II XI 1651836 1653181 1651837 * One gel sand ** Each comb is

continues

Large-Format Vertical Electrophoresis Systems

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Ordering Information				
Catalog #	Description			
PROTEAN II	xi Multi-Cell*			
1651951	PROTEAN II xi Multi-Cell, includes 3 central cooling cores with gaskets, buffer tank, lid with power cables, 1 upper buffer dam, PROTEAN II xi multi-casting chamber with accessories, leveling bubble			
1651956	PROTEAN II xi Multi-Cell 2-D Conversion Kit , for proper cooling, includes 2 cooling coils and manifold (required for 2-D electrophoresis applications)			
PROTEAN II	XL Multi-Cell, Wide Format, Compatible with ReadyStrip IPG Strips*,**			
1653176	PROTEAN II XL Multi-Cell, wide format, 1.0 mm			
1653177	PROTEAN II XL Multi-Cell, wide format, 1.5 mm			
1653178	PROTEAN II XL Multi-Cell, wide format, 2.0 mm			
* The PROTE	EAN i12 IEF system is required for first-dimension IEF with the PROTEAN II xi or XL multi-cell; see page 202.			

** Includes catalog #1651951, #1651956, and 3 PROTEAN II xi cell IPG conversion kits of desired thickness. Order appropriate spacers, plates, clamps, combs, and accessories for your application (pages 185–187).

See Also

Acrylamide gel-casting reagents: page 195. Buffers: page 193.

PROTEAN® II Multi-Gel Casting Chamber

- Up to twelve 1.5 mm thick gels can be cast simultaneously
- Top filling for uniform single percentage gels
- Bottom filling for reproducible gradient gels using the Model 495 gradient former (see page 190)
- Accommodation of 16 or 20 cm gels
- Acrylic blocks can be used as space fillers when fewer than 10 gels are cast, and reusable separation sheets offer easy separation of gel sandwiches after casting



Ordering Inf	Ordering Information			
Catalog #	Description			
1652025	PROTEAN II xi Multi-Gel Casting Chamber, includes casting chamber, sealing plate, silicone gasket, 15 separation sheets, 4 acrylic blocks, 10 xi alignment cards, tapered luer connector, leveling bubble			
1652024	PROTEAN II XL Multi-Gel Casting Chamber, includes casting chamber, sealing plate, silicone gasket, 15 separation sheets, 4 acrylic blocks, 10 XL alignment cards, tapered luer connector, leveling bubble			
Accessories				
1651957	Acrylic Blocks, 4			
1651958	Separation Sheets, 15			
1652026	Sealing Gaskets, 3			
1652029	PROTEAN II xi Alignment Cards, 2			
1651840	PROTEAN II XL Alignment Cards, 2			

PROTEAN[®] Plus Dodeca[™] Cell

The PROTEAN Plus Dodeca cell* accommodates up to 12 large slab gels, matching the capacity of 1-D runs in the PROTEAN IEF system for high-throughput 2-D applications. Features include:

- Capacity to run 1–12 gels
- Ceramic cooling core, buffer recirculation pump**, and refrigerated circulator that provide efficient cooling temperature of buffer surrounding gels varies by ≤1°C
- Plate electrodes** that create an optimally uniform electrical field to give straight horizontal run results
- Differential plate heights that facilitate easy IPG strip or tube gel loading; the AnyGel[™] stand (page 190) can be used to stabilize and position gels while loading



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- * Designed to run IPG and tube gel samples; not recommended for 1-D applications.
- ** U.S. patent 6,451,193.

Ordering Information

Catalog #	Description		
PROTEAN P	us Dodeca Cells and Systems		
1654150	PROTEAN Plus Dodeca Cell, 100/120 V, includes electrophoresis buffer tank with built-in ceramic		
	cooling core, lid, buffer recirculation pump with tubing, 2 gel releasers		
1654140	PROTEAN Plus Dodeca Cell (100/120 V) and PowerPac HC Power Supply, includes #1654150 and #1645052		
1654142	PROTEAN Plus Dodeca Cell (100/120 V) and PowerPac Universal Power Supply, includes #1654150 and #1645070		
1654144	PROTEAN Plus Dodeca Cell (100/120 V), Trans-Blot Plus Cell, and PowerPac Universal Power Supply, includes #1654150, #1703990, and #1645070		
1655134	PROTEAN Plus Dodeca Cell (100/120 V) and Two 6-Row AnyGel Stands, includes #1654150 and two #1655131		
1654151	PROTEAN Plus Dodeca Cell, 220/240 V, includes electrophoresis buffer tank with built-in ceramic cooling core, lid, buffer recirculation pump with tubing, 2 gel releasers		
1654141	PROTEAN Plus Dodeca Cell (220/240 V) and PowerPac HC Power Supply, includes #1654151 and #1645052		
1654143	PROTEAN Plus Dodeca Cell (220/240 V) and PowerPac Universal Power Supply, includes #1654151and #1645070		
1654145	PROTEAN Plus Dodeca Cell (220/240 V), Trans-Blot Plus Cell, and PowerPac Universal Power Supply, includes #1654151, #1703990, and #1645070		
1655135	PROTEAN Plus Dodeca Cell (220/240 V) and Two 6-Row AnyGel Stands, includes #1654151 and two #1655131		
Accessories	and Replacement Parts		
1654158	Recirculation Pump, 100/120 V		
1654159	Recirculation Pump, 220/240 V		
1654153	Replacement Tubing Kit, for tank with stopcock drain port installed at base of tank		
1654152	Replacement Old Tubing Kit, for tank without stopcock drain port installed at base of tank		
1654154	Replacement Gasket Assembly		
1654155	Replacement Electrode Card, anode		
1654156	Replacement Electrode Card, cathode		
1654157	Replacement Lid		
1654166	Manifold Tubing, required for precast gels and PROTEAN II plates, 11 pieces		
1654167	Buffer Exhaust Tubing		
1653320	Gel Releasers, 5		
1652948	Replacement Power Cables, for lid		

See Also

PowerPac HC and PowerPac Universal power supplies: page 155. Dodeca stainers: page 182. Gel clip: page 190.

Protein Electrophoresis

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See Also

Acrylamide gel-casting reagents: page 195. Buffers: page 193.

Large-Format Electrophoresis Accessories

PROTEAN[®] Plus Combs and Hinged Spacer Plates

PROTEAN Plus hinged spacer plates are two glass plates joined together by a silicone hinge with integrated spacers bonded onto the long plate to guarantee perfect alignment during casting and eliminate potential current leaks. The differential plate heights facilitate easy IPG strip or tube gel loading. The hinged spacer plate sizes are the same for both gel sizes (20 and 25 cm wide). Combs are available for both 20 and 25 cm wide gel sizes and 1.0, 1.5, or 2.0 mm thick gels.

PROTEAN Plus Multi-Casting Chamber

Use the PROTEAN Plus multi-casting chamber to cast up to 12 gels of 1.0, 1.5, or 2.0 mm thickness simultaneously. The chamber accommodates the PROTEAN Plus hinged spacer plates for both 20 and 25 cm wide gel sizes. Acrylic blocks act as space fillers when fewer than 12 gels are cast, and a leveling bubble ensures level interfaces. Gradient gels are cast through a bottom port using the Model 495 gradient former (below).

Dodeca[™] High-Throughput Stainers

Dodeca stainers are available in two sizes: the small size accommodates up to 24 Criterion[™] gels while the large size can accommodate up to 12 large-format gels. The stainers ensure consistent results and eliminate gel breakage from excessive handling.

Model 495 Gradient Former

This gradient former allows you to pour linear or convex exponential acrylamide gradients. Its 100–1,500 ml capacity is designed to pour up to 12 gradient slab gels in the PROTEAN Plus multi-casting chamber. The optional exponential piston is required to form convex exponential acrylamide gradients.

PROTEAN® II xi Plate Washer/Holder

The PROTEAN II xi plate washer/holder takes the tedium out of washing glass plates while greatly reducing the potential for plate damage. Each rack holds up to eight PROTEAN II xi plates or 18 Mini-PROTEAN[®] II plates. The plate washing tank is ideal for soaking plates and for long-term dust-free storage. Hooks suspend the rack above the washing tank for complete plate drainage.

AnyGel[™] Stands

AnyGel stands provide stabilization and access to virtually any size gel. The clamping mechanism secures gel cassettes vertically without excessive pressure.

Gel Clip

The gel clip facilitates the handling of large-format gels and eliminates gel breakage by minimizing direct hands-on gel manipulation. The gel clip gently but securely clamps along one edge of a gel, distributing the weight evenly so that the gel can be easily lifted without tearing.



Using the gel clip to clamp onto a gel (PROTEAN Plus precast gel shown).

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Catalog #	Description			
PROTEAN P	us Combs			
1654176	2-D Comb with 1 Reference Well, 20 cm, 1.0 mm			
1654177	2-D Comb with 1 Reference Well, 20 cm, 1.5 mm			
1654178	2-D Comb with 1 Reference Well, 20 cm, 2.0 mm			
1654179	2-D Comb with 1 Reference Well, 25 cm, 1.0 mm			
1654180	2-D Comb with 1 Reference Well, 25 cm, 1.5 mm			
1654181	2-D Comb with 1 Reference Well, 25 cm, 2.0 mm			
PROTEAN P	us Hinged Spacer Plates			
1654170	Hinged Spacer Plates, for 20 x 20.5 cm gels, 1.0 mm, 1 set			
1654171	Hinged Spacer Plates, for 20 x 20.5 cm gels, 1.5 mm, 1 set			
1654172	Hinged Spacer Plates, for 20 x 20.5 cm gels, 2.0 mm, 1 set			
1654173	Hinged Spacer Plates, for 25 x 20.5 cm gels, 1.0 mm, 1 set			
1654174	Hinged Spacer Plates, for 25 x 20.5 cm gels, 1.5 mm, 1 set			
1654175	Hinged Spacer Plates, for 25 x 20.5 cm gels, 2.0 mm, 1 set			
PROTEAN P	us Multi-Casting Chamber			
1654160	PROTEAN Plus Multi-Casting Chamber, includes casting chamber, sealing plate, silicone gasket,			
	tapered luer connector, leveling bubble, 15 separation sheets, 8 acrylic blocks (order glass hinged spacer			
	plates and combs separately)			
Accessories	for PROTEAN Plus Multi-Casting Chamber			
1654165	Separation Sheets, for PROTEAN Plus multi-casting chamber, 15			
1654161	Acrylic Block, 1.5 mm			
1654162	Acrylic Block, 3 mm			
1654163	Acrylic Block, 6 mm			
1654164	Acrylic Block, 12 mm			
1653320	Gel Releasers, 5			
Gel Clip				
1653414	Gel Clip, holds any gel size			
Model 495 G	radient Former			
1654121	Model 495 Gradient Former, 100–1,500 ml, includes body with valve stem and tubing connection kit			
1654123	Model 495 Gradient Former and PROTEAN Plus Multi-Casting Chamber, includes #1654121 and #1654160			
Accessories	for Model 495 Gradient Former			
1652005	Exponential Piston, for Model 395 and Model 495 gradient formers			
1652008	Tubing Connection Kit, includes stopcock, luer taper coupling, tubing (1/8" ID, 3'), Y-connector			
	xi Plate Washer/Holder			
1651991*	PROTEAN II xi Plate Washer System, includes 2 plate holders, washing tank, lid,			
1001331	1 bottle of Bio-Rad cleaning concentrate			
1651992*	PROTEIN II xi late Holder			
1610722	Bio-Rad Cleaning Concentrate, 50x, 1 kg			
	ble with Mini-PROTEAN 3 short plates and spacer plates or with PROTEAN Plus hinged spacer plates.			

Buffers and Reagents for Protein Electrophoresis

See Also

ReadyPrep 2-D sample preparation kits: page 3. ReadyStrip IPG strips: page 205.

Premixed Sample Loading Buffers

The concentrated formulas of these buffers allow them to be used with both liquid and lyophilized samples. All premixed sample buffers are tested to ensure quality and consistency.



Premixed Sample Loading Buffer Selection Guide

For More Information

Web: bio-rad.com/proteinreagents

D#		A
Buffer	Formulation	Applications
Laemmli sample buffer (2x)	62.5 mM Tris-HCl, pH 6.8, 2% SDS, 20% glycerol (w/v), 0.01% bromophenol blue (BPB)	SDS-PAGE
Laemmli sample buffer (4x)	250 mM Tris-HCl, pH 6.8, 4% LDS, 40% glycerol (v/v), 0.02% bromophenol blue (BPB)	SDS-PAGE
Native sample buffer	62.5 mM Tris-HCl, pH 6.8, 40% glycerol (w/v), 0.01% BPB	Native PAGE
Tricine sample buffer	200 mM Tris-HCl, pH 6.8, 2% SDS, 40% glycerol (w/v), 0.04% Coomassie Brilliant Blue G-250	Peptide and small protein SDS-PAGE
IEF sample buffer	50% glycerol (v/v)	IEF
Zymogram sample buffer	62.5 mM Tris-HCl, pH 6.8, 4% SDS, 25% glycerol (w/v), 0.01% BPB	Protease analysis

Catalog #	Description
Premixed Pre	otein Sample Loading Buffers
1610737	2x Laemmli Sample Buffer, 30 ml
1610747	4x Laemmli Sample Buffer, 10 ml
1610738	Native Sample Buffer, 30 ml
1610739	Tricine Sample Buffer, 30 ml
1610763	IEF Sample Buffer, 30 ml
1610764	Zymogram Sample Buffer, 30 ml
1610791	XT Sample Buffer, 4x, 10 ml

Premixed Running Buffers

Premixed running buffers can be used with handcast or precast gels. Simply dilute with distilled deionized water. For running buffers designed especially for extended shelf life Criterion[™] XT precast gels, see page 180.



Protein Electrophoresis

Buffers and Reagents for Protein Electrophoresis

Electrophoresis Running E	Buffer Selection Guide
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Buffer	1x Formulation	Applications
Protein Electrophoresis		
10x Tris/glycine/SDS	25 mM Tris, 192 mM glycine, 0.1% SDS, pH 8.3	General SDS-PAGE
10x Tris/glycine	25 mM Tris, 192 mM glycine, pH 8.3	Native PAGE
10x Tris/Tricine/SDS	100 mM Tris, 100 mM tricine, 0.1% SDS, pH 8.3	Peptide SDS-PAGE
10x IEF anode buffer	7 mM phosphoric acid	Analytical isoelectric focusing
10x IEF cathode buffer	20 mM lysine, 20 mM arginine	Analytical isoelectric focusing
10x zymogram renaturation buffer	2.5% Triton X-100	Protease analysis; renatures enzymes after electrophoresis
10x zymogram development buffer	50 mM Tris-HCl, pH 7.5, 200 mM NaCl, 5 mM CaCl ₂ , 0.02% Brij 35	Protease analysis; activates enzymes after electrophoresis
Nucleic Acid Electrophoresis		
10x TBE	89 mM Tris, 89 mM boric acid, 2 mM EDTA, pH 8.3	Nucleic acid electrophoresis/sequencing; polyacrylamide or agarose gels
10x TBE extended range	130 mM Tris, 45 mM boric acid, 2.5 mM EDTA	Nucleic acid electrophoresis/sequencing; polyacrylamide or agarose gels; extends the buffer capacity for longer DNA sequencing runs
50x TAE	40 mM Tris, 20 mM acetic acid, 1 mM EDTA, pH 8.0	Nucleic acid electrophoresis; polyacrylamide or agarose gels

Ordering Information

Catalog #	Description	Catalog #	Description
Premixed Pr	rotein Running Buffers	Premixed Nu	ucleic Acid Running Buffers
1610732	10x Tris/Glycine/SDS, 1 L	1610733	10x Tris/Boric Acid/EDTA (TBE),
1610772	10x Tris/Glycine/SDS, 5 L cube		1L
1610734	10x Tris/Glycine, 1 L	1610770	10x Tris/Boric Acid/EDTA (TBE),
1610771	10x Tris/Glycine, 5 L cube		5 L cube
1610744	10x Tris/Tricine/SDS, 1 L	1610741	10x Tris/Boric Acid/EDTA (TBE),
1610761	10x IEF Anode Buffer, 250 ml		extended range, 1 L
1610762	10x IEF Cathode Buffer, 250 ml	1610743	50x Tris/Acetic Acid/EDTA (TAE),
1610765	10x Zymogram Renaturation		1L
	Buffer, 125 ml		
1610766	10x Zymogram Development		
	Buffer, 125 ml		

Premixed Gel-Casting Buffers

Tris-HCl buffers are available to prepare the stacking and resolving portions of native or SDS-PAGE gels using discontinuous buffer systems according to Laemmli (1970) or Ornstein and Davis (1959). Use the 0.5 M Tris-HCI, pH 6.8, buffer for stacking gels and the 1.5 M Tris-HCl, pH 8.8, buffer for resolving gels.

Ordering Information

Catalog #	Description
1610798	Resolving Gel Buffer, 1.5 M Tris-HCl, pH 8.8, 1 L
1610799	Stacking Gel Buffer, 0.5 M Tris-HCl, pH 6.8, 1 L

See Also

Criterion XT buffers and reagents: page 182.

See Also

ReadyStrip IPG strips: page 205. Vertical electrophoresis systems: pages 164–191. Horizontal electrophoresis systems: pages 244-252.

TGX Stain-Free[™] Solutions

See Also

Mini-PROTEAN TGX precast gels: page 168. Mini-PROTEAN TGX Stain-Free precast gels: page 168.

TGX[™] Handcast Acrylamide Solutions

TGX Stain-Free[™] FastCast[™] Acrylamide Solutions

TGX Stain-Free FastCast acrylamide solutions are readyto-use solutions for hand casting polyacrylamide gels for SDS-PAGE or PAGE. Stain-free technology eliminates extra steps by confirming electrophoresis results and transfer performance before western blotting, conserving precious samples, and reducing waste. Each kit comes with two resolver and stacker solutions, which are each mixed 1:1 with the appropriate amount of TEMED and APS.

TGX[™] FastCast[™] Acrylamide Solutions

TGX FastCast acrylamide solutions are ready-to-use solutions for hand casting polyacrylamide gels for SDS-PAGE or PAGE. Each kit comes with two resolver and stacker solutions, which are each mixed 1:1 with the appropriate amount of TEMED and APS.

Advantages of the TGX and TGX Stain-Free FastCast acrylamide kits:

- Faster casting times ability to pour stacker immediately after resolver
- Long shelf life gels gels can be used up to 1 month after casting when stored at 4°C
- Fast run times run times in as little as 20 min



- Fast blotting times efficient protein transfers in as little as 3 min using the Trans-Blot[®] Turbo[™] transfer system
- Stain-free technology for fast imaging or for better, more reliable total protein normalization in western blotting (using Stain-Free FastCast kits and Bio-Rad stain-free enabled imagers)

For More Information Web: bio-rad.com/tgxfastcast bio-rad.com/tgxstainfreefastcast

	Mini Gels (~9 x 7 cm)			Midi Gels (~13 x 9 cm)	
	1.0 mm MiniPROTEAN [®] Cassettes	0.75 mm Glass Plates	1.0 mm Glass Plates	1.5 mm Glass Plates	1.0 mm Criterion [®] Cassettes
Starter Kit	11 gels	19 gels	13 gels	9 gels	6 gels
11 gels	55 gels	95 gels	65 gels	45 gels	30 gels

Catalog #	Description
1610170	TGX FastCast Acrylamide Starter Kit, 7.5%
1610171	TGX FastCast Acrylamide Kit, 7.5%
1610172	TGX FastCast Acrylamide Starter Kit, 10%
1610173	TGX FastCast Acrylamide Kit, 10%
1610174	TGX FastCast Acrylamide Starter Kit, 12%
1610175	TGX FastCast Acrylamide Kit, 12%
1610180	TGX Stain-Free FastCast Acrylamide Starter Kit, 7.5%
1610181	TGX Stain-Free FastCast Acrylamide Kit, 7.5%
1610182	TGX Stain-Free FastCast Acrylamide Starter Kit, 10%
1610183	TGX Stain-Free FastCast Acrylamide Kit, 10%
1610184	TGX Stain-Free FastCast Acrylamide Starter Kit, 12%
1610185	TGX Stain-Free FastCast Acrylamide Kit, 12%

Approximate Number of Gels per Kit

Buffers and Reagents for Protein Electrophoresis

Gel-Casting Reagents

Acrylamide

- Acrylamide powders acrylamide and bis-acrylamide powders allow adjustment of concentration and acrylamide/bis ratio
- Premixed acrylamide/bis powders premeasured amounts allow stock solutions from 30–50% to be prepared directly in the bottle by adding the indicated amount of water
- Acrylamide solutions ready to use and available in two concentrations (30% and 40%) and in three acrylamide/bis ratios (19:1, 29:1, and 37.5:1)

Pore Size Determination: %T and %C

Polyacrylamide gels are described in terms of two parameters that determine pore size: total monomer concentration (%T) and weight percentage of cross-linker (%C).

%T =	grams acrylamide + grams cross-linker total volume, ml	x 100%
%C =	grams cross-linker grams acrylamide + grams cross-linker	x 100%

By varying these two parameters, the pore size of the gel can be optimized to give the best separation and resolution for

Acrylamide/Cross-Linker Ratio by Application

Ratio	%C	Common Applications
19:1	5	DNA sequencing
29:1	3.3	Protein separation
37.5:1	2.6	Protein separation

the molecule of interest. For help in determining the best %T and %C for your application, refer to the Precast Gels sections on pages 168 and 177. Examples of migration patterns of proteins on gels of different compositions can be found on page 169 (Mini-PROTEAN[®] TGX[™] precast gels) and 178 (Criterion[™] precast gels), or contact Bio-Rad Technical Support.

For More Information Web: bio-rad.com/acrylamide

Request or download bulletins: 1156 and 1866

Ordering Information

Description

Acrylamide	Solutions*	500 ml	2 x 500 ml	
30% acrylami	de/bis, 19:1	1610154	1610155	
30% acrylami	de/bis, 29:1	1610156	1610157	
30% acrylami	de/bis, 37.5:1	1610158	1610159	
40% acrylami	de/bis, 19:1	1610144	1610145	
40% acrylami	de/bis, 29:1	1610146	1610147	
40% acrylami	de/bis, 37.5:1	1610148	1610149	
40% acrylami	de	1610140	1610141	
2% bis solutio	n	1610142	1610143	
Catalog #	Description			
Acrylamide	Powder			
1610100	Acrylamide, 99.9%, 100 g			
1610101	Acrylamide, 99.9%, 500 g			
1610107	Acrylamide, 99.9%, 1 kg			
1610103	Acrylamide, 99.9%, 2 kg			
1610108	Acrylamide , 99.9%, 5 kg			
Premixed Acrylamide/Bis Powders		30 g	150 g	
Acrylamide/bi	s, 19:1	1610120	1610123	
Acrylamide/bi	s, 29:1	1610121	1610124	
Acrylamide/bi	s, 37.5:1	1610122	1610125	
Catalog #	Description			
1615100	SDS-PAGE Reagent Starter Kit, ind	cludes 100 g acrylamide, 5 g bis,	5 ml TEMED, 10 g ammonium persulfate	
1632091 ReadyPrep Proteomics Grade Wa		er. 500 ml		

Buffers and Reagents for Protein Electrophoresis

bio-rad.com/proteinreagents

Cross-Linkers and Catalysts

Bio-Rad offers standard and alternative cross-linkers for a variety of applications.

	Formal Name	Chemical Structure	Applications
Bis	N,N'-methylene- bis-acrylamide	OOO II CH ₂ =CH-C-NH-CH ₂ -NH-C-CH=CH ₂	General cross-linker in PAGE
PDA	Piperazine diacrylamide	CH ₂ =CH-C-N N-C-CH=CH ₂	Reduction of silver stain background in SDS-PAGE and 2-D gels, increased resolution, higher gel strength
DATD	N,N'-diallyl- tartardiamide	$\begin{array}{ccc} & & & \\ & & \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ $	Increased pore size of IEF gels where molecular sieving is a problem. Used in scintillation counting. 1,2-diol structure is soluble in periodic acid

Catalog #	Description	
Crosslinkers	3	
1610200	Bis Crosslinker, 5 g	
1610201	Bis Crosslinker, 50 g	
1610142	2% Bis Solution, 500 ml	
1610143	2% Bis Solution, 2 x 500 ml	
1610202	PDA Crosslinker, 10 g	
1610620	DATD Crosslinker, 25 g	
Catalysts		
1610800	TEMED*, 5 ml (hazardous shipping charges may apply)	
1610801	TEMED, 50 ml	
1610700	Ammonium Persulfate (APS)*, 10 g	
1610501	Riboflavin-5'-Phosphate*, 10 g	
* For longer sh	helf life, store desiccated at room temperature.	

IEP/IEF Agaroses

Standard low – m, agarose — with high strength, clarity, and low – m, value, this agarose is recommended for all standard immunoelectrophoresis applications.

Zero –m_r agarose – this agarose is specific for IEF. It has no detectable electroendosmosis and is recommended for IEF of very high MW proteins or complexes that are subject to varying degrees of molecular sieving in polyacrylamide gels. Agarose IEF and post-run processing can be completed more quickly than polyacrylamide gel IEF.

For More Information Web: bio-rad.com/IEP/IEFAgaroses

Ordering Inf	Ordering Information		
Catalog #	Description		
1620100	Standard Low –m _r Agarose, 100 g		
1620102	Standard Low -m, Agarose, 500 g		
1620022	Zero-m, Agarose, 10 g		
All reagents should be stored at room temperature, dry, and away from direct sunlight.			

Accessory Reagents

Tracking Dyes

Bio-Rad offers two tracking dyes to monitor electrophoresis runs:

- Bromophenol blue for monitoring protein electrophoresis
- · Xylene cyanole (FF) for monitoring nucleic acid electrophoresis

Ordering Information

Catalog #	Description
1610404	Bromophenol Blue, 10 g
1610423	Xylene Cyanole FF, 25 g
All dyes and st	ains should be stored at room temperature, dry, and away from direct sunlight.

Detergents

SDS is available in a powder form or as 10% and 20% solutions. They are prepared with 18 M Ω water and have no detectable DNase or RNase activity. Also available are Tween 20 for blotting solutions and Triton X-100 and CHAPS for membrane protein solubilization. For simple, accurate pipetting, a solution of 10% Tween 20 is available.

Ordering Information

Catalog #	Description
1610301	SDS (Sodium Dodecyl Sulfate), 100 g
1610302	SDS (Sodium Dodecyl Sulfate), 1 kg
1610416	SDS Solution, 10% (w/v), 250 ml
1610418	SDS Solution, 20% (w/v), 1 L
1706531	Tween 20, EIA grade, 100 ml
1610407	Triton X-100 Detergent, 500 ml
1610460	CHAPS*, 1 g
1610781	10% Tween 20, for easy pipetting, 1 L
* Store decier	poted at 4°C. All other reagants should be stared at ream temperature, dry, and away from direct sublight

* Store desiccated at 4°C. All other reagents should be stored at room temperature, dry, and away from direct sunlight.

See Also

ReadyPrep 2-D sample preparation kits: page 3.

Buffers and Reagents for Protein Electrophoresis

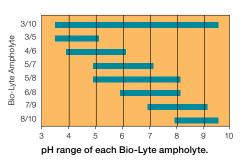
bio-rad.com/proteinreagents

See Also

ReadyStrip IPG strips: page 205. PROTEAN i12 IEF system: page 202.

Bio-Lyte[®] Ampholytes

Bio-Lyte carrier ampholytes, supplied as aqueous solutions, are blended to give a complete range of isoelectric points for linear pH gradients. Bio-Lyte 3/10, 3/5, and 8/10 ampholytes extend from approximately pH 3.5–9.5 units on the acidic and basic ends. All other ranges are within 0.1–0.2 pH units of their specified range. Bio-Lyte ampholytes are also used as IPG buffers. For ready-to-use ampholytes, see ReadyStrip[™] IEF buffers (page 206).



Ordering Information			
Catalog #	Description	Catalog #	Description
1631112	Bio-Lyte 3/10 Ampholyte, 40%, 10 ml	1631192	Bio-Lyte Ampholyte, 40%, 10 ml
1631113	Bio-Lyte 3/10 Ampholyte, 40%, 25 ml	1631193	Bio-Lyte 5/8 Ampholyte, 40%, 25 ml
1631132	Bio-Lyte 3/5 Ampholyte, 20%, 10 ml	1631162	Bio-Lyte 6/8 Ampholyte, 40%, 10 ml
1631142	Bio-Lyte 4/6 Ampholyte, 40%, 10 ml	1631163	Bio-Lyte 6/8 Ampholyte, 40%, 25 ml
1631143	Bio-Lyte 4/6 Ampholyte, 40%, 25 ml	1631172	Bio-Lyte 7/9 Ampholyte, 40%, 10 ml
1631152	Bio-Lyte 5/7 Ampholyte, 40%, 10 ml	1631182	Bio-Lyte 8/10 Ampholyte, 20%, 10 ml
1631153	Bio-Lyte 5/7 Ampholyte, 40%, 25 ml		

Cleaning Concentrate

Bio-Rad's cleaning concentrate is a moderately alkaline detergent that cleans by solubilization and emulsification. It is ideal for cleaning glass plates and other laboratory equipment and is harmless to skin and clothing.

Ordering Inf	Ordering Information			
Catalog #	Description			
1610722	Bio-Rad Cleaning Concentrate, 50x, 1 kg			

See Also

Gel drying systems: page 218.

Gel Drying Solution

Bio-Rad's gel drying solution is a pretreatment for polyacrylamide gels that helps prevent gels from cracking during air or vacuum drying. Just 10 minutes of equilibration in the solution before drying prevents excessive gel swelling and cracking.

Ordering Information		
Catalog #	Description	
1610752	Gel Drying Solution, 1 L	

Protein Stains

Protein Stains

Bio-Rad offers visible and fluorescent gel stains to accommodate your needs for sensitivity, linearity, and mass spectrometry compatibility.

Ge	Stain	Selection	Guide

Stain	Staining per Band	Time	Comments
Coomassie Stains			
QC Colloidal Coomassie	3.0 ng	1–20 hr	Colloidal endpoint stain; nonhazardous formulation
Bio-Safe [™] Coomassie G-250	8.0–28.0 ng	1–2.5 hr	Nonhazardous staining in aqueous solution; premixed; mass spectrometry compatible
Coomassie Brilliant Blue R-250	36.0–47.0 ng	2.5 hr	Simple and consistent; mass spectrometry compatible
Silver Stains			
Silver Stain Plus [™] kit (Gottlieb and Chavko 1987)	0.6–1.2 ng	1.5 hr	Simple and robust; mass spectrometry compatible
Silver stain (Merril et al. 1981)	0.6–1.2 ng	2 hr	Stains glycoproteins, lipoproteins, lipopolysaccharides, nucleic acids
Fluorescent Stains			
Oriole [™] fluorescent gel stain	0.5–1.0 ng	1.5 hr	Rapid fluorescent gel stain; no destaining; mass spectrometry compatible; compatible only with UV excitation
Flamingo [™] fluorescent gel stain	0.25–0.5 ng	5 hr	High sensitivity; broad dynamic range; no destaining; simple; mass spectrometry compatible; excellent for LED and laser-based scanners
SYPRO Ruby protein gel stain	1.0–10.0 ng	3 hr	Fluorescent protein stain; simple, robust protocol; broad dynamic range; mass spectrometry compatible
Nucleic Acid Stains			
Ethidium bromide	50.0 ng	1 hr	Classic fluorescent DNA stain

Coomassie Stains

QC Colloidal Coomassie Stain

The QC colloidal Coomassie stain provides sensitivity down to ~3 ng BSA, low background endpoint staining, and the level of reproducibility needed to meet regulatory standards. Additionally, it is formulated to be ready to use and environmentally friendly. Features include:

- · Low background, high sensitivity, superior reproducibility
- Environmentally friendly formulation no addition of methanol or acetic acid required; eliminates the need for hazardous waste disposal
- Flexible staining and destaining times from 1 hr to overnight
- No alcohol addition or dilution steps necessary when staining polyacrylamide gels
- One-part, ready-to-use colloidal Coomassie stain

For More Information Web: bio-rad.com/coomassie

Request or download bulletin: 6385

Coomassie Brilliant Blue R-250 Staining and Destaining Solutions

Coomassie Brilliant Blue R-250 staining solution is the fastest and easiest way to stain Criterion[™] or other polyacrylamide protein gels using Coomassie stain. Coomassie R-250 staining and destaining solutions are ready to use.



Bio-Safe[™] Coomassie Stain

Bio-Safe Coomassie Brilliant Blue G-250 stain is a premixed, ready-to-use, nonhazardous solution that does not require the use of methanol and acetic acid for destaining. Bio-Safe Coomassie stain produces blue bands on a clear background and is fast, simple, sensitive, and convenient. Advantages include:

- Staining in aqueous solution no special handling or fume hood requirements
- Visibility of bands while gel is in the stain
- No solvent waste problems or disposal costs

For More Information Web: bio-rad.com/coomassie Request or download bulletin: 2423

See Also

Precast polyacrylamide gels: pages 168, 177. Imaging systems: page 280.

Protein Stains

bio-rad.com/proteinstains

O	formation.
Ordering In	Tormation
Catalog #	Description
QC Colloida	I Coomassie Stain
1610803	QC Colloidal Coomassie Stain, 1 L
Bio-Safe Co	oomassie Stain
1610786	Bio-Safe Coomassie Stain, 1 L
1610787	Bio-Safe Coomassie Stain, 5 L
Coomassie	Brilliant Blue R-250 Staining and Destaining Solutions
1610435	Coomassie Brilliant Blue R-250 Staining Solutions Kit, includes 1 L Coomassie Brilliant Blue R-250
	staining solution, 2 x 1 L Coomassie Brilliant Blue R-250 destaining solution
1610436	Coomassie Brilliant Blue R-250 Staining Solution, 1 L
1610437	Coomassie Brilliant Blue R-250 Staining Solution, 4 x 1 L
1610438	Coomassie Brilliant Blue R-250 Destaining Solution, 1 L
1610439	Coomassie Brilliant Blue R-250 Destaining Solution, 4 x 1 L
Coomassie	Stain Powders
1610400	Coomassie Brilliant Blue R-250, 10 g
1610406	Coomassie Brilliant Blue G-250, 10 g
	-

Silver Stains

Silver Stain Plus[™] Kit

Silver Stain Plus kit provides the most sensitive and easiest to use silver stain. It is derived from the method developed by Gottlieb and Chavko (1987) for detection of native and denatured eukaryotic DNA in agarose gels. The chemistry has been modified so that it is ideal for both proteins and nucleic acids in polyacrylamide and agarose gels.

The Silver Stain Plus kit:

- Detects nanogram quantities of protein and DNA
- Eliminates background by preventing silver precipitation in the gel matrix
- Does not require destaining
- Stains 13 full-size gels or 40 mini gels

Bio-Rad Silver Stain Kit

Bio-Rad's original silver stain kit, derived from the method of Merril et al. (1981), is ideal for staining polysaccharides and highly glycosylated proteins that are difficult to stain with the Silver Stain Plus kit. This kit will stain 24 full-size gels or 48 mini gels in 2 hours. The lowest sensitivity is 0.25–0.5 ng.

For More Information Web: bio-rad.com/silverstain Request or download bulletin: 1089

Specifications

	Silver Stain Plus	Silver Stain
Time	1.5 hr	2 hr
Number of Gels	40 mini gels	48 mini gels
Shelf Life	1 yr	1 yr
Storage	4°C	Ambient
Lowest Sensitivity	0.6–1.2 ng	0.6–1.2 ng

Ordering Information		
Catalog #	Description	
Silver Stain F	Plus Kit	
1610449	Silver Stain Plus Kit, includes fixative enhancer concentrate, silver complex solution, reduction moderator solution, image development reagent, development accelerator reagent, stains 13 full size or 40 mini gels	
1610448	Development Accelerator Reagent, 50 g	
1610461	Fixative Enhancer Concentrate*, 1 L	
1610462	Silver Complex Solution*, 100 ml	
1610463	Reduction Moderator Solution*, 100 ml	
1610464	Image Development Reagent* 100 ml	

* Hazardous shipping charges may apply.

Protein Electrophoresis

bio-rad.com/proteinstains

Protein Stains

Catalog #	Description
Bio-Rad Silv	rer Stain Kit*,**
1610443	Silver Stain Kit, includes oxidizer concentrate, silver reagent concentrate, silver stain developer,
	stains 20 full-size or 48 mini gels
1610450	Silver Stain Developer, 115 g
1610447	Silver Stain Developer, 4 x 115 g
1610444	Oxidizer Concentrate, 480 ml
1610445	Silver Reagent Concentrate, 480 ml
* Hazardous	s shipping charges may apply.
** The Bio-Ba	ad silver stain kit and components should be stored at 4° C.

Fluorescent Stains

Oriole[™] Fluorescent Gel Stain

Oriole stain is a an easy-to-use, fast, and sensitive fluorescent protein gel stain.

- One-step protocol, no fixing or destaining required, full sensitivity achieved in 90 min
- Full compatibility with downstream proteolysis and mass spectrometric analysis
- Nanogram sensitivity and low background
- Compatible with UV excitation imagers such as the Gel Doc[™] EZ and ChemiDoc[™] MP imaging systems

Flamingo[™] Fluorescent Gel Stain

This easy-to-use, economical gel stain is for use with the ChemiDoc MP system and a variety of fluorescence imaging systems.

- Two-step protocol that can be completed in as little as 5 hr
- Compatible with mass spectrometry
- Wide dynamic range and highly linear response (3 orders of magnitude)
- Less than 1 ng protein can be detected

SYPRO Ruby Protein Gel Stain

SYPRO Ruby protein gel stain is compatible with mass spectrometry and Edman-based sequencing applications.

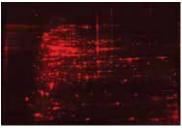
- Detection of glycoproteins, lipoproteins, and metalloproteins
- No detection of extraneous nucleic acids in the sample
- Suitable for IEF gels

For More Information

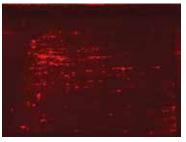
Web: bio-rad.com/fluorescentstain Request or download bulletins: Flamingo - 5346, 5705, 5754 Download bulletins: Oriole - 5900, 5921, 5991



2-D gel stained with Oriole stain. *E. coli* protein (40 μg) was run on an 11 cm pH 5–8 ReadyStrip[™] IPG strip for the first dimension and a Tris-HCl 8–16% Criterion[™] gel for the second dimension.



Flamingo fluorescent gel stain. E. coli protein sample (10 µg).



SYPRO Ruby protein gel stain. E. coli protein sample (10 µg).

See Also

Imaging systems: page 280. Precast polyacrylamide gels: pages 168, 177. 2-D electrophoresis: pages 151, 202.

bio-rad.com/2Dsystems

Ordering In	formation
Catalog #	Description
Oriole Fluor	escent Gel Stain
1610495	Oriole Fluorescent Gel Stain, 1x solution, 200 ml
1610496	Oriole Fluorescent Gel Stain, 1x solution, 1 L
1610497	Oriole Fluorescent Gel Stain, 1x solution, 5 L
Flamingo Flu	uorescent Gel Stain
1610490	Flamingo Fluorescent Gel Stain, 10x solution, 20 ml
1610491	Flamingo Fluorescent Gel Stain, 10x solution, 100 ml
1610492	Flamingo Fluorescent Gel Stain, 10x solution, 500 ml
SYPRO Ruby	y Protein Gel Stain
1703126	SYPRO Ruby Protein Gel Stain, 1x solution, 200 ml
1703125	SYPRO Ruby Protein Gel Stain, 1x solution, 1 L
1703138	SYPRO Ruby Protein Gel Stain, 1x solution, 5 L

2-D Electrophoresis

IEF is primarily used as the first dimension of separation in 2-D analysis; 2-D electrophoresis is used to separate complex protein samples based on pl and MW. IEF separations can be performed using two techniques: either with an IPG strip with ampholytes covalently bound to the gel or with carrier ampholytes that move through the gel to generate a pH gradient. Bio-Rad offers products for both techniques. Bio-Rad's first-dimension products are compatible with second-dimension SDS-PAGE systems in mini, midi, and large formats. For more information, see page 151. For preparative IEF products see page 213.

D Learn More about the Technology Web: bio-rad.com/tech/2delectro For More Information Web: bio-rad.com/2dworkflow

See Also

ReadyStrip IPG strips: page 205. Protein sample preparation products: page 2. Vertical electrophoresis systems: pages 164–191.

PROTEAN[®] i12[™] IEF System

The PROTEAN i12 IEF system offers individual lane control — a novel feature that allows multiple lanes to be run simultaneously, each with a different sample, pH gradient, and protocol, resulting in time savings and improved reliability. The flexible system works with ReadyStrip[™] IPG strips to provide many separation range options. The PROTEAN i12 IEF system provides a unique solution for first-dimension separations with the following features:

Individual Lane Control

- Optimize experiments in fewer runs
- Run multiple experiments at once
- Obtain better quality data with less experimental risk one irregular sample cannot compromise the entire run



PROTEAN i12 IEF system touch screen user interface.

Touch Screen User Interface

- Easily run programs and edit and create protocols

Flexible Electrode and Tray Design

- Run IPG strips gel-side down or gel-side up or load sample with cups, all within the same tray
- Durable polycarbonate trays supply sufficient heat transfer for accurate and reproducible pl determination



PROTEAN i12 IEF system components:

- 1. PROTEAN i12 IEF cell. 2. Focusing travs with strip retainers.
- Focusing trays with
 Cleaning brushes.
- Cleaning brushes
 Pair of electrodes.
- 5. ReadyStrip IPG Strips.
- 6. Leveling bubble.
- 7. Forceps.
- 8. Styluses.

- USB flash drives.
 Electrode wicks.
- 11. Rehydration trays.
- 12. ReadyPrep[™] 2-D starter kit,
- rehydration/sample buffer. 13. Cleaning concentrate.
- 14. Mineral oil.

Web Application

• Export focusing data via USB port to an Excel spreadsheet or upload to the PROTEAN i12 Reporter (i12reporter.com), a free Web-based application that easily graphs data, compares lanes, and creates reports

PROTEAN i12 IEF System Specifications

Input power	100-240 VAC, 50/60 Hz	Available focusing tray lengths	7, 11, 13, 17, 18, 24 cm
Voltage per lane	0, 50–10,000 V, 1 V increments	Focusing tray capacity	1–12 IPG strips per tray
Current per lane	0–100 µA, 1 µA intervals	Dimensions (W x D x H)	46 x 34.5 x 18.5 cm
Power per lane	0–1 W	Weight	8.6 kg (19 lbs)
Peltier platform temperature	10-25°C	Display	QVGA resolution (320 x 240) touch screen or mouse control

For More Information Web: bio-rad.com/proteani12

PROTEAN i12 IEF System Accessories

Accessories for the PROTEAN i12 system can also be purchased individually. Six sizes of focusing and rehydration/equilibration trays are available as well as replacement electrodes, cleaning supplies, and other system-related items.

Cup loading is an option for improving your 2-D results, especially for proteins with extreme pls. The PROTEAN i12 sample cup holder can be used with all of the PROTEAN i12 focusing trays. It effortlessly clips onto the tray and forms a secure seal that prevents leaking but won't damage the IPG strip. The disposable sample cups prevent sample contamination.



Request or download bulletins: 2651, 6097, 6138, 6139, and 6140

For More Information Web: bio-rad.com/proteani12

Request or download bulletins: 2651, 6097, 6138, 6139, and 6140

Catalog #	Description	
1646000	PROTEAN i12 IEF System, includes basic unit, 90–240 VAC positive and negative electrode assemblies, 7,	
	11, and 17 cm focusing trays, 1 pack each of 7, 11, and 17 cm rehydration/equilibration trays, 2 pairs of forceps,	
	2 packs of electrode wicks for gel-side down and gel-side up applications, mineral oil, 2 cleaning brushes,	
	cleaning concentrate, 2 USB flash drives, 3 styluses, pH 3–10 ReadyStrip IPG strips (7, 11, and 17 cm lengths), rehydration/sample buffer, leveling bubble, and instruction manual. All 13, 18, and 24 cm trays and cup loading	
	accessories can be purchased separately	
1646001	PROTEAN i12 IEF Cell, includes PROTEAN i12 IEF cell, 90–240 VAC basic unit, positive and negative electrode	
1040001	assemblies, and 3 styluses. Focusing trays and other accessories sold separately	
	2 IEF System Accessories	
1646107	i12 7 cm Focusing Tray, includes 2 IPG strip retainers	
1646111	i12 11 cm Focusing Tray, includes 2 IPG strip retainers	
1646113	i12 13 cm Focusing Tray, includes 2 IPG strip retainers	
1646117	i12 17 cm Focusing Tray, includes 2 IPG strip retainers	
1646118	i12 18 cm Focusing Tray, includes 2 IPG strip retainers	
1646124	i12 24 cm Focusing Tray, includes 2 IPG strip retainers	
1654035	i12 7 cm Rehydration/Equilibration Tray, includes lids, 25	
1654025	i12 11 cm Rehydration/Equilibration Tray, includes lids, 25	
1646313	i12 13 cm Rehydration/Equilibration Tray, includes lids, 25	
1654015	i12 17 cm Rehydration/Equilibration Tray, includes lids, 25	
1654041	i12 18 cm Rehydration/Equilibration Tray, includes lids, 25	
1654043	i12 24 cm Rehydration/Equilibration Tray, includes lids, 25	
1646040	IPG Strip Retainers, 2	
1646020	i12 Sample Cup Holder, includes 25 sample cups	
1646021	i12 Sample Cups, 25	
1646030	Gel-Side Up Electrode Wicks, 100	
		continues

bio-rad.com/2Dsystems

Ordering In	formation
Catalog #	Description
PROTEAN i1	2 IEF System Accessories (cont.)
1646031	Gel-Side Down Electrode Wicks, 500
1646012	Negative Electrode Assembly
1646011	Positive Electrode Assembly
1646010	Electrode Assembly Pair, includes 1 positive and 1 negative electrode assembly
1654072	Cleaning Brushes, 2
1610722	Cleaning Concentrate, 1 L
1646060	USB Flash Drive, 2
1646050	Stylus, 3
1632129	Mineral Oil, 500 ml
1654070	Forceps, 1

PROTEAN® IEF Accessories

Accessories for the discontinued PROTEAN IEF cell (#1654000 and #1654001) are still available and include focusing trays, electrode wicks, cup loading accessories, and thermal printers. Rehydration/equilibration trays, cleaning supplies, forceps, and reagents are interchangeable with the PROTEAN i12 IEF system (see pages 203–204 for part numbers).

Focusing Trays

- Focusing trays hold 1–12 ReadyStrip[™] IPG strips for flexibility and streamlined handling
- Platinum electrode is physically embedded into the running tray to ensure the integrity of each well and sample
- Durable polycarbonate trays ensure sufficient heat transfer for accurate and reproducible pl determination
- Numbered channels aid in strip identification and sample tracking

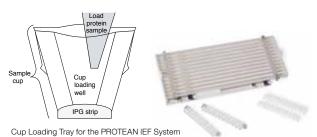


Tray Specifications

	IPG Strip Length						
	7 cm	11 cm	17 cm	18 cm	24 cm		
Focusing Trays							
Electrode distance	6.5 cm	10.2 cm	16.2 cm	17.1 cm	22.7 cm		
Total strip length accommodated	8.2 cm	12.1 cm	18.1 cm	20.1 cm	25.3 cm		
ReadyStrip IPG strip length	7.9 cm	11.8 cm	17.8 cm	19.0 cm	24.7 cm		
Rehydration/Equilibration Trays							
Total strip length accommodated	8.0 cm	12.7 cm	18.6 cm	20.4 cm	25.3 cm		
Maximum volume	6.8 ml	9.6 ml	14.2 ml	16.0 ml	19.0 ml		

Cup Loading Tray for the PROTEAN IEF System

Cup loading expands the versatility and range of applications for first-dimension IEF using the PROTEAN IEF cell. This loading method can improve focusing results, especially for proteins with pls in the extreme pH ranges. Load up to 150 µl of sample with easy-to-use disposable sample cups. Moveable electrodes provide the flexibility to run IPG strips from 7 to 24 cm in length.



Catalog #	Description
Trays	
1654030	7 cm Focusing Tray with Lid
1654020	11 cm Focusing Tray with Lid
1654010	17 cm Focusing Tray with Lid
1654040	18 cm Focusing Tray with Lid
1654042	24 cm Focusing Tray with Lid
Cup Loading	Tray*
1654050	Cup Loading Tray, includes 1 tray base, 1 pair movable electrodes, 1 pack each of large and small replacement cups
1654055	Cup Loading Tray with Forceps
Accessories	
1654071	Electrode Wicks, precut, 500
1654080	Thermal Printer, 100 V, includes cable and power adaptor
1702412	Thermal Printer Paper, 10 rolls
1654051	Large Replacement Cups, 150 µl, 120
1654052	Small Replacement Cups, 100 µl, 120
1654053	Replacement Movable Electrodes, 1 pair

rehydration/equilibration tray that matches your IPG strip's length.

ReadyStrip[™] IPG Strips

ReadyStrip IPG strips are available in five different strip lengths and in a wide selection of pH gradients, with 1, 3, or 7 pH units per strip. Shorter strips are useful for method development, while longer strips provide the best separation possible with higher protein loads. ReadyStrip IPG strips are thoroughly tested for quality and performance to deliver 2-D gel-to-gel reproducibility.

Design Features

- Stringent gel length tolerances of ±2 mm
- Anode and pH range clearly printed on each strip, with barcoding on 24 cm strips
- · Consistent backing lengths for self-centering on 2-D gels

Gradient Selection

- Standard broad range pH gradients for maximum separation on a single gel
- Narrow range gradients for greater resolution (more cm of gel per pH unit)
- Comprehensive offering that increases resolving power in the first dimension with overlapping pH ranges



Relative Focusing Power

The 7 cm pH 3–10 strip is arbitrarily assigned a baseline focusing power of 1.0 in order to calculate the relative focusing power of the other strips.

- Strips with the same pH range but different lengths calculate the ratio of the strip lengths. Compared to a 7 cm strip, an 11 cm strip has a relative focusing power of 11/7 cm = 1.6
- Strips with the same length but different pH range calculate the ratio of the pH ranges. Compared to a pH 3–10 strip (7 pH units), a pH 5–8 strip (3 pH units) has a relative focusing power of 7/3 = 2.3

For More Information Web: bio-rad.com/readystripIPG Request or download bulletin: 2442

See Also

PROTEAN i12 IEF system: page 202. ReadyPrep 2-D starter kit: page 207.

bio-rad.com/2Dsystems

Relative Focusing Power of IPG Strips

		рН								Relativ	ReadyStrip IEF Buffer				
Strip Range*	3	4	5	6	7	8	9	10	7 cm	11 cm	17 cm	18 cm	24 cm	3–10	7–10
Broad Range															
3–10									1x	1.6x	2.4x	2.6x	3.4x	•	
3–10 nonlinear (NL)									1x	1.6x	2.4x	2.6x	3.4x	•	
Narrow Range															
3–6									2.3x	3.7x	5.7x	6.0x	8.0x	•	
5–8									2.3x	3.7x	5.7x	6.0x	8.0x	•	
7–10									2.3x	3.7x	5.7x	6.0x	8.0x		•
4–7									2.3x	3.7x	5.7x	6.0x	8.0x	•	

* Strips are designed with sufficient overlap to allow spot matching while limiting the extent of redundant data.

pH Range	7 cm	11 cm	17 cm	18 cm	24 cm
ReadyStrip IPC	G Strips, 12 per Packa	ige			
pH 3–10	1632000	1632014	1632007	1632032	1632042
pH 3–10 NL*	1632002	1632016	1632009	1632033	1632043
pH 3–6	1632003	1632017	1632010	1632035	1632045
pH 4–7	1632001	1632015	1632008	1632034	1632044
pH 5–8	1632004	1632018	1632011	1632036	1632046
pH 7–10	1632005	1632019	1632012	1632037	1632047

ReadyStrip IEF Buffers** and Accessories

1632094 Bio-Lyte 3/10 Ampholyte, 100x, 1 ml

1632093 ReadyStrip 100x 7–10 Buffer, includes only ampholytes, 1 ml

1632099 ReadyStrip Instruction Manual, free upon request with ReadyStrip purchases

* NL, nonlinear gradient.

** Dilute ReadyStrip buffers to 1x in each sample to obtain a final concentration of 0.2% ampholyte.

ReadyPrep[™] Reagents for First-Dimension IEF

ReadyPrep reagents ensure success with first- and second-dimension separations. The 2-D starter kit is the ideal tool for learning to use the PROTEAN i12 IEF system and for perfecting technique. Premixed buffers and individual reagents are available for each step of the 2-D process. For preparation of protein samples for 2-D electrophoresis, see page 3.

ReadyPrep[™] 2-D Starter Kit

The ReadyPrep 2-D starter kit is intended for first-time users of the PROTEAN i12 IEF cell and ReadyStrip IPG strips. The kit contains tested premixed reagents required for first and second dimension separations, a reference manual with technical tips, and a known protein sample. The ReadyPrep 2-D starter kit includes all reagents needed to:

- Prepare an E. coli protein sample
- Rehydrate IPG strips with sample
- Equilibrate IPG strips for SDS-PAGE
- Overlay IPG strips with agarose on SDS-PAGE gels

This kit contains enough material to complete either six 17 cm IPG strips, ten 11 cm strips, or sixteen 7 cm IPG strips.

For More Information Web: bio-rad.com/readyprep2d



See Also

Viole/Kit

ReadyStrip IPG strips and IEF buffers: pages 205–206. PROTEAN i12 IEF system: page 202. Oriterion system: page 175.

2-D Starter Kit Contents

	viais/Kit
E. coli protein sample, 2.7 mg	1
ReadyPrep 2-D starter kit rehydration/sample buffer, 10 ml	1
ReadyPrep equilibration buffer I, 20 ml	2
ReadyPrep equilibration buffer II, 20 ml	2
30% glycerol solution, 70 ml	1
ReadyPrep overlay agarose, 50 ml	1
lodoacetamide, 0.5 g	2
Nanopure water, 15 ml	1

Ordering Information		
Description		
ReadyPrep 2-D Starter Kit, includes E. coli protein sample and reagents sufficient to rehydrate, focus, and transfer to second-dimension gels, ReadyStrip IPG strips, precast SDS-PAGE gels, and gel stains not included		
E. coli Protein Sample, lyophilized, 2.7 mg		

See Also

page 2. ReadyPrep reduction-

page 4.

Protein sample preparation products:

alkylation kit:

bio-rad.com/2Dsystems

2-D Premixed Buffers and Individual Reagents

Streamline 2-D experiments and reduce variables with Bio-Rad's convenient premixed buffers and protein sample, tested for consistent 2-D performance with IPG strips:

- ReadyPrep[™] 2-D starter kit rehydration/sample buffer — a standard formulation appropriate for many protein samples
- ReadyPrep 2-D starter kit equilibration buffer I premixed with DTT for the first equilibration step in the DTT/iodoacetamide alkylation method
- ReadyPrep 2-D starter kit equilibration buffer II add iodoacetamide and use for the second equilibration step in the DTT/iodoacetamide alkylation method; this buffer can also be used for single-step alkylation by adding TBP and acrylamide
- E. coli protein sample this complex protein sample is performance tested to give a consistent pattern when used with ReadyPrep 2-D starter kit rehydration/sample buffer; use this sample as a control to validate your 2-D system and protocol before running more difficult experimental samples

Reducing and Alkylating Agents

Either DTT or TBP can be used for IEF and during equilibration prior to SDS-PAGE. Alkylation with iodoacetamide is the standard method to prevent reoxidation during second-dimension SDS-PAGE. Reduction and alkylation can also occur at the sample preparation stage. See the ReadyPrep reduction-alkylation kit, page 4.

Overlay Agaroses

Bromophenol blue tracking dye is incorporated into this solution to allow monitoring of electrophoresis runs. Use ReadyPrep overlay agarose, a low melting point agarose, to secure IPG strips in place for most applications. For second-dimension runs in the PROTEAN® Plus cell, in which the IPG strip is oriented perpendicular to the laboratory bench, firmer PROTEAN Plus overlay agarose is recommended to secure the IPG strip.

Individual Reagents and Detergent

Urea and Tris as well as CHAPS detergent are available.

For More Information Web: bio-rad.com/2dreagents

Catalog #	Description
1632106	ReadyPrep 2-D Starter Kit Rehydration/Sample Buffer, 10 ml, 8 M urea, 2% CHAPS, 50 mM DTT, 0.2% Bio-Lyte 3/10 ampholyte, 0.001% bromophenol blue
1632107	ReadyPrep 2-D Starter Kit Equilibration Buffer I, with DTT, 10 ml, 375 mM Tris-HCl, pH 8.8, 6 M urea, 2% SDS, 2% DTT
1632108	ReadyPrep 2-D Starter Kit Equilibration Buffer II, without DTT or iodoacetamide, 20 ml, 375 mM Tris-HCl, pH 8.8, 6 M urea, 2% SDS
1632091	ReadyPrep Proteomics Grade Water, 500 ml
1610610	Dithiothreitol (DTT), 1 g
1610611	Dithiothreitol (DTT), 5 g
1632101	TributyIphosphine (TBP), 200 mM, 0.6 ml
1632109	Iodoacetamide, 30 g
1610731	Urea, 1 kg
1610719	Tris, 1 kg
Control Sam	nple
1632110	E. coli Protein Sample, lyophilized, 2.7 mg
Overlay Aga	roses
1632111	ReadyPrep Proteomics Grade Overlay Agarose , 50 ml, 0.5% low melting point agarose in 1x Tris/glycine/SDS and 0.003% bromophenol blue
1632092	PROTEAN Plus Proteomics Grade Overlay Agarose, 125 ml, 0.75% agarose in 1x Tris/glycine/SDS and 0.003% bromophenol blue

1610460 **CHAPS**, 1 q

Tube Gel IEF 2-D Systems

Bio-Rad offers several options for first-dimension tube gel separations using ampholytes.

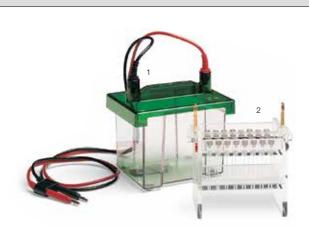
Mini-PROTEAN[®] 2-D Electrophoresis Cell

The Mini-PROTEAN tube cell module transforms the Mini-PROTEAN 3 cell into a miniature 2-D electrophoresis cell. The Mini-PROTEAN 2-D electrophoresis cell runs both tube gel IEF and vertical electrophoresis applications. First-dimension IEF typically takes 3.5 hours, and seconddimension SDS-PAGE takes 45 minutes. The entire 2-D procedure, including silver staining, can be completed in less than a day.

- Up to 16 tube gels can be cast in the glass tubes, then attached to molded sample reservoirs for the IEF run
- Following first-dimension IEF, the gels are easily removed using the mini 2-D tube gel ejector and are ready to slide between the plates of the slab gel for the second-dimension run
- The cell is IEC 1010 safety certified

For More Information Web: bio-rad.com/tubegellEF

Ordering Information



Mini-PROTEAN 2-D electrophoresis cell components: 1. Buffer tank and lid with cables. 2. Tube cell module.

Catalog #	Description
1652960	Mini-PROTEAN 2-D Cell, includes tube adaptor, 16 sample reservoirs and stoppers, 50 sample reservoir/capillary tube connectors, 200 capillary tubes with casting tube, tube gel ejector, Mini-PROTEAN II slab cell with electrode assembly and gaskets, lower buffer chamber, lid with cables, 10 sets of glass plates, 2 clamp assemblies, two 2-D combs with 1 standard well, four 1.0 mm thick spacers, casting stand with gaskets, leveling bubble
1652961	Mini-PROTEAN Tube Cell, includes tube adaptor, 16 sample reservoirs and stoppers, 50 sample reservoir/capillary tube connectors, 200 capillary tubes with casting tube, lower buffer chamber, lid with cables, tube gel ejector
1652965*	Mini-PROTEAN Tube Cell Module, same as #1652961, without lower buffer chamber and lid
Accessories	
1652966	Capillary Tubes with Casting Tube, 200
1652967	Mini 2-D Tube Gel Ejector
1652968	Mini-PROTEAN Tube Gel Sample Reservoirs, 8
1652969	Mini-PROTEAN Tube Module Stoppers, 8
1652970	Mini-PROTEAN Tube Module Tube Connectors, 50
1645056**	PowerPac HV Power Supply, 100–120/220–240 V
	ROTEAN tube cell module may be used with the tank and lid of the Mini Trans-Blot cells of older Mini-PROTEAN II or

Mini-PROTEAN 3 systems; the tube cell module is not compatible with the Mini-PROTEAN Tetra system. The Mini-PROTEAN tube cell (for casting tube gels and performing first-dimension IEF) and the tube cell module (for casting tube gels) are also available separately.

** Recommended for use with the Mini-PROTEAN 2-D electrophoresis cell.

power supplies: page 155. Acrylamide

See Also AnyGel stands: page 173.

gel-casting reagents: page 195.

PowerPac HV and

PowerPac Universal

Protein Electrophoresis

2-D Electrophoresis

bio-rad.com/2Dsystems

See Also

PowerPac HV and PowerPac Universal power supplies: page 155. Acrylamide gel-casting reagents: page 195. PROTEAN II seconddimension systems: page 184.

PROTEAN[®] II xi 2-D Tube Gel Cell

The PROTEAN II xi 2-D cell provides all the components required for 2-D electrophoresis using polyacrylamide tube gels. The PROTEAN II xi 2-D cell:

- Runs both tube gels for first-dimension IEF and slab gels for second-dimension SDS-PAGE in the same cell
- Can focus up to 16 first-dimension IEF tube gels in a single run using the tube gel adaptors
- Can run up to four* 16 x 16 cm or 16 x 20 cm slab gels (use the 20 cm length for greater resolution)
- Makes it easy to position tube gels on the slab gel without an agarose overlay due to the beveled plates and the accessibility of the slab gel surface

For More Information Web: bio-rad.com/tubegellEF



PROTEAN II xi 2-D cell components:

1. Tube gel central cooling core.

- 2. Electrophoresis central cooling core with gaskets.
- Buffer tank and lid with cables.
 Slab gel casting stand, glass plates, and sandwich clamps.
- 5. Grommets and stoppers.
- 6. Glass tubes.
- * For higher throughput, the PROTEAN II xi multi-cell provides six-gel capacity for second-dimension runs.

Catalog #	Description
PROTEAN II	xi 2-D Tube Gel Cell*
1651931	PROTEAN II xi 2-D Cell, 1.0 mm, 16 cm
1651932	PROTEAN II xi 2-D Cell, 1.5 mm, 16 cm
1651933	PROTEAN II xi 2-D Cell, 1.0 mm, 20 cm
1651934	PROTEAN II xi 2-D Cell, 1.5 mm, 20 cm
Accessories	and Replacement Parts
1651940	Tube Gel Adaptor, with gasket, grommets (4–8 mm OD tubes), stoppers
1651943	Tube Gel Loading Needles, 18 cm, 22 gauge, blunt tip, luer hub (for casting monomer in small-diameter tubes), 2
1651944	Tube Gel Extrusion Needles, 9 cm, 26 gauge, beveled tip, luer hub (for removing gels from tubes), 2
1651947	Replacement Gaskets, for tube gel adaptor, 2
1651859	PROTEAN II Comb Conversion Screws**, includes 10 comb conversion screws, 10 standard comb screws
1651827	Beveled Inner Glass Plates, for 2-D tube gel procedures, 16 cm bevel length, 16 x 20 cm, 2, for PROTEAN II xi 2-D cells only
1651828	Beveled Inner Glass Plates, for 2-D tube gel procedures, 16 cm bevel length, 20 x 20 cm, 2, for PROTEAN II xi 2-D cells only
plates (with	EAN II xi 2-D cell includes a central cooling core with gaskets, lower buffer chamber, lid with cables, 2 sets of glass beveled inner plates), 4 sandwich clamps, twenty-four 180 mm long glass tubes (tube diameter = spacer thickness), daptors, 16 grommets, 16 stoppers, two 2-D combs, 4 spacers, upper buffer dam, casting stand with gaskets,

Lobe get adaptors, to growning stand with gaskets, lobe build appropriate for the cell (16 cm or 20 cm).
 1.0 mm and 1.5 mm indicate the thickness of spacers and combs included with the cell.
 ** For use with agarose gels. Comb conversion screws convert two PROTEAN II xi combs with standard 25 mm well depth

to combs with a 10 mm well depth. Double-up stacking gels (4 gels/run) cannot be cast simultaneously when comb conversion screws are used.

Model 175 Tube Gel Accessories

Glass Tubes for IEF

Bio-Rad's hand-cut and polished borosilicate glass tubes may be used for any tube gel electrophoresis application.

Model 225 Tube Gel Casting Stand

The Model 225 tube gel casting stand aids casting of 4–8 mm OD tube gels and features leveling legs and stainless steel fingers to hold 24 tubes.

Grommet and Stopper Sets

Grommets and stoppers are available in two sizes; they work with both the Model 175 tube cell and the tube gel adaptors for the PROTEAN[®] II xi cells.

For More Information

Web: bio-rad.com/model175

Ordering Information

Catalog #	Description
Glass Tubes	
1653136	1.0 mm ID Glass Tubes, 6.0 mm OD, 180 mm length, 24
1653137	1.5 mm ID Glass Tubes, 7.5 mm OD, 150 mm length, 24
1653138	1.5 mm ID Glass Tubes, 7.5 mm OD, 180 mm length, 24
1653155	2.4 mm ID Glass Tubes, 4.0 mm OD, 160 mm length, 24
1653150	3.4 mm ID Glass Tubes, 5.0 mm OD, 125 mm length, 24
1653122	5.0 mm ID Glass Tubes, 7.0 mm OD, 125 mm length, 24

Model 225 Tube Gel Casting Stand

1652020 Model 225 Tube Gel Casting Stand

Grommet and Stopper Sets*

1651984 Grommets and Stoppers, for 4–5 mm OD tubes, 12 each

1651985 Grommets and Stoppers, for 6–7.5 mm OD tubes, 12 each

* Grommet and stopper sets work with both Model 175 and Model 225 tube gels and the tube gel adaptors for the PROTEAN II xi cells.





Glass Tubes



Model 225 Tube Gel Casting Stand

See Also

PowerPac HV and PowerPac Universal power supplies: page 155. PROTEAN II xi multi-cell: page 186. Bio-Lyte ampholytes: page 198. Acrylamide gel-casting reagents: page 195. 2-D Electrophoresis

Mini-Format Analytical IEF

See Also

PowerPac HV and PowerPac Universal power supplies: page 155. IEF standards: page 163. Bio-Lyte ampholytes: page 198. Acrylamide gel-casting reagents: page 195. Agarose: page 196.

Model 111 Mini IEF Cell

This compact cell performs analytical IEF, including isoenzyme separation, forensic applications, and clinical determinations. Use it to screen large numbers of samples or for quickly running a few samples to determine the pl of a protein of interest. It requires only a 500 V power supply. Please note that this unit does not use IPG strips. Features include:

- Unique inverted format condensation cannot disrupt electrophoresis results
- No external cooling required
- Bufferless operation no wicks required
- Casting tray suitable for both agarose and polyacrylamide gels
- Easy-to-clean, removable graphite electrodes
- Small footprint of 21 x 11.5 x 4.2 cm

For More Information Web: bio-rad.com/model111 Request or download bulletin: M1702975



Catalog #	Description	
1702975	Model 111 Mini IEF Cell, includes chamber and lid, graphite electrodes, casting tray, 5 glass plates, 50 sheets of gel support film for polyacrylamide, 5 sample templates	
Accessories		
1702980	Graphite Electrodes, 2	
1702981	Mini Casting Tray	
1702982	Glass Plates, 12.5 cm x 6.5 cm x 1.5 mm, 5	
1702983	Gel Support Film for Polyacrylamide, 12.5 x 6.5 cm, 50 sheets	
1702984	Gel Support Film for Agarose, 12.5 x 6.5 cm, 50 sheets	
1702985	Sample Templates. 5	

bio-rad.com/prepelectro

Preparative Electrophoresis

Preparative electrophoresis devices fractionate and purify nanogram to gram quantities of proteins or nucleic acids via liquid phase IEF electrophoresis or continuous electroelution from gels. These devices separate and purify molecules according to their molecular mass (using SDS-PAGE or agarose gel electrophoresis), pl (using liquid-phase IEF), or a combination of both molecular mass and pl (using native PAGE or preparative 2-D electrophoresis). These devices include:

- Model 491 prep cell and mini prep cell perform high-resolution separations of proteins and nucleic acids by continuous-elution gel electrophoresis (PAGE)
- Model 422 electro-eluter elutes macromolecules from gel slices

Preparative Electrophoresis Product Selection Guide

Product	Page	Method of Purification	Molecules Purified	Run Time	Bulletin
Model 491 prep cell	215	SDS-PAGE or native PAGE	Protein (1–500 mg) DNA (50–300 μg) RNA (≤1 mg)	4–10 hr	1964
Mini prep cell	215	SDS-PAGE or native PAGE	Protein (0.5−1,000 μg) DNA (≤10 μg) RNA (≤20 μg)	4–10 hr	1964
Model 422 electro-eluter	217	Electroelution from excised gel pieces	Protein (gel load limits) DNA (≤3 mm thick gels)	3–5 hr	-

See Also

Protein sample preparation kits: page 2.

Protein Electrophoresis

Preparative Electrophoresis

See Also

PowerPac HV

bio-rad.com/prepelectro

Rotofor[®] Cell, Mini Rotofor Cell Accessories, and MicroRotofor[™]

power supply: page 155. Protein sample **Ordering Information** preparation kits: Description Catalog # page 2. Accessories and Replacement Parts for Rotofor Cell and Mini Rotofor Cell 1702910 Rotofor Starter Kit, includes 10 ml Bio-Lyte ampholytes (pH 3-10), 60 ml syringe, colored protein sample, 2 vent buttons, one each of the ion exchange membranes, hydrated 1702991 Mini Membrane Cores, for 18 ml focusing chamber, 2 1702952 Membrane Cores, for 60 ml focusing chamber, 2 1702953 Repair Kit, includes O-ring kit, 4 ion exchange gaskets, 4 port cover screws, 4 electrolyte chamber screws, 2 gray port gaskets 1702954 Cooling Finger O-Ring Kit, with 4 O-rings Ion Exchange Membranes, 5 pair 1702956 1702957 Vent Buttons, 8 1702958 Cooling Finger 1702960 Sealing Tape, 1 roll, 1 in x 36 yards 1702964 Harvest Tubing 1702965 Harvest Box Lid 1702966 Harvesting Needle Array **Rotofor Adaptor Kits** 1702990 Adaptor Kit, to convert Rotofor cell to mini Rotofor cell, includes mini focusing chamber, mini membrane core, 18 ml 1702959 Adaptor Kit, to convert mini Rotofor cell to Rotofor cell, includes focusing chamber, membrane core, 60 ml Accessories and Replacement Parts for MicroRotofor Cell 1702804 MicroRotofor Starter Kit, includes Bio-Lyte ampholytes, control protein sample, focusing chamber, ion exchange membranes, harvesting tray, syringes 1702810 MicroRotofor Harvesting Trays, 3 1702820 MicroRotofor Sealing Film, 10 sheets 1702960 Sealing Tape, 1 roll, 1 in x 36 yards 1702821 MicroRotofor Focusing Chambers, 3 1702822 MicroRotofor Cathode Assembly MicroRotofor Anode Assembly 1702829 1702833 MicroRotofor Ion Exchange Membrane Assemblies 1702835 MicroRotofor Cleaning Brush 1702836 MicroRotofor Syringes, 3 and 10 ml, 3 each MicroRotofor Needle Assembly 1702851 1702852 MicroRotofor Vacuum Block O-Ring

MicroRotofor Electrode Assembly O-Ring/Gasket Kit, electrolyte buffer chamber O-ring and gaskets

214 | Electrophoresis and Blotting

1702826

See Also

PowerPac Universal and PowerPac HV

power supplies: page 155.

Preparative PAGE Cells

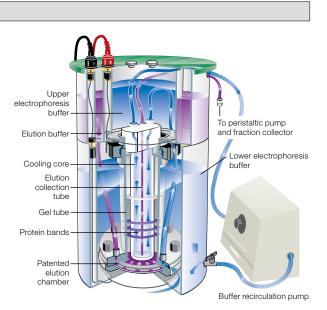
Model 491 Prep Cell and Mini Prep Cell

The Model 491 prep cell and mini prep cells separate biomolecules (protein or nucleic acids) by continuouselution electrophoresis. Samples are electrophoresed through a cylindrical gel matrix, where they are separated into ring-shaped bands. As individual bands migrate off the bottom of the gel, they are collected in discrete liquid fractions. The Model 491 prep cell and the mini prep cell allow resolution of proteins differing in MW by as little as 2%. With these prep cell systems, you can:

- · Purify nanogram to milligram quantities of target protein
- Separate proteins that differ in MW by as little as 1 kDa by using SDS-PAGE
- Separate proteins by mass and charge with pl differences as little as 0.1 pH units by using native PAGE
- Separate large proteins or DNA fragments (up to 18 kb) by using agarose gel electrophoresis

For More Information

Web: bio-rad.com/prepPAGE Request or download bulletins: 1964, 3153, and 3161



Continuous-elution electrophoresis in the Model 491 prep cell. Samples are electrophoresed through the cylindrical gel matrix where they are separated into ring-shaped bands. Individual bands migrate off the bottom of the gel and are collected in discrete liquid fractions available for assay and characterization.

Preparative Electrophoresis

bio-rad.com/prepelectro

Specifications

	Model 491 Prep Cell	Mini Prep Cell
Sample capacity (mass/volume)	1–500 mg/0.5–15 ml	0.5–1.0 mg/50–500 μl
Gel tube dimensions	28 and 37 mm ID, 14 cm length	7 mm ID, 13 cm length
Cooling	Glazed alumina-ceramic tube	Not necessary
Electrical limits	500 V, 40 mA, 20 W (PowerPac [™] HV or PowerPac Universal recommended)	500 V, 10 mA, 5 W (PowerPac HV or PowerPac Universal recommended)
Elution buffer flow rate	1 ml/min	0.1 ml/min
Auxiliary equipment required	Fraction collector, power supply, peristaltic pump	Fraction collector, power supply

Ordering Information Catalog # Description

Catalog #	Description
Model 491 P	rep Cells
1702926	Model 491 Prep Cell, 100/120 V, includes buffer recirculation pump, prep cell starter kit with protein standard
1702927	Model 491 Prep Cell, 220/240 V
1702928	Model 491 Prep Cell without Buffer Recirculation Pump
Replacemen	t Parts and Accessories for the Model 491 Prep Cell
1702944	Prep Cell Casting Stand
1702929	Buffer Recirculation Pump, 100/120 V
1702930	Buffer Recirculation Pump, 220/240 V
1702932	Small Gel Tube Assembly, 28 mm ID
1702933	Large Gel Tube Assembly, 37 mm ID
1702934	Cooling Finger Assembly, includes feedline connectors
1702935	Buffer Circulation Tubing Kit, includes stopcock with tubing and connectors, 3 elution buffer circulation lines and connectors, and electrophoresis/cooling buffer circulation lines and connectors
1702936	O-Ring Kits, 2
1702937	Dialysis Membranes, precut, 5
1702938	Frit Kit, includes support frit and elution frit
1702939	Sample Application/Overlay Buffer Kit, includes sample loading guide, syringe with tubing
1702940	Thumbscrews, 4
1702969	Lid with Power Cables
1615101	Prep Cell Starter Kit
1610323	Prep Cell Starter Kit Protein Standard, 1 ml
1702941	Elution Manifold Base
Mini Prep Ce	lls
1702915	Mini Prep Cell with Reagent Starter Kit
1702908	Mini Prep Cell without Reagent Starter Kit
Replacemen	t Parts and Accessories for the Mini Prep Cell
1702909	Gel Tubes, 2
1702913	Sample Application/Purge Kit
1702947	Peristaltic Pump Adaptor Kit, for 0.8 mm tubing
1702948	Elution Frit Kit, with 5 dialysis membranes, MW cutoff 3,500
1702911	Elution Frit Kit, with 5 dialysis membranes, MW cutoff 6,000
1702912	Harvest Ring Assembly, includes elution collection tubing
1702917	Mini Prep Cell Elution Chamber Top
1702918	Mini Prep Cell Casting Stand
1702916	Elution Manifold Base
1702910	

Preparative Electroelution Cells

Whole Gel Eluter and Mini Whole Gel Eluter Accessories

Ordering Information

1651283

Catalog # Description

Whole Gel El	luter Accessories	
1651270	Whole Gel Eluter Template	
1651275	Cellophane, 25 precut sheets	
1651277	Sealing Tabs, 50	
1651280	Lower Chamber Filter Paper, 21 x 21 cm, 75 precut sheets	
1651281	Upper Chamber Filter Paper, 21 x 21 cm, 50 precut sheets	
1702940	Thumbscrews, 4	
Mini Whole C	Gel Eluter Accessories	
1651276	Cellophane, 25 precut sheets	
1651278	Sealing Tabs, 50	
1651282	Lower Chamber Filter Paper 9 x 10 cm 50 precut sheets	

Upper Chamber Filter Paper, 5 x 6 cm, 50 precut sheets

Model 422 Electro-Eluter

The Model 422 electro-eluter is an electroelution cell for preparative recovery of biomolecules from agarose and acrylamide gels. Easy to assemble, the electro-eluter has six vertical glass tubes connecting the upper and lower buffer chambers. A frit at the bottom of each tube retains the gel slice but permits macromolecules to migrate through when current is applied. When the macromolecules have passed through the frit, they are collected (in the membrane cap) for further analysis or testing.

Depending on the buffer system, the Model 422 electroeluter can be used for protein elution or dialysis. In all cases, setup is quick and easy and the sample is collected in 400–600 μ l. The Model 422 electro-eluter can be used for one to six samples without increasing the run time (3–5 hours) or decreasing sample yield.

For More Information

Web: bio-rad.com/electroelution



Specifications

Elution capacity Collection volume Buffer volume Glass tube dimensions Recommended power supply Dimensions (W x D x H) Weight 1–6 samples 400–600 μl 700 ml 1 cm (ID) x 6 cm (long) PowerPac[™] Universal 12 x 16 x 18 cm 1.1 kg (2.4 lb)

Ordering Inf	Ordering Information		
Catalog #	Description		
1652976	Model 422 Electro-Eluter, includes electro-eluter module, membrane caps (MW cutoff 12,000–15,000), glass tubes, frits, silicone adaptors, grommets and stoppers, buffer tank, lid with power cables		
1652977*	Model 422 Electro-Eluter Module, without buffer tank and lid		
Accessories	3		
1652985	Membrane Caps, clear, MW cutoff 12,000–15,000, 12		
1652986	Membrane Caps, green, MW cutoff 3,500, 12		
1652987	Frits, 12		
1652978	Glass Tubes, 6		
1652981	Silicone Adaptors, 6		
1651988	Grommets and Stoppers, 8		
	n be used with the discontinued Mini-PROTEAN® 3 cell. If you do not own a Mini-PROTEAN 3 cell, el 422 electro-eluter #1652976.		

Gel Drying Equipment

Bio-Rad offers flexible gel drying systems that will accommodate multiple gel types and allow optimization of drying conditions.

For More Information Web: bio-rad.com/geldrying

Model 583 and HydroTech[™] Gel Drying Systems

Precast gels: pages 168, 177. Acrylamide: page 195. Premixed buffers: page 192.

See Also

The Model 583 gel dryer accommodates sequencing gels or multiple standard size gels. With variable temperature control and three preprogrammed cycles, drying conditions can be optimized to prevent gel cracking. The HydroTech vacuum pump is a unique, environmentally friendly vacuum pump. The gel dryer and vacuum pump can be purchased individually or together as an economical system.

Model 583 Gel Dryer

The Model 583 gel dryer has a drying surface large enough to fit up to 16 mini gels, 9 Criterion[™] gels, 2 large-format gels, or 1 sequencing gel. The floating heating element heats gels from the top while a vacuum is pulled through the bottom porous gel support, distributing the vacuum evenly so gels dry without cracking. The transparent sealing gasket allows monitoring of gels during the drying cycle.

HydroTech Vacuum Pump

The HydroTech vacuum pump uses ordinary tap water, not vacuum pump oil, eliminating messy oil changes and hazardous waste. A vapor trap is not needed because the pump traps gel-drying liquids and vapors in the 4 L water reservoir.

The self-contained HydroTech pump applies vacuum by pumping pressurized water through dual Venturi injectors. The vacuum strength is temperature dependent; by circulating the water through a cooling unit, the pump maintains a strong, constant vacuum.

For More Information Request or download bulletin: 1992

Double-Up Gel Dryer Rack

The double-up gel dryer rack accommodates two gel dryers up to 60 x 50 cm. The bottom shelf is on interlocking glides that allow full extension and easy access to the gel dryer's surface. When a dryer is placed on the stationary top shelf, it stabilizes the unit and helps prevent tilting of the rack when the bottom shelf is fully extended. The rack is plumbed for vacuum, made of sturdy sheet metal, and arrives assembled. The rack can be ordered separately, or as a system including two Model 583 gel dryers and a HydroTech vacuum pump.

For More Information Request or download bulletin: 2210



HydroTech Vacuum Pump



Model 583 Gel Dryer and Double-Up Gel Dryer Rack

Model 583 Gel Drying Supports

Available supports for use with the Model 583 gel dryer include filter paper backing for stained gels, cellophane membrane backing for transmission densitometry, filter paper for fragile sequencing gels, and porous gel supports to ensure evenly distributed vacuum pressure.

Gel drying solution for polyacrylamide gels and drying supports for discontinued products are also available.

For More Information Request or download bulletin: 2210

Catalog #	Description
1651789	HydroTech Gel Drying System, 100/120 V, includes #1651745 and #1651781
1651790	HydroTech Gel Drying System, 220/240 V, includes #1651746 and #1651782
1651745	Model 583 Gel Dryer*, 100/120 V, includes porous gel support, transparent sealing gasket,
	filter paper backing, cellophane membrane backing, sequencing gel filter paper
1651746	Model 583 Gel Dryer*, 220/240 V, includes all items in #1651745
HydroTech V	acuum Pumps
1651781	HydroTech Vacuum Pump*, 100/120 V, includes pump, quick disconnect fittings for 1/4 and 3/8" ID vacuum tubing, vacuum tubing, drain tubing
1651782	HydroTech Vacuum Pump*, 220/240 V, includes all items in #1651781
HydroTech V	acuum Pump Accessories
1651783	Quick Disconnect Fitting, fits 1/4" ID tubing
1651784	Quick Disconnect Fitting, fits 3/8" ID tubing
1651785	Vacuum Tubing, 2 m, includes quick disconnect fitting, hose clamps, 2-way stopcock
1651786	Drain Tubing, 2 m, includes quick disconnect fitting, hose clamp
9100509	2-Way Stopcock
1651787	3-Way Stopcock
1651788	HydroTech Vacuum Gauge
1651791	Anti-Foam Agent, 100 ml
Double-Up 0	ael Drying Rack and Systems
1651796	Double-Up Gel Dryer Rack
1651797	Double-Up Gel Dryer System, 100/120 V, includes 2 Model 583 gel dryers (#1651745), HydroTech vacuum pump (#1651781), double-up gel dryer rack (#1651796)
1651798	Double-Up Gel Dryer System, 220/240 V, includes 2 Model 583 gel dryers (#1651746), HydroTech vacuum pump (#1651782), double-up gel dryer rack (#1651796)
Model 583 D	rying Supports
1650962	Filter Paper Backing, for stained gels, 35 x 45 cm, 25 sheets
1650963	Cellophane Membrane Backing , clear membrane for transmission densitometry or overhead projection, 35 x 45 cm, 50 sheets
1650959	Sequencing Gel Filter Paper, for fragile sequencing gels, 35 x 45 cm, 25 sheets
1651747	Model 583 Gel Dryer Porous Gel Support*, 35 x 45 cm
1651748	Model 583 Transparent Sealing Gasket*, 41 x 51 cm
Drying Supp	orts for Discontinued Products
1650922	Cellophane Membrane Backing, 18 x 34 cm, for Model 224, 443, and 543 slab gel dryers, 50 sheets
1650921	Thick Blot Paper, 18 x 34 cm, for Model 224, 443, and 543 slab gel dryers, 25 sheets
Gel Drying S	olution
1610752	Gel Drying Solution, 1 L

Gel Drying Equipment

bio-rad.com/geldrying

GelAir[™] Drying System

The GelAir drying system is perfect for drying polyacrylamide and agarose gels. Dried between two sheets of cellophane, the gels come out completely clear with a glossy finish, ideal for densitometry, photodocumentation, autoradiography, overheads, and long-term storage.

The heated drying chamber works like a convection oven to dry mini gels in 45 minutes or 20.0 x 20.0 cm gels in 60 minutes, rivaling the speed of conventional gel dryers that require a vacuum pump. Drying times may vary depending on the percentage and thickness of the gel. The dryer holds up to four drying frames at once.

For More Information Web: bio-rad.com/geldrying Request or download bulletin: 1965



Specifications

GelAir Dryer		GelAir Drying Frames	
Timer control	0–3 hr, fully adjustable	Inner dimensions	20.0 x 20.0 cm
Function modes	Fan only; fan and heat; off	Drying frame	Molded polycarbonate bottom frame,
Dryer capacity	4 shelves, each accommodating 1 drying frame		stainless-steel top frame
Dimensions ($W \times D \times H$)	27.0 x 43.0 x 30.0 cm	Clamps	Molded polysulfone, 8 clamps per drying frame
Weight	8 kg (18 lb)	Gel capacity (per frame)	4 mini (8.0 x 7.0 cm) gels, 2 Criterion [™] (13.3 x 8.7 cm) gels, 1 large (20.0 x 20.0 cm) gel

Catalog #	Description	
1651771	GelAir Drying System*, 115 V, 60 Hz, includes #1651777, 2 drying frames, 16 clamps, assembly table, 50 precut sheets of cellophane support, gel drying solution	
1651772	GelAir Drying System*, 230 V, 50 Hz, includes #1651778, 2 drying frames, 16 clamps, assembly table,	
	50 precut sheets of cellophane support, gel drying solution	
1651777	GelAir Dryer, 115 V, 60 Hz, gel drying oven only	
1651778	GelAir Dryer, 230 V, 50 Hz, gel drying oven only	
Accessories	3	
1651775	GelAir Drying Frames, includes plastic drying frame, metal square frame, 16 clamps	
1651776	GelAir Assembly Table	
9207965	GelAir Plastic Drying Frame, for GelAir assembly table, does not include metal square frame	
1651779	GelAir Cellophane Support, 50 precut sheets	
1651780	GelAir Drying Frame Clamps, 8	
1610752	Gel Drying Solution, 1 L	

Western Blotting

Bio-Rad's western blotting products include the V3 Western Workflow[™], systems for protein transfers, blotting membranes, filter paper, premixed blotting buffers, reagents, protein standards, and detection kits.

Learn More about the Technology Web: bio-rad.com/tech/westernblotting

V3 Western Workflow[™] Protocol

Bio-Rad's V3 Western Workflow — consisting of TGX Stain-Free[™] precast gels, the Trans-Blot[®] Turbo[™] system, and the ChemiDoc[™] Touch imaging system — incorporates traditional blotting techniques with innovative technology. The five-step streamlined protocol allows quick confirmation of gels and blot transfer quality prior to western blotting and provides total protein blot normalization for rapid and robust quantitation.

Five Steps

- 1. Separate proteins Mini-PROTEAN[®] TGX Stain-Free[™] precast gels and Criterion[™] TGX Stain-Free[™] precast gels offer fast, superior protein separation. TGX Stain-Free precast gels feature proprietary in-gel chemistry, enabling high-quality protein separation in as little as 15 minutes (pages 168, 178).
- Visualize proteins protein separation is visualized and confirmed, using stain-free technology, after 1 minute activation on the ChemiDoc Touch imaging system. Stain-free technology is a sensitive, time-saving alternative to traditional Coomassie staining (page 282).
- 3. **Transfer proteins** Trans-Blot Turbo system, a rapid protein transfer apparatus, reduces transfer protocols to as little as 3 minutes across a broad MW range (page 224).
- 4. Verify protein transfer ChemiDoc Touch imaging system paired with stain-free technology enables instant verification of protein transfer (page 281).
- 5. Validate and quantitate ChemiDoc Touch imaging system and Image Lab[™] software validate western blotting data via total protein normalization as an alternative to using housekeeping proteins. By normalizing to total protein, stripping and reprobing is no longer necessary.



Separate Proteins Rapidly separate proteins with TGX Stain-Free precast gels Visualize Separation Immediately visualize separation using stainfree technology and the ChemiDoc Touch imager

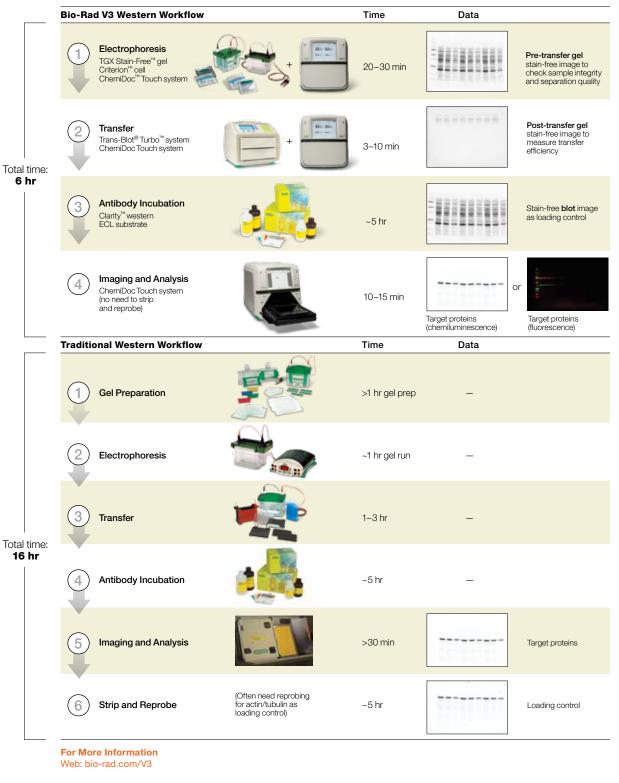
Transfer Proteins Use the Trans-Blot Turbo system for rapid and efficient protein transfer

Verify Transfer Verify high-quality transfer by instantly imaging proteins on the membrane

Validate Western Blot Perform multiplex imaging and validate results by total protein normalization on the ChemiDoc Touch imager

Ordering Information

Catalog #	Description
1708381	ChemiDoc Touch V3 Western Workflow for Mini Gels, includes ChemiDoc Touch imager with Image Lab software, UV/stain-free sample tray, 50 Mini-PROTEAN TGX Any kD Stain-Free precast gels, SDS-PAGE accessories, Mini-PROTEAN Tetra cell, Trans-Blot Turbo starter kit, 50 PVDF transfer packs for mini gels
1708382	ChemiDoc Touch V3 Western Workflow for Midi Gels, includes ChemiDoc Touch imager with Image Lab software, UV/stain-free sample tray, 50 4–20% Criterion TGX Stain-Free precast gels, SDS-PAGE accessories, Criterion cell, Trans-Blot Turbo starter kit, 50 PVDF transfer packs for midi gels



Bio-Rad V3 Western Workflow vs. Traditional Western Workflow

bio-rad.com/blotting

Transfer Devices

Overview of Blot Transfer Systems

- Rapid transfer systems Trans-Blot[®] Turbo[™] system (page 224) for rapid transfer of proteins, suitable for high molecular weight and low molecular weight proteins
- Semi-dry transfer systems Trans-Blot[®] SD for rapid, high-intensity transfers, best suited for mid-range proteins, 10–100 kD or >200 kD (page 225)
- Tank transfer systems ideal for most routine protein work, tank transfer systems provide efficient and quantitative protein transfers over a broad MW range and are available with either plate or wire electrodes (page 226)
- Microfiltration (dot blotting) and screening systems used to determine working conditions for a new blotting assay or in situations where protein separation is not required; suitable for both protein and nucleic acid blotting (page 230)

Blotting Selection Guide

	Mini Trans-Blot®	Criterion [™] Blotter	Trans-Blot®	Trans-Blot® Plus	Trans-Blot SD	Trans-Blot Turbo
Blotting area	10.0 x 7.5 cm	15.0 x 9.4 cm	16.0 x 20.0 cm	28.0 x 26.5 cm	24.0 x 16.0 cm	15.0 x 11.0 cm
Gel capacity	2 Mini-PROTEAN® gels	4 Mini-PROTEAN or 2 Criterion gels	3 PROTEAN® II xi, 6 Criterion, or 12 Mini-PROTEAN gels	Three 26.5 x 28 cm gels or 12 Criterion gels	2 PROTEAN II gel sandwiches, stacked and separated by dialysis membrane; 4 Mini-PROTEAN gels side by side; 3 Criterion gels side by side	2 midi gels (13.5 x 8.5 cm), 4 mini gels (7.0 x 8.5 cm) or similar
Number of gel holders	2	2	3	3	-	-
Buffer requirement	1.2 L	1.3 L	3–4 L	10–12 L	200 ml	N/A
Electrode distance	4.0 cm	4.3 cm	2 positions: 4.0 and 8.0 cm	3 positions: 4.0, 7.0, and 10.0 cm	Determined by thickness of the gel and membrane sandwich and filter paper stack	~8 mm depending on gel thickness
Electrode dimension	s —	-	—	-	25.0 x 18.0 cm	16.0 x 12.0 cm
Electrode materials	Platinum wire	Platinum-coated titanium anode with stainless-steel cathode plates or platinum wire	Platinum-coated titanium anode with stainless-steel cathode plates or platinum wire	Platinum-coated titanium anode and stainless-steel cathode plates	Platinum-coated titanium anode and stainless-steel cathode plates	Platinum-coated titanium anode and stainless-steel cathode plates
Transfer time Wire electrodes	Standard: 16 hr High-intensity: 1 hr	Standard: 60 min to overnight	Standard: 5 hr Overnight: 16 hr High-intensity: 30 min–4 hr	_	_	_
Plate electrodes		Standard: 30 min to overnight	Standard: 1–5 hr Overnight: 16 hr High-intensity: 30 min–1 hr	Standard: 16 hr High-intensity: 15 min–1 hr	~30 min	3–10 min
Cooling	Blue cooling unit	Sealed ice block or optional Criterion blotter cooling unit	Super cooling coil	Super cooling coil	-	-
Overall dimensions (W x L x H)	12.0 x 16.0 x 18.0 cm	21.8 x 11.8 x 15.0 cm	18.0 x 9.5 x 24.0 cm	30.0 x 17.3 x 39.4 cm	37.0 x 24.0 x 11.0 cm	26.0 x 21.0 x 20.0 cm

bio-rad.com/blotting

Semi-Dry and Rapid Blotting Systems

Trans-Blot[®] Turbo[™] Transfer System

The Trans-Blot Turbo transfer system represents the next generation of protein transfer. The Trans-Blot Turbo integrates speed, reproducible performance, and ease of use into a complete system, providing results faster than any other method currently available.

The Trans-Blot Turbo blotting system combines traditional blotting techniques with modern filter paper and buffers, allowing rapid transfer of proteins with minimal preparation time. By providing the entire system in a ready-to-use format, researchers can obtain their results faster and easier with reproducibility that is difficult to achieve by traditional tank and semi-dry blotting methods.

Rapid, High-Throughput Transfer

- Transfers standard mini or midi gels in as little as 3 min
- Efficient transfer of high- and low-MW proteins
- Can transfer 1-4 mini or 1-2 midi gels in a single run
- No cooling period required between runs
- Specialized protocol for Mini-PROTEAN[®] TGX[™] gel transfer in 3 min
- No need to pre-equilibrate gels prior to transfer

Ready-to-Use Transfer Packs

Ordering Information

- Ready-to-use transfer packs eliminate the need for buffer and membrane preparation
- Transfer packs available with nitrocellulose and PVDF
- Proprietary buffer included in each transfer pack

Ready-to-Assemble (RTA) Transfer Kits

- Kits provide enough consumables for 40 blots
- Consists of pre-cut membranes, pre-cut filter pads, and specially formulated transfer buffer
- Kits available with nitrocellulose, PVDF, and lowfluorescence PVDF



Flexible Design

- Option to either use rapid preset protocols or customize transfer conditions
- Accommodates traditional semi-dry consumables
- Compatible with various gel types and percentages
- Ability to customize and store protocols within the instrument
- Integrated power supply means no external power supply is needed

Environmentally Friendly

- Environmentally safe consumables eliminate disposal cost
- Single-use consumables reduce waste

For More Information Web: bio-rad.com/turbo Request or download bulletin: 6039

Catalog #	Description				
1704150	Trans-Blot Turbo Transfer System, includes 2 cas	settes, roller			
1704151	Trans-Blot Turbo Cassette, 1 cassette				
1704152	Trans-Blot Turbo Base, base instrument, no cassettes included				
		Mini	Midi		
Description		(7 x 8.5 cm)	(8.5 x 13.5 cm)		
Trans-Blot Tu	Irbo Transfer Pack, PVDF, pkg of 10	1704156	1704157		
Trans-Blot Tu	Irbo Transfer Pack, Nitrocellulose, pkg of 10	1704158	1704159		
Trans-Blot Tu	Irbo RTA Transfer Kit, Nitrocellulose, for 40 blots	1704270	1704271		
Trans-Blot Tu	Irbo RTA Transfer Kit, PVDF, for 40 blots	1704272	1704273		
Trans-Blot Tu	Irbo RTA Transfer Kit, LF PVDF, for 40 blots	1704274	1704275		

Transfer Devices

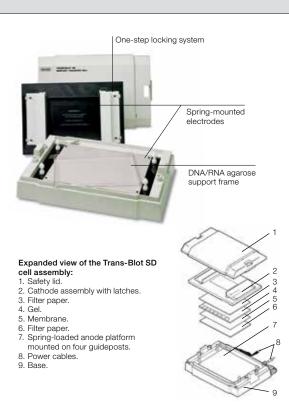
Trans-Blot[®] SD Semi-Dry Transfer Cell

The Trans-Blot SD semi-dry transfer cell allows fast and efficient blotting without buffer tank or gel cassettes. Features include:

- Transfers in as little as 15–60 min
- Minimal buffer requirements
- Capacity to transfer multiple gel sizes
- Single-step locking system for simple setup
- Platinum-coated titanium anode and stainless-steel cathode plate electrodes that provide consistent and reliable transfers, durability, and years of use
- Safety cover to break the electrical current when lifted, preventing electrical shock

In addition to western blotting, the Trans-Blot SD cell can also transfer DNA and RNA using the unique agarose gel semi-dry blotting support frame. The frame protects fragile agarose gels from compression by the electrodes. Southern and northern blot transfers can be run in 10–35 minutes.

For More Information Web: bio-rad.com/transblotsd Request or download bulletin: 2895



Specifications

Maximum gel size (W x L)	24 x 16 cm
Buffer requirement	200 ml
Gel capacity	4 Mini-PROTEAN® precast gels, 4 Ready Gel® precast gels, 4 Mini-PROTEAN handcast gels, 3 Criterion™ gels, or 1–3 PROTEAN® II gel sandwiches*
Recommended power supply	PowerPac [™] HC
Dimensions (W x L x H)	37 x 24 x 11 cm
Weight	3.6 kg (7.9 lb)
* Dialysis membrane between each gel	sandwich.

Ordering Information

Catalog #	Description
1703940*	Trans-Blot SD Semi-Dry Electrophoretic Transfer Cell, includes transfer cell, agarose gel
	support frame, extra thick blot paper (7 x 8.4 cm, 60 sheets; 8 x 13.5 cm, 60 sheets; 14 x 16 cm,
	30 sheets; 18 x 18.5 cm, 30 sheets)
1703848	Trans-Blot SD Cell and PowerPac HC Power Supply, 100–120/220–240 V,
	includes #1703940 and #16-5052
1703849	Trans-Blot SD Cell and PowerPac Universal Power Supply, 100–120/220–240 V,
	includes #1703940 and #1645070
Accessories	
1703947	Cathode Plate, stainless-steel upper electrode
1703942	Anode Plate, platinum-coated lower electrode
1704019	Trans-Blot SD Agarose Gel Support Frame, includes extra thick blot paper (15 x 20 cm, 30 sheets)
1703957	Trans-Blot SD DNA/RNA Blotting Kit, includes SD agarose gel support frame, extra thick blot paper
	(15 x 20 cm, 30 sheets), 1 L 10x TBE buffer
* The Trans-Blo	ot SD semi-dry transfer cell requires the use of a microprocessor-controlled power supply.

See Also

PowerPac HC power supply: page 155. Blotting buffers: page 236. **Transfer Devices**

Wet/Tank Blotting Systems

See Also

PowerPac Basic and HC power supplies: page 155. Ready Gel precast gels: page 171. Blotting membranes: page 232. Blot detection reagents: page 236. Buffers: page 236.

Mini Trans-Blot[®] Cell

This cell provides high-quality blotting of mini gels. A component of the Mini-PROTEAN® Tetra system, the Mini Trans-Blot cell accommodates two gel holder cassettes for electrophoretic transfer of mini-format gels.

- Ability to transfer two 10 x 7.5 cm gels in just 1 hr; low-intensity overnight transfers are also possible
- Placement of wire electrodes 4 cm apart for strong electrical fields and efficient protein transfer
- · Color-coded cassettes and electrodes to ensure proper orientation of the gel during transfer
- Blue cooling unit, contained within the Mini Trans-Blot cell, absorbs heat generated during rapid transfers
- Availability as either a complete stand-alone apparatus or a module compatible with the Mini-PROTEAN Tetra cell

For More Information

Request or download bulletin: 2033

Specifications

10 x 7.5 cm Maximum gel size (W x L) Buffer requirement 1.2 L 2 Mini-PROTEAN handcast gels, 2 Mini-PROTEAN precast gels, or 2 Ready Gel® precast gels Gel capacity Recommended power supply PowerPac[™] HC (PowerPac Basic is a suitable alternative) Dimensions (W x L x H) 12 x 16 x 18 cm

Mini Trans-Blot cell components:

5. Electrophoresis blotting module.

5

1. Buffer tank and lid.

Foam pads.
 Gel holder cassette.

2. Blue cooling unit.

Ordering Information

Catalog #	Description
1703930	Mini Trans-Blot Electrophoretic Transfer Cell, includes 2 gel holder cassettes, 4 foam pads,
	modular electrode assembly, blue cooling unit, lower buffer tank, lid with cables
1703935*	Mini Trans-Blot Module, without lower buffer tank and lid
1703989	Mini Trans-Blot Cell and PowerPac Basic Power Supply, includes #1703930 and #1645050
1703836	Mini Trans-Blot Cell and PowerPac HC Power Supply, includes #1703930 and #1645052
1658029	Mini-PROTEAN Tetra Cell and Mini Trans-Blot Module, includes 10-well, 1.0 mm, 4-gel system
	(#1658001) and blotting module (#1703935) without lower buffer tank and lid, gel casting accessories
1658033	Mini-PROTEAN Tetra Cell, Mini Trans-Blot Module, and PowerPac Basic Power Supply,
	includes #1658001, #1703935, and #1645050
1658034	Mini-PROTEAN Tetra Cell for Mini Precast Gels, Mini Trans-Blot Module, and PowerPac Basic
	Power Supply , includes #1658004, #1703935, and #1645050
1658036	Mini-PROTEAN Tetra Cell for Mini Precast Gels, Mini Trans-Blot Module, and PowerPac HC
	Power Supply, includes #1658004, #1703935, and #1645052
1658035	Mini-PROTEAN Tetra Cell, Mini Trans-Blot Module, and PowerPac HC Power Supply,
	includes #1658001, #1703935, and #1645052
Accessories	
1703931	Mini Gel Holder Cassette
1703932	Thick Blot Paper, 7.5 x 10 cm, for Mini Trans-Blot cassette, 50 sheets
1703933	Foam Pads, 8 x 11 cm, 4
1703812	Mini Trans-Blot Central Core
1703919	Blue Cooling Unit, for Mini-PROTEAN Tetra tanks
1703934	Bio-Ice Cooling Unit, for Mini-PROTEAN 3 tanks
1651279	Roller, 3.5" wide

* Also fits in the Mini-PROTEAN 3 electrophoresis cell.

Criterion[™] Blotter

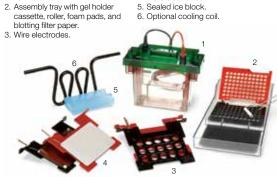
- Efficient transfers in 30 min to 1 hr for most proteins; overnight transfer at lower voltages is also an option
- Plate electrodes, for faster and more efficient transfers, or wire electrodes
- Included assembly tray and roller
- Sealed ice block provides sufficient cooling for most applications
- Optional cooling coil available for applications that require precise temperature control
- Cassettes with handles for easy removal from the tank

For More Information Request or download bulletin: 2558

Specifications

Criterion blotter components: 1. Tank and lid.

- Pathana na.
 Assembly tray with gel holder cassette, roller, foam pads, and
- 3. Wire electrodes.



4. Plate electrodes.

See Also

PowerPac Basic and PowerPac HC power supplies: page 155. Criterion precast gels: page 177. Blotting membranes: page 232. Blot detection reagents: page 236. Buffers: page 236.

••••••••	
Maximum gel size (W x L)	15 x 9.4 cm
Buffer requirement	1.3 L
Gel capacity	4 Mini-PROTEAN® precast gels, 4 Ready Gel® precast gels, 4 mini handcast gels, or 2 Criterion precast gels
Electrode choices	Platinum-coated titanium anode and stainless-steel cathode plate electrodes*, or economical platinum wire electrodes
Recommended power supply	PowerPac [™] HC
Dimensions (W x L x H)	21.8 x 11.8 x 15 cm

* Plate electrodes create a high-strength electrical field with higher current densities than other electrodes, producing faster and more efficient transfers.

Ordering Information

Catalog #	Description
1704070	Criterion Blotter with Plate Electrodes, includes cell assembled with plate electrodes, lid with cables,
	2 Criterion gel holder cassettes, 1 pack precut blot absorbent filter paper, 4 foam pads, gel/blot assembly
	tray, roller, sealed ice block
1704071	Criterion Blotter with Wire Electrodes, includes cell assembled with wire electrodes, lid with cables,
	2 Criterion gel holder cassettes, 1 pack precut blot absorbent filter paper, 4 foam pads, gel/blot assembly
	tray, roller, sealed ice block
1656024	Criterion Cell/Plate Blotter System, includes #1656001 and #1704070
1656025	Criterion Cell/Wire Blotter System, includes #1656001 and #1704071
1703872	Criterion Blotter with Plate Electrodes and PowerPac HC Power Supply, includes #1704070 and #1645052
1703874	Criterion Blotter with Wire Electrodes and PowerPac HC Power Supply, includes#1704071 and #1645052
Accessories	
1704076	Optional Criterion Blotter Cooling Coil
1704077	Criterion Blotter Buffer Tank
1704079	Criterion Blotter Lid
1704080	Criterion Blotter Gel Holder Cassette
1704081	Criterion Blotter Platinum Anode Plate Electrode
1704082	Criterion Blotter Stainless-Steel Cathode Plate Electrode
1704083	Criterion Blotter Wire Electrode Card, anode
1704084	Criterion Blotter Wire Electrode Card, cathode
1704085	Thick Blot Paper, 9.5 x 15.2 cm, for Criterion blotter, 50 sheets
1704086	Foam Pads, 9.5 x 15.2 cm, 4
1704087	Sealed Ice Blocks, for Criterion blotter, 2
1704089	Criterion Gel/Blot Assembly Tray
1651279	Roller. 3.5" wide

Western Blotting

Transfer Devices

bio-rad.com/tankblotters

5. Plate electrodes.

6. Super cooling coil.

See Also

PowerPac HC power supply: page 155. Precast gels: pages 168, 177. Blotting membranes: page 232. Blot detection reagents: page 236.

Trans-Blot[®] Cell

Features of the Trans-Blot transfer cell include:

- Ability to transfer up to 12 mini or 6 midi gels at the same time
- Plate electrodes, for faster and more efficient transfers, or wire electrodes
- Temperature regulation with the super cooling coil and a water recirculator
- A hinged gel holder cassette clamping system that eliminates slipping and ensures tight contact between the membrane and the gel
- · Color-coded cassettes to ensure proper orientation in the cell

Specifications

Maximum gel size (W × L) 16 × 20 cm Buffer requirement 3–4 L Gel capacity 12 Mini-PROTEAN® precast gels, 12 Ready Gel® precast gels, 12 mini handcast gels, 6 Criterion™ precast gels, or 3 PROTEAN® II xi handcast gels Electrode choices Durable platinum-coated titanium anode and stainless-steel cathode plate electrodes*, or economical platinum wire electrodes Recommended power supply PowerPac[™] HC Dimensions (W x L x H) 18 × 9.5 × 24 cm

Trans-Blot cell components: 1. Buffer tank and lid with cables.

2. Gel holder cassette.

Foam pads.
 Wire electrodes.

* Plate electrodes create a high-strength electrical field with higher current densities than other electrodes, producing faster and more efficient transfers.

Catalog #	Description
1703939*	Trans-Blot Cell with Plate Electrodes and Super Cooling Coil, includes 2 gel holder cassettes,
	buffer tank, lid with power cables, 4 foam pads, 1 pack precut blot absorbent filter paper (15 x 20 cm)
1703853*	Trans-Blot Cell with Plate Electrodes, Super Cooling Coil, and PowerPac HC Power Supply,
	includes #1703939, #1703912, and #1645052
1703946	Trans-Blot Cell with Plate Electrodes, includes 2 gel holder cassettes, buffer tank, lid with power
	cables, 4 foam pads, 1 pack precut blot absorbent filter paper (15 x 20 cm)
1703850	Trans-Blot Cell with Plate Electrodes and PowerPac HC Power Supply, includes #1703946 and #1645052
1703910	Trans-Blot Cell with Wire Electrodes, includes 2 gel holder cassettes, buffer tank, lid with power cables,
	4 foam pads, 1 pack precut blot absorbent filter paper (15 x 20 cm)
1703825	Trans-Blot Cell with Wire Electrodes and PowerPac HC Power Supply, includes #1703910 and #1645052
Accessories	
1703914	Foam Pads, 15.5 x 20.5 cm, 6
1703956	Thick Blot Paper, 15 x 20 cm, for Trans-Blot cassette, 25 sheets
1703960	Extra Thick Blot Paper, 15 x 20 cm, 30 sheets
1703943	Trans-Blot Platinum Anode Plate Electrode
1703944	Trans-Blot Stainless-Steel Cathode Plate Electrode
1703945	Trans-Blot Plate Electrode Pair, platinum anode and stainless-steel cathode
1703920	Trans-Blot Standard Wire Electrode Card, cathode
1703921	Trans-Blot Standard Wire Electrode Card, anode
1703912	Super Cooling Coil, required for all high-intensity transfers
1703913	Gel Holder Cassette, includes 2 foam pads
1703922	Trans-Blot Cell Buffer Tank
1703923	Trans-Blot Cell Lid with Power Cables
* Trans-Blot c using plate e	ells require the super cooling coil for high-intensity transfers; the super cooling coil is also recommended for all application:

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Trans-Blot[®] Plus Cell

The Trans-Blot Plus cell provides transfers of proteins from large format gels in as little as 15–30 minutes.

- Durable plate electrodes (platinum coated and stainless steel) that provide a strong and uniform electrical field
- · Rigid gel holder cassettes that ensure uniform contact along the entire gel and membrane surface
- A hinged cassette design that prevents slipping and facilitates cassette assembly
- · Color-coded cassettes and electrode plates to ensure proper orientation in the cell
- Temperature regulation with the super cooling coil and refrigerated water recirculator
- An optional assembly tray that is ideal for gel sandwich and cassette assembly

For More Information

Request or download bulletin: 2866





See Also

PowerPac HC power supply: page 155. Precast gels: pages 168, 177. Blotting membranes: page 232. Blot detection reagents: page 236. Gel clip: page 190. Buffers: page 236.

Specifications	
Maximum gel size (W x L)	26.5 x 28 cm
Buffer requirement	10–12 L
Gel capacity	27 Mini-PROTEAN [®] precast gels, 27 Mini-PROTEAN handcast gels, 27 Ready Gel [®] precast gels, 12 Criterion™ gels, or 3 PROTEAN [®] II XL gels
Recommended power supply	PowerPac [™] HC
Dimensions (W \times L \times H)	30 x 17.3 x 39.4 cm

Ordering Information

Catalog #	Description
1703990*	Trans-Blot Plus Cell with Plate Electrodes and Super Cooling Coil, includes 3 gel holder cassettes, buffer tank, lid with power cables, 6 foam pads, 1 pack blot absorbent filter paper (26.5 x 28 cm, 30 sheets), roller, stirbar
1703991	Trans-Blot Plus Cell and PowerPac HC Power Supply, 100–120/220–240 V, includes #1703990 and #1645052
1703992	Trans-Blot Plus Cell and PowerPac Universal Power Supply, 100–120/220–240 V, includes #1703990 and #1645070
1654144	PROTEAN Plus Dodeca Cell (100/120 V), Trans-Blot Plus Cell, and PowerPac Universal Power Supply, includes #1654150, #1703990, and #1645070
1654145	PROTEAN Plus Dodeca Cell (220/240 V), Trans-Blot Plus Cell, and PowerPac Universal Power Supply, includes #1654151, #1703990, and #1645070
Accessories	
1703995	Foam Pads, 27 x 28.5 cm, 2
1703997	Stirbar
1703998	Trans-Blot Plus Roller, 6 in wide
1704990	Trans-Blot Plus Super Cooling Coil
1704991	Trans-Blot Plus Platinum Anode Plate Electrode
1704992	Trans-Blot Plus Stainless-Steel Cathode Plate Electrode
	ells require the super cooling coil for high-intensity transfers; the super cooling coil is also recommended

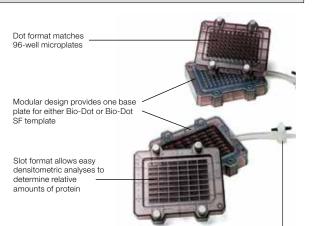
for all applications using plate electrodes.

Microfiltration and Screening Systems

Bio-Dot® and Bio-Dot SF Microfiltration Apparatus

The 96-well Bio-Dot and 48-well Bio-Dot SF (slot format) microfiltration units provide easy, reproducible methods for binding proteins or nucleic acids in solution onto membranes. The Bio-Dot SF apparatus focuses sample to a thin line instead of a circle, making quantitation by densitometry more reproducible. Each is available as a complete, independent unit or as a modular template without the manifold base. Features include:

- Resistance to 100% ethanol, strong acid, and NaOH
- Autoclavability
- Sealing gasket to eliminate lateral leakage
- Easy sample application with microplate-based spacing
- Flow valve (three-way) for adjustable vacuum



Three-way vacuum valve allows sample loading by gravity and quick washes

Specifications

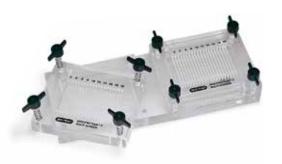
	Bio-Dot Apparatus	Bio-Dot SF Apparatus	
Format	Dot blot	Slot blot	
Samples	96-well, 8 x 12 format	48-well, 6 x 8 format	
Sample volume	50–600 µl	50–500 µl	
Well size	3 mm diameter	7 x 0.75 mm	
Quantitation with	Yes, but Bio-Dot SF	Yes	
densitometer	unit recommended		
Overnight incubations	Yes	No	
Membrane size (W x L)	12 x 9 cm	12 x 9 cm	
Dimensions (W x H x D)	9 x 6.5 x 12"	9.5 x 7 x 12"	
Weight	1.1 kg (2.5 lb)	1.2 kg (2.6 lb)	

Ordering Inf	formation
Catalog #	Description
1703938	Bio-Dot Microfiltration System, includes Bio-Dot apparatus (#1706545) and Bio-Dot SF module (#1706543) templates, vacuum manifold base, gasket support plates, gasket
1706545	Bio-Dot Apparatus, includes Bio-Dot sample template, vacuum manifold base, gasket support plate, gasket
1706547	Bio-Dot Module, without vacuum manifold base, for conversion of Bio-Dot SF to Bio-Dot apparatus
1706542	Bio-Dot SF Apparatus, includes Bio-Dot SF sample template, vacuum manifold base, gasket support plate, gasket, filter paper
1706543	Bio-Dot SF Module, without vacuum manifold base, for conversion of Bio-Dot to Bio-Dot SF apparatus
Accessories	
1706546	Bio-Dot Gaskets, 3
1706544	Bio-Dot SF Gaskets, 2
1620161	Bio-Dot/Bio-Dot SF Filter Paper, 11.3 x 7.7 cm, 60 sheets

Mini-PROTEAN® II Multiscreen Apparatus

Advantages of the Mini-PROTEAN II multiscreen apparatus include:

- Quick and efficient screening or filtering of up to 40 different antibodies or sera without cutting a western blot into individual strips
- · Compatibility with all common western blotting procedures
- Precise side-by-side comparison of results
- Economical use of antibody samples requires only 600 µl per channel
- Separate, detachable sample templates that accommodate one or two 8 x 7 cm blots
- Clamps that secure the blot to form 40 leakproof channels
- Molded gasket that eliminates cross-contamination between samples
- Easy operation and assembly



Specifications

Membrane size (W x L) Channel dimensions Dimensions (W x L x H)

) 8 x 7 cm 2.5 mm x 5.2 cm x 5 mm) 27 x 11 x 6 cm

Ordering Information

Catalog #	Description
1704017	Mini-PROTEAN II Multiscreen Apparatus, includes 2 sample templates, 2 gaskets, base plate
1704018	Multiscreen Gaskets, 2

Mini Incubation Trays

Trays allow screening of antigens that have been blotted onto membranes. An entire immunological screening process can be carried out in a single tray.

- Each tray has eight 10.5 cm x 5 mm channels to accommodate strips cut from the blotted membrane. Channels align with an eight-channel pipet
- Minimal reagent volumes needed (400 µl/channel)
- Numbered channels for sample identification
- Unique ribs in the tray lid and the design of the sample channels ensure that no cross-contamination occurs



Ordering Information

Catalog #	Description
1703902	Mini Incubation Trays, 20
1703903	Mini Incubation Trays, 100

Membranes and Filter Papers

Bio-Rad offers a comprehensive line of blotting membranes including different grades of nitrocellulose, PVDF, and Zeta-Probe[®] nylon membranes. Use the selection guide below to choose the membrane appropriate for your application.

For More Information

Web: bio-rad.com/blottingmembranes

Blotting Membrane and Filter Paper Selection Guide				
Membrane	Pore Size	Binding Capacity, µg/cm ²	Compatible Detection Methods	Notes
Nitrocellulose	0.45 μm 0.2 μm	80–100	Colorimetric, chemiluminescence, chemifluorescence, radioactive	General-purpose protein blotting membrane
Supported nitrocellulose	0.45 μm 0.2 μm	80–100	Colorimetric, chemiluminescence, chemifluorescence, radioactive	Pure nitrocellulose cast on an inert synthetic support; increased strength for easier handling and for reprobing
Immun-Blot [®] PVDF	0.2 µm	150–160	Colorimetric, chemiluminescence, radioactive	High mechanical strength and chemical stability; recommended for western blotting
lmmun-Blot LF PVDF	0.45 µm	155–300	Colorimetric, chemiluminescence, chemifluorescence, fluorescence	High mechanical strength and chemical stability; low autofluorescence; recommended for western blotting using fluorescence detection
Sequi-Blot™ PVDF	0.2 µm	170–200	Colorimetric, radioactive	High mechanical strength and chemical stability; recommended for protein sequencing
Blotting Appa	ratus	Precut Membrane Si	zes Precut Filter Paper Sizes	Membrane/Filter Paper Sandwiches
Mini Trans-Blot	® cell	7 x 8.5 cm	7.5 x 10.5 cm	7 x 8.5 cm
Criterion [™] blott	er	8.5 x 13.5 cm	9.5 x 15.2 cm	8.5 x 13.5 cm
Trans-Blot [®] cel	I	13.5 x 16.5 cm	15 x 20 cm	-
Trans-Blot Plus	cell	25 x 28 cm 26.5 x 28 cm		
Trans-Blot [®] Tur	bo™	7 x 8.5 cm 8.5 x 13.5 cm	7.5 x 10.5 cm 9.5 x 15.2 cm	7 x 8.5 cm 8.5 x 13.5 cm (see page 233)
Trans-Blot SD (cell	7 x 8.5 cm 11.5 x 16 cm 15 x 15 cm 15 x 9.2 cm 20 x 20 cm	7 x 8.5 cm 8 x 13.5 cm 14 x 16 cm 18 x 18.5 cm —	7 x 8.5 cm 8.5 x 13.5 cm — — —
Mini-PROTEAN multiscreen ap		7 x 8.5 cm 7 x 8.5 cm	7 x 8.5 cm —	7 x 8.5 cm —
Bio-Dot® appa	ratus	9 x 12 cm	11.3 x 7.7 cm	_
Bio-Dot SF app	paratus	9 x 12 cm	11.3 x 7.7 cm	_
Vacuum blotter		_	_	_

See Also

Filter paper: page 235.

Nitrocellulose Membranes

Nitrocellulose

Nitrocellulose with the 0.45 μm pore size is recommended for most analytical blotting including protein, ssDNA, and RNA transfers. For transfer of low MW proteins (<15 kD) or nucleic acids, the 0.2 μm nitrocellulose membrane prevents sample loss due to transfer through the membrane.

Supported Nitrocellulose

Made of 100% pure nitrocellulose cast on an inert synthetic support, this nitrocellulose is a solid support for nucleic acid and protein applications and can withstand the rigors of multiple reprobing and autoclaving (121°C).



bio-rad.com/blottingmembranes

Membranes and Filter Papers

Catalog #	Description	Recommended Uses
Nitrocellulos	se Membranes (0.2 μm)	
1620112	Nitrocellulose Membrane, 0.2 µm, 30 cm x 3.5 m, 1 roll	Transfer of low MW
1620212	Nitrocellulose/Filter Paper Sandwiches, 0.2 µm, 7 x 8.4 cm, 20 pack	proteins or nucleic acids
1620213	Nitrocellulose/Filter Paper Sandwiches, 0.2 µm, 7 x 8.4 cm, 50 pack	(has smaller pore size)
1620232	Nitrocellulose/Filter Paper Sandwiches, 0.2 µm, 8.5 x 13.5 cm, 20 pack	
1620233	Nitrocellulose/Filter Paper Sandwiches, 0.2 µm, 8.5 x 13.5 cm, 50 pack	
1620146	Nitrocellulose Membranes, 0.2 µm, 7 x 8.4 cm, 10 sheets	
1620168	Nitrocellulose Membranes, 0.2 µm, 8.5 x 13.5 cm, 10 sheets	
1620147	Nitrocellulose Membranes, 0.2 µm, 13.5 x 16.5 cm, 10 sheets	
1620150	Nitrocellulose Membranes, 0.2 µm, 20 x 20 cm, 5 sheets	
1620252	Nitrocellulose Membranes, 0.2 µm, 26.5 x 28 cm, 10 sheets	
Nitrocellulos	se Membranes (0.45 μm)	
1620115	Nitrocellulose Membrane, 0.45 µm, 30 cm x 3.5 m, 1 roll	Transfer of low MW antigens,
1620214	Nitrocellulose/Filter Paper Sandwiches, 0.45 µm, 7 x 8.4 cm, 20 pack	immunoglobulins, glycoprotein
1620215	Nitrocellulose/Filter Paper Sandwiches, 0.45 µm, 7 x 8.4 cm, 50 pack	receptor proteins, histones
1620234	Nitrocellulose/Filter Paper Sandwiches, 0.45 µm, 8.5 x 13.5 cm, 20 pack	and nonhistones, etc.; capillary
1620235	Nitrocellulose/Filter Paper Sandwiches, 0.45 µm, 8.5 x 13.5 cm, 50 pack	Southern blotting of ssDNA and RNA <500 bp (use Zeta-Probe
1620145	Nitrocellulose Membranes, 0.45 µm, 7 x 8.4 cm, 10 sheets	membranes for blotting ssDNA
1620167	Nitrocellulose Membranes, 0.45 µm, 8.5 x 13.5 cm, 10 sheets	and RNA of all sizes)
1620117	Nitrocellulose Membranes, 0.45 µm, 9 x 12 cm, 10 sheets	
1620148	Nitrocellulose Membranes, 0.45 µm, 11.5 x 16 cm, 10 sheets	
1620114	Nitrocellulose Membranes, 0.45 µm, 15 x 9.2 cm, 10 sheets	
1620116	Nitrocellulose Membranes, 0.45 µm, 15 x 15 cm, 10 sheets	
1620113	Nitrocellulose Membranes, 0.45 µm, 20 x 20 cm, 5 sheets	
1620251	Nitrocellulose Membranes, 0.45 µm, 26.5 x 28 cm, 10 sheets	
Supported N	litrocellulose Membranes (0.2 μm)	
1620097	Supported Nitrocellulose Membrane, 0.2 µm, 30 cm x 3 m, 1 roll	Protein and nucleic acid blotting
1620095	Supported Nitrocellulose Membranes, 0.2 µm, 7 x 8.4 cm, 10 sheets	
1620071	Supported Nitrocellulose Membranes, 0.2 µm, 8.5 x 13.5 cm, 10 sheets	
Supported N	litrocellulose Membranes (0.45 μm)	
1620094	Supported Nitrocellulose Membrane, 0.45 µm, 30 cm x 3 m, 1 roll	Protein and nucleic acid blotting
1620090	Supported Nitrocellulose Membranes, 0.45 µm, 7 x 8.4 cm, 10 sheets	
1620070	Supported Nitrocellulose Membranes, 0.45 µm, 8.5 x 13.5 cm, 10 sheets	

PVDF Membranes

The chemically resistant PVDF membrane has very high protein binding capacity and resistance to tearing and cracking, even after repeated stripping and reprobing. All Bio-Rad PVDF membranes have a $0.2 \ \mu m$ pore size.

Immun-Blot® PVDF for Western Blotting

This membrane is ideal for chemiluminescent and colorimetric western blots because it retains target protein very strongly but reduces nonspecific protein binding that can obscure high-sensitivity detection. Binding capacity is $150-160 \ \mu g/cm^2$.

Sequi-Blot[™] PVDF for Protein Sequencing

This membrane gives outstanding performance in protein sequencing, even for low-abundance samples. Sequi-Blot PVDF retains all transferred protein and has a binding capacity of $170-200 \ \mu g/cm^2$.

Immun-Blot Low Fluorescence PVDF Membrane

Optimized for fluorescence applications, the low fluorescence property of the membrane enhances image quality and improves sensitivity of all fluorescence detection protocols. It is ideal for multiplex, fluorescence western blotting, and chemifluorescence applications. The membrane is also compatible with other detection methods such as chemiluminescence and colorimetric detection. This membrane is highly recommended for the V3 Western Workflow[™].

For More Information Web: bio-rad.com/v3

Request or download bulletins: 2212 and 6116

Membranes and Filter Papers

Catalog #	Description	
	t PVDF Membranes	
1620177	Immun-Blot PVDF Membrane, 26 cm x 3.3 m, 1 roll	
1620218	Immun-Blot PVDF/Filter Paper Sandwiches, 7 x 8.4 cm, 20 pack	
1620219	Immun-Blot PVDF/Filter Paper Sandwiches, 7 x 8.4 cm, 50 pack	
1620238	Immun-Blot PVDF/Filter Paper Sandwiches, 8.5 x 13.5 cm, 20 pack	
1620239	Immun-Blot PVDF/Filter Paper Sandwiches, 8.5 x 13.5 cm, 50 pack	
1620174	Immun-Blot PVDF Membranes, 7 x 8.4 cm, 10 sheets	
1620175	Immun-Blot PVDF Membranes, 10 x 15 cm, 10 sheets	
1620176	Immun-Blot PVDF Membranes, 20 x 20 cm, 10 sheets	
1620255	Immun-Blot PVDF Membranes, 25 x 28 cm, 10 sheets	
Sequi-Blot F	PVDF Membranes	
1620184	Sequi-Blot PVDF Membrane, 26 cm x 3.3 m, 1 roll	
1620237	Sequi-Blot PVDF/Filter Paper Sandwiches, 8.5 x 13.5 cm, 50 pack	
1620186	Sequi-Blot PVDF Membranes, 7 x 8.4 cm, 10 sheets	
1620180	Sequi-Blot PVDF Membranes, 10 x 15 cm, 10 sheets	
1620181	Sequi-Blot PVDF Membranes, 15 x 15 cm, 10 sheets	
1620182	Sequi-Blot PVDF Membranes, 20 x 20 cm, 10 sheets	
Immun-Blot	t Low-Fluorescence PVDF Membranes	
1620260	Low Fluorescence PVDF/Filter Paper Sandwiches, 7 x 8.5 cm, 10 pack	
1620261	Low Fluorescence PVDF/Filter Paper Sandwiches, 7 x 8.5 cm, 20 pack	
1620262	Low Fluorescence PVDF/Filter Paper Sandwiches, 8.5 x 13.5 cm, 10 pack	
1620263	Low Fluorescence PVDF/Filter Paper Sandwiches, 8.5 x 13.5 cm, 20 pack	
1620264	Low Fluorescence PVDF Roll, 28 x 3.8 m, 1 roll	

Zeta-Probe[®] Nylon Membranes

Zeta-Probe Membranes

Zeta-Probe membranes bind nucleic acids independently of buffer pH, so they can be used in traditional Southern blots, rapid alkaline Southern and northern blotting techniques, and electrophoretic transfer of nucleic acids from agarose and polyacrylamide gels. Zeta-Probe membranes can be hybridized and stripped as many as 20 times for DNA (Li et al. 1987) and six times for RNA (Gatti et al. 1984). Oligonucleotides as short as six bases will bind to the membrane and oligonucleotides ≥20 bases long will be retained after repeated hybridization and washing.

Zeta-Probe GT Membranes

Zeta-Probe GT (genomic DNA-tested) membranes meet all performance specifications of Zeta-Probe membranes, and each lot is also functionally tested to ensure that 3 pg of single-copy factor VIII human DNA can be detected in 5 µg total genomic DNA.

For More Information Request or download bulletin: 2096

C/P Lift[®] Membranes

C/P Lift membranes yield strong, sharp signals and very low background from positive colonies or plaques in confluent lawns. The membranes complement the screening of genomic and cDNA libraries using either DNA or RNA probes. The membranes wet easily and can be used directly out of the box with no pretreatment.

Ordering Information		
Description	Zeta-Probe	Zeta-Probe GT
Zeta-Probe and Zeta-Probe GT	Membranes	
30 cm x 3.3 m, 1 roll	1620159	1620196
20 cm x 3.3 m, 1 roll	1620165	1620197
7 x 10 cm, 15 sheets	1620206	1620208
9 x 12 cm, 15 sheets	1620153	1620190
		continues

bio-rad.com/blottingmembranes

Membranes and Filter Papers

Ordering In	formation		
Description		Zeta-Probe	Zeta-Probe GT
Zeta-Probe	and Zeta-Probe GT Me	mbranes (cont.)	
10 x 15 cm, 1	5 sheets	1620154	1620191
15 x 15 cm, 1	5 sheets	1620155	1620192
15 x 20 cm, 1	5 sheets	1620156	1620193
20 x 20 cm, 15 sheets		1620157	1620194
20 x 25 cm, 3	sheets	1620158	1620195
Catalog #	Description		
C/P Lift Mer	mbranes		
1620162	C/P Lift Membrane	C/P Lift Membrane Disks, 85 mm, 50	
1703202	Supported Nitrocel	lulose Membrane Disks, 82.5 mm, 50	

Filter Paper

Bio-Rad offers a range of filter papers for blotting applications, including filter paper precut to fit standard gel sizes.

Ordering Information

Catalog #	Description	Recommended Uses
Blot Absorbe	ent Filter Paper (Extra Thick)	
1703965	Extra Thick Blot Paper, 7.5 x 10 cm, for Ready Gel or	All blotting applications using the
	Mini-PROTEAN Tetra gels, 60 sheets	Trans-Blot SD cell or Trans-Blot
1703966	Extra Thick Blot Paper, 7 x 8.4 cm, for Ready Gel or	cell (precut to gel dimensions from
	Mini-PROTEAN Tetra gels, 60 sheets	well to bottom of gel)
1703967	Extra Thick Blot Paper, 8 x 13.5 cm, for Criterion precast gels, 60 sheets	
1703968	Extra Thick Blot Paper, 14 x 16 cm, for PROTEAN II xi gels, 30 sheets	
1703969	Extra Thick Blot Paper, 19 x 18.5 cm, for PROTEAN II XL gels, 30 sheets	
1703958	Extra Thick Blot Paper, 10 x 15 cm, 30 sheets	
1703959	Extra Thick Blot Paper, 15 x 15 cm, 30 sheets	
1703960	Extra Thick Blot Paper, 15 x 20 cm, 30 sheets	
Blot Absorbe	ent Filter Paper (Thick)	
1703932	Thick Blot Paper, 7.5 x 10 cm, for Mini Trans-Blot cassette, 50 sheets	All blotting applications requiring
1704085	Thick Blot Paper, 9.5 x 15.2 cm, for Criterion blotter, 50 sheets	thick, high wet strength filter paper
1703955	Thick Blot Paper, 14 x 16 cm, for PROTEAN II xi gels, 25 sheets	
1703956	Thick Blot Paper, 15 x 20 cm, for Trans-Blot cassette, 25 sheet	
1650921	Thick Blot Paper, 18 x 34 cm, for Model 224, 443,	
	and 543 slab gel dryers, 25 sheets	
1620161	Bio-Dot/Bio-Dot SF Filter Paper, 7.7 x 11.3 cm, 60 sheets	
1650962	Filter Paper Backing, 35 x 45 cm, for stained gels, 25 sheets	
Blot Absorbe	ent Filter Paper (Thin)	
1620118	Thin Blot Paper, 33 cm x 3 m, 1 roll	All blotting applications requiring
		thin, high wet strength filter paper

Blotting Stains and Tracking Dyes

Bio-Rad offers a selection of stains for blotting applications; see page 243. Tracking dyes can be found on page 259.

Blotting Buffers and Reagents

Premixed Blotting Buffers and Buffer Reagents

Two transfer buffers are available: 10x Tris/glycine and 10x Tris/CAPS. Premixed blocking buffers, available as 1x PBS with casein and 1x TBS with casein, take the time and effort out of solubilizing casein. Bio-Rad offers a complete line of reagents for preparation of buffers to your own specifications.

Blotting Buffer Selection Guide

	1x Formulation	Applications
Transfer Buffers*		
10x Tris/glycine	25 mM Tris, 192 mM glycine, pH 8.3	Western blotting
10x Tris/CAPS	Anode buffer: 60 mM Tris, 40 mM CAPS, 15% methanol, pH 9.6	A discontinuous buffer system that increases transfer efficiency in semi-dry applications
	Cathode buffer: 60 mM Tris, 40 mM CAPS, 0.1% (w/v) SDS, pH 9.6	
Processing Buffers		
10x PBS	10 mM sodium phosphate, 150 mM NaCl, pH 7.4	Western blotting wash solution
10x TBS	20 mM Tris, 500 mM NaCl, pH 7.4	Western blotting wash solution
1x PBS with 1% casein	10 mM sodium phosphate, 150 mM NaCl, 1% (w/v) casein, pH 7.4	Western blotting blocking buffer (casein blockers recommended for all applications, including those with biotin-avidin complexes)
1x TBS with 1% casein	20 mM Tris, 500 mM NaCl, 1% (w/v) casein, pH 7.4	Western blotting blocking buffer (casein blockers recommended for all applications, including those with biotin-avidin complexes)

* These buffers can be used for all gel types and formulations.

Catalog #	Description	Catalog #	Description
Blot Transfer and Processing Buffers		Detergents	and Blocking Buffers
1610734	10x Tris/Glycine, 1 L	1706537	Gelatin, EIA grade, 200 g
1610771	10x Tris/Glycine, 5 L cube	1706404	Blotting-Grade Blocker,
1610778	10x Tris/CAPS, 1L		nonfat dry milk , 300 g
1610780	10x Phosphate Buffered Saline, 1 L	1706531	Tween 20, EIA grade, 100 ml
1706435	10x Tris Buffered Saline, 1 L	1610781	10% (w/v) Tween 20, for easy
			pipetting, 1 L
		1610418	SDS Solution, 20% (w/v), 1 L
		1610783	1x Phosphate Buffered Saline
			with 1% Casein*, 1 L
		1610782	1x Tris Buffered Saline with 1%
			Casein*, 1 L
Reagents			
1610610	Dithiothreitol (DTT)**, 1 g	1610710	2-Mercaptoethanol, 25 ml
1610611	Dithiothreitol (DTT)**, 5 g	1632101	Tributylphosphine (TBP),
1610729	EDTA , 500 g		200 mM, 0.6 ml
1706537	Gelatin, EIA grade, 200 g	1610713	Tricine, 500 g
1610717	Glycine, 250 g	1610716	Tris , 500 g
1610718	Glycine, 1 kg	1610719	Tris, 1 kg
		1610730	Urea , 250 g

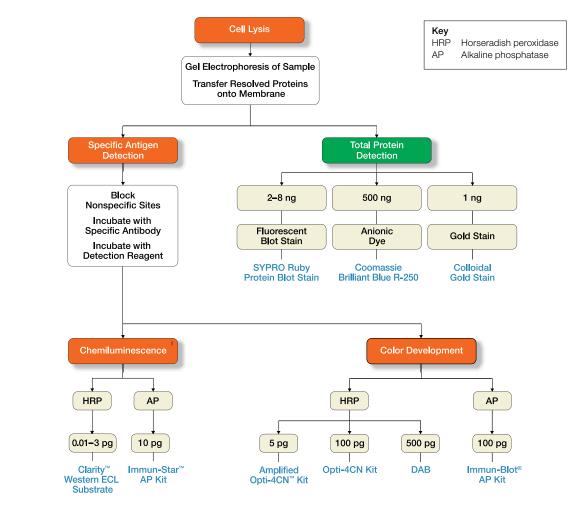
* Store at 2–8°C.

** Store desiccated at 2–8°C; store other reagents at room temperature, dry, and away from direct sunlight. Hazardous shipping charges may apply.

Immunodetection Reagents and Kits

The most common blot detection techniques use antibodies to either probe for specific antigens in a complex protein sample or stain all proteins bound to a membrane. The chart indicates the maximum sensitivity achievable with each detection system.

For more information on methods, equipment, and reagents used in protein blotting, request the Protein Blotting Guide (bulletin 2895).



Blot detection reagent selection guide.

Chemiluminescence Detection

Chemiluminescent western blot detection offers highly sensitive detection of proteins bound to blotting membranes. Most specific antigen detection methods are based on HRP (horseradish peroxidase) or AP (alkaline phosphatase) secondary antibody conjugates. The signal can be captured with film or dedicated imaging equipment (see page 280).

Chemiluminescence-Based Kit Selection Guide

	Clarity [™] Western ECL	Immun-Star [™] AP
Lower detection limit	Mid femtogram	10 pg
Signal duration	24 hr	24 hr
Primary detection method	Digital imager and film	Film
Suggested anitbody dilution	Primary: 1:1,000–1/50,000; Secondary: 1:50,000–1/250,000	Primary: 1:1,000–1/6,000; Secondary: 1:3,000
Recommended membrane	Nitrocellulose, PVDF, or LF PVDF	Nitrocellulose, PVDF, or LF PVDF

Clarity[™] Western ECL Substrate

Clarity Western ECL substrate is compatible with any HRP-conjugate secondary detection reagent and ideal for both digital and film-based imaging. The Clarity substrate provides excellent sensitivity with an extremely long signal duration that allows re-imaging without loss of signal. Features include:

- Low background levels, yielding very clear images
- Bright, long signal
- Shelf life of 12 months at room temperature

For More Information Web: bio-rad.com/clarity Request or download bulletin: 6305



Ordering Information		
Catalog #	Description	
1705060	Clarity Western ECL Substrate, 200 ml size contains Clarity western peroxide reagent, 100 ml, and Clarity western luminol/enhancer reagent, 100 ml	
1705061	Clarity Western ECL Substrate, 500 ml size contains Clarity western peroxide reagent, 250 ml, and Clarity western luminol/enhancer reagent, 250 ml	

Immun-Star[™] AP Chemiluminescence Kits

These kits combine Bio-Rad's blotting reagents and CDP-*Star* chemiluminescence technology. Exposure times on film are typically between 30 seconds and 5 minutes, depending on sample amount and antibody specificity. Immun-Star AP kit features include:

- The ability to reactivate a blot, even weeks later, with the addition of fresh chemiluminescent substrate
- Detection of as little as 10 pg of protein
- Stable light signal duration of 24 hr
- Ability to strip and reprobe

Choose from two kits based on goat anti-mouse or goat anti-rabbit conjugates.



For More Information Web: bio-rad.com/blotdetection Request or download bulletin: 2050

Ordering Inf	formation				
Catalog #	Description	Substrate	Enhancer*	Antibody	
Immun-Star	AP Kits** and Components				
1705010	GAM-AP Detection Kit	•	•	•	
1705011	GAR-AP Detection Kit	•	•	•	
1705018	AP Substrate, 125 ml	•			
1705012	AP Substrate Pack	•	•		
* The enhan	cer is used on nitrocellulose blots but is not	optimized for PVDF blots. Ad	dditional testing is i	recommended to	

* The enhancer is used on nitrocellulose blots but is not optimized for PVDF blots. Additional testing is recommended to determine appropriate conditions for PVDF blots.

** GAM, goat anti-mouse; GAR, goat anti-rabbit.

Colorimetric Detection

Enzymes such as HRP or AP convert several substrates to a colored precipitate. As the precipitate accumulates on the blot, a colored signal develops. The reaction can be monitored and stopped when the desired signal over background is observed. Colorimetric detection is easier to perform than film-based chemiluminescence detection; however, the method's single end-point result does not allow multiple exposures of chemiluminescent methods. Colorimetric detection. However, Bio-Rad offers amplified colorimetric systems that provide high sensitivity comparable to or exceeding that of chemiluminescent detection.

For More Information Web: bio-rad.com/blotdetection

Colorimetric HRP Detection

Bio-Rad offers three types of kits based on the detection reagent 4-chloro-1-naphthol (4CN) for colorimetric HRP detection; individual reagents are also available, including 3,3'-diaminobenzidine (DAB), an alternative reagent.

For More Information Request or download bulletin: 2260



$\mathbf{Opti}\text{-}\mathbf{4CN}^{^{\mathrm{M}}}$ Substrate and Detection Kits

Detection sensitivity using 4CN is about 500 pg of antigen, with the benefit of very low background. The Opti-4CN kit improves detection sensitivity over that of 4CN, to 100 pg, with no additional steps required.

Amplified Opti-4CN Substrate and Detection Kits

Amplified Opti-4CN detection kits are based on proprietary HRP-activated amplification reagents from Bio-Rad. These kits allow colorimetric detection to 5 pg, which is comparable to chemiluminescence detection sensitivity. No additional materials or special equipment are required.

Immun-Blot[®] HRP Assay Kits

Immun-Blot HRP assay kits provide the reagents required to perform standard HRP/4CN colorimetric detection on western blots with the added convenience of premixed buffers and enzyme substrates. All kit components are individually tested for quality control in blotting applications.

Premixed and Individual HRP Colorimetric Substrates

Premixed enzyme substrate kits are convenient and reliable and reduce exposure to hazardous reagents used in the color development of western blots.

Catalog #	Description
Opti-4CN Ki	ts*
1708235	Opti-4CN Substrate Kit
1708236	Opti-4CN Goat Anti-Rabbit Detection Kit
1708237	Opti-4CN Goat Anti-Mouse Detection Kit
Amplified O	pti-4CN Kits*
1708238	Amplified Opti-4CN Substrate Kit
1708240	Amplified Opti-4CN Goat Anti-Mouse Detection Kit
1708239	Amplified Opti-4CN Goat Anti-Rabbit Detection Kit
Immun-Blot	HRP Assay Kits, with 4CN**
1706463	Goat Anti-Rabbit IgG (H + L)-HRP Assay Kit
1706464	Goat Anti-Mouse IgG (H + L)-HRP Assay Kit
1706465	Goat Anti-Human IgG (H + L)-HRP Assay Kit
Premixed Su	ubstrate Reagents
1706431	HRP Conjugate Substrate Kit, contains premixed 4CN, hydrogen peroxide solutions,
	color development buffer; makes 1 L color development solution
Individual B	lotting Substrates
1706534	HRP Color Development Reagent, 4CN, 5 g
1706535	HRP Color Development Reagent, DAB, 5 g
* Each kit co	ntains enough reagent for 2,500 cm ² of membrane or approximately 50 mini blots.
	n 0.5 ml of specific HRP blotting-grade conjugate; each kit provides reagents (blotting-grade TBS buffer, detergent, gelatin blocking reagent, and 4CN substrate solution) for 200 assays on a 0.6–0.8 x 9.2 cm

nitrocellulose strip using a total volume of 5.0 ml.

Colorimetric AP Detection

Immun-Blot[®] AP Assay Kits

A common substrate for colorimetric detection on western blots based on AP-conjugated secondary antibodies is 5-bromo-4-chloro-3-indolyl phosphate/nitroblue tetrazolium (BCIP/NBT). Immun-Blot AP assay kits provide the essential reagents to perform colorimetric detection (of up to 100 pg of protein) based on AP and BCIP/NBT with the added convenience of premixed buffers and enzyme substrates. All kit components are individually tested for quality control in blotting applications.

Premixed AP Colorimetric Substrates

Premixed enzyme substrate kits provide convenience and reliability and reduce exposure to hazardous reagents.

For More Information

Web: bio-rad.com/blotdetection Request or download bulletins: 1600 and 2032

Ordering Information

Catalog # Description

 Opti-4CN Kits*

 1706460
 Goat Anti-Rabbit IgG (H + L)-AP Assay Kit

 1706461
 Goat Anti-Mouse IgG (H + L)-AP Assay Kit

 1706462
 Goat Anti-Human IgG (H + L)-AP Assay Kit

Premixed Substrate Reagents

1706432 AP Conjugate Substrate Kit, contains premixed BCIP and NBT solutions and color development buffer; makes 1 L color development solution

* Kits contain 0.5 ml of specific AP blotting-grade conjugate; each kit provides reagents (blotting grade TBS buffer, Tween 20 detergent, gelatin blocking reagent, and BCIP and NBT substrate solution) for 200 assays on a 0.6–0.8 x 9.2 cm nitrocellulose strip using a total volume of 5.0 ml.



Western Blot Conjugates and Reagents

Blotting-Grade Conjugates and Reagents

Protein A and Protein G Conjugates

Proteins A and G are bacterial cell surface proteins that bind to the Fc region of IgG molecules. Each reagent has different IgG binding capabilities, depending on the species of origin of the immunoglobulin.

Blotting-Grade Reagents

Detergents and blocking reagents for western blotting are available individually.

Primary Antibodies

For our selection of primary antibodies for western blotting and other applications, see page 276.

For More Information Web: bio-rad.com/blotdetection

Binding Specificities of Protein A and Protein G Conjugates

Immunoglobulin	Protein A	Protein G	Immunoglobulin	Protein A	Protein G
Human IgG₁	•	•	Mouse IgG _{2b}	•	•
Human IgG ₂	•	•	Mouse IgG ₃	•	•
Human IgG ₃	-	•	Rat IgG ₁	0	0
Human IgG ₄	•	•	Rat IgG _{2a}	-	•
Mouse IgG ₁	°/—	0	Rat IgG _{2b}	-	0
Mouse IgG _{2a}	•	•	Rat IgG _{2c}	•	•

• Strong binding. ° Weak binding. – No binding.

Conjugate Specifications*

Products	Volume, ml	Recommended Dilution	Products	Volume, ml	Recommended Dilution
lmmun-Star [™] GAR	2	1:10,000	Goat anti-rabbit IgG-AP	1	1:3,000
Immun-Star GAM	2	1:10,000	Goat anti-mouse IgG-AP	1	1:3,000
Avidin-HRP	2	1:1,000–1:3,000	Goat anti-human IgG-AP	1	1:3,000
Goat anti-rabbit (H + L)	2	1:3,000	Avidin-AP	1	1:1,000-1:3,000
Goat anti-mouse (H + L)	2	1:3,000	Biotinylated-AP	1	1:3,000
Goat anti-human (H + L)	2	1:3,000	Biotinylated-GAR (H + L),	1	1:3,000
Protein A-HRP	1	1:3,000	human IgG adsorbed		
Protein G-HRP	1	1:3,000			

* Shelf life of conjugates is one year when stored at 4°C.

Catalog #	Description	Catalog #	Description
Blotting-Gra	ide Conjugates, HRP		
1705046	Immun-Star Goat Anti-Rabbit	1706522	Protein A-HRP, 1 ml
	(GAR)-HRP, lyophilized	1706425	Protein G-HRP, 1 ml
1705047	Immun-Star Goat Anti-Mouse (GAM)-	1706528	Avidin-HRP, 2 ml
	HRP, lyophilized		
1706515	Goat Anti-Rabbit IgG (H + L)-HRP, 2 ml		
1706516	Goat Anti-Mouse IgG (H + L)-HRP, 2 ml		
1721050	Goat Anti-Human IgG (H + L)-HRP, 2 ml		
Blotting-Gra	ide Conjugates, AP		
1706518	Goat Anti-Rabbit IgG-AP, 1 ml	1706521	Goat Anti-Human IgG-AP, 1 ml
1706520	Goat Anti-Mouse IgG-AP, 1 ml	1706403	Biotinylated AP, 1 ml
Detergents a	and Blocking Reagents		
1706537	Gelatin, EIA grade, 200 g	1610418	SDS Solution, 20% (w/v), 1 L
1706404	Blotting-Grade Blocker, nonfat dry milk,	1610783	1x Phosphate Buffered Saline
	300 g		with 1% Casein,* 1 L
1706531	Tween 20, EIA grade, 100 ml	1610782	1x Tris Buffered Saline with
1610781	10% Tween 20, for easy pipetting, 1 L		1% Casein ,* 1 L

Total Protein Blot Detection

Bio-Rad offers three stain options for total protein detection. For electrophoresis stains, see page 199.

Total Protein Stains

Comparison of Total Protein Staining Methods

Stain	Sensitivity	Staining Time	Advantages	Disadvantages
SYPRO Ruby protein blot stain	2–8 ng	<1 hr	Mass spectrometry compatible	UV fluorescence detection system required
Coomassie Brilliant Blue R-250	100–1,000 ng	~1 hr	Inexpensive, rapid stain	Low sensitivity, shrinks nitrocellulose membranes
Colloidal gold total protein stain	1 ng	~2 hr	Very sensitive, rapid stain	High background with nylon membranes

SYPRO Ruby Protein Blot Stain

SYPRO Ruby protein blot stain provides highly sensitive detection of proteins on PVDF or nitrocellulose membranes. After staining, target proteins can be detected by colorimetric or chemiluminescence immunostaining or analyzed by microsequencing or mass spectrometry with no interference from the stain.

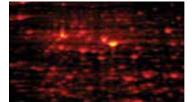
Coomassie Brilliant Blue R-250 Dye

Coomassie Brilliant Blue R-250 is an anionic dye used for staining gels and membranes (PVDF and nitrocellulose). It is a rapid and inexpensive stain that can detect nanogram levels of protein. Since this dye can interfere with antibody binding sites, subsequent detection of proteins by immunostaining is not recommended.

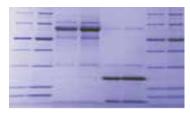
Colloidal Gold Total Protein Stain

Colloidal gold total protein stain is a stabilized gold stain optimized for rapid and sensitive identification of proteins bound to nitrocellulose membranes (Rohringer and Holden 1985). Protein bands stain dark red following incubation of the membrane with colloidal gold solution. The stained membrane yields a permanent record of the protein pattern for exact comparison to immunostained results. Colloidal gold total protein stain is provided ready to use.

For More Information Web: bio-rad.com/totalprotein



SYPRO Ruby protein gel stain.



Coomassie Brilliant Blue stain.

1														
	=	-	=		=		=		-	-	-	-	-	H
	_		Ξ	201	=		=	150		74.5	242			
-	-	-	-	-	-	-	-	-	-	2	1	-		2
1.5			-		-		=	-	=	=	=		-	2
-														

Colloidal gold total protein stain.

Ordering Info	rmation	
Catalog #	Description	
1703127	SYPRO Ruby Protein Blot Stain, 200 ml	
1610400	Coomassie Brilliant Blue R-250, 10 g	
1706527	Colloidal Gold Total Protein Stain, 500 ml	

DNA Electrophoresis Systems

Nucleic Acid Electrophoresis and Blotting

Bio-Rad offers a wide range of nucleic acid electrophoresis and blotting tools for life science research — from molecular ladders to mutation detection systems. Different system formats and sizes are available to accommodate a variety of application needs.

Learn More about the Technology Web: bio-rad.com/tech/DNAelectro

web: bio-rad.com/tech/binAelectro

DNA Electrophoresis Systems

See Also

Certified agaroses: page 261. PowerPac Basic power supply: page 155. DNA ladders: page 262. Premixed electrophoresis buffers: page 260. Nucleic acid reagents: page 259. Gel documentation systems: page 280.

> ReadyAgarose precast gels: page 252.

Bio-Rad offers a complete line of easy-to-use horizontal agarose gel electrophoresis systems, varying in length and width, for both low- and high-throughput applications. Submerged horizontal electrophoresis cells include two models that can run precast or handcast gels:

- Mini-Sub[®] cell GT cell
- Wide Mini-Sub cell GT cell

Three models that can run handcast gels only:

- Sub-Cell[®] GT cell
- Sub-Cell Model 96 cell
- Sub-Cell Model 192 cell

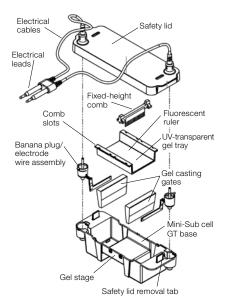
And two models configured to run ReadyAgarose[™] precast gels:

- Mini ReadySub-Cell[™] GT cell
- Wide mini ReadySub-Cell GT cell

Key features of the Sub-Cell family of cells include:

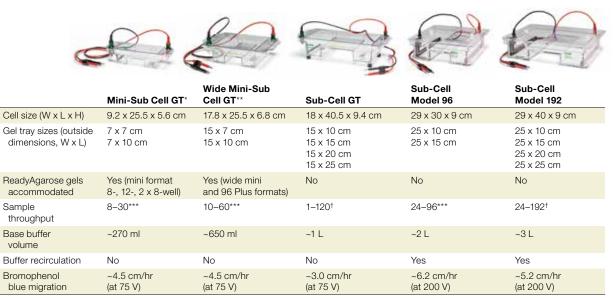
- UV-transparent gel trays with an integrated fluorescent ruler
- Multiple options for hand casting gels of different sizes
- Combs to fit virtually every need
- Clear plastic construction for easy sample visualization
- Buffer recirculation ports for applications that require high voltages or extended runs
- Easy-to-replace electrode cassettes
- IEC 1010 (EN 61010) electrical safety certification

For More Information Web: bio-rad.com/DNAelectro Request or download bulletin: 2660



Components of the Mini-Sub cell GT cell.

Sub-Cell Family Selection Guide



* The mini ReadySub-Cell[™] GT cell is a Mini-Sub cell GT cell dedicated to running ReadyAgarose precast gels, gel size 7 x 10 cm; sample throughput is 8-, 12-, or 2 x 8-well. This cell does not include casting gates, tray, or combs.

** The wide mini ReadySub-Cell GT cell is a wide Mini-Sub cell GT cell dedicated to running ReadyAgarose precast gels, gel size 15 x 10 cm; sample throughput is 20-, 32-, 2 x 32-, or 4 x 26-well. This cell does not include casting gates, tray, or combs.

*** Sample throughput value assumes 1–2 combs per gel.

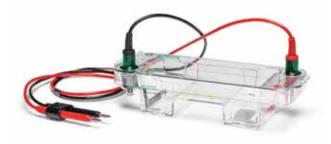
⁺ Sample throughput value assumes 1-4 combs per gel.

Mini-Sub[®] Cell GT Cells

The redesigned Mini-Sub cell GT cell offers updated features that make electrophoresis even easier. A Mini-Sub cell GT cell can resolve up to 30 samples. Its short, narrow format allows 7 and 10 cm runs with speed, simplicity, and economy. Bio-Rad's mini cells resolve EcoRI or HindIII digests of lambda phage DNA in only 1.5 hours at 60 V. Small DNA fragments can be separated in as little as 15 minutes at 150 V. All mini cells accommodate ReadyAgarose[™] precast gels and include a buffer tank, safety lid with cables, and leveling bubble.

The mini ReadySub-Cell[™] GT cell (#1704487 and #1640303) is identical to the Mini-Sub cell GT cell, except it is dedicated to running mini ReadyAgarose precast gels. This cell does not include casting gates, tray, or combs. Kits are available to upgrade the ReadySub-Cell GT cell for handcasting capability.

For More Information Web: bio-rad.com/DNAelectro



DNA Electrophoresis Systems

bio-rad.com/DNAelectro

	Casting	Gel	UVTP Tray	/, cm	Combs	Po	werPac [™] Basic Power
Catalog #	Gates	Caster	7 x 7*	7 x 10	3-Well 15	-Well	Supply (#16-5050)
/lini-Sub Ce	I GT Systems**						
704406	•		•		•	•	
704466				•	•	•	
704486	•	•	•		•	•	
704467		•		•	•	•	
640300		•		•	•	•	•
704487							
640303							•
Catalog #	Description						
/lini-Sub Ce	I GT Accessori	es					
704491			ncludes 7 x 7 cr	m tray, casting	gates, 15-wel	l 1.5 mm fixed	-height comb,
704422	8-well 1.5 mr Mini-Gel Ca		int comp ni-Sub and wide	Mini-Sub cellu	GT systems		
704436*			parent Mini-Ge			slots for fixed	-beight combs)
104400	Sub-Oeli Gi	i ov-nansp	Jarent Mini-Ge	i i i ay , <i>i</i> × <i>i</i> 0 i	1 (11 ays 11 ave 2	- 31013 101 11XEC	-neight cornos/
704435	Sub-Cell GI	LIV-Trans	narent Mini-Ge	Trav 7 x 10 c	m (travs have	2 slots for five	d-height combs)
704435 704330**		•			m (trays have	2 slots for fixe	d-height combs)
704330**	Original UV-	-Transpare	nt Mini-Gel Tra		m (trays have	2 slots for fixe	d-height combs)
704330** 704434	Original UV- Mini-Sub Ce	-Transpare ell GT Cast	nt Mini-Gel Tra ing Gates, 2	y , 7 x 10 cm		2 slots for fixe	d-height combs)
704330** 704434 704362	Original UV- Mini-Sub Ce Mini-Sub Ce	-Transpare ell GT Casti ell GT Anoc	nt Mini-Gel Tra ing Gates, 2 le (Red) Quick	y, 7 x 10 cm Snap Electroo	le Assembly		d-height combs)
704330** 704434	Original UV- Mini-Sub Ce Mini-Sub Ce Mini-Sub Ce	-Transpare ell GT Casti ell GT Anoc ell GT Cath	nt Mini-Gel Tra ing Gates, 2	y, 7 x 10 cm Snap Electroo ick Snap Elec	le Assembly trode Assem		d-height combs)
704330** 704434 704362 704363	Original UV- Mini-Sub Ce Mini-Sub Ce Mini-Sub Ce	-Transpare ell GT Casti ell GT Anoc ell GT Cath	nt Mini-Gel Tra ing Gates, 2 le (Red) Quick ode (Black) Qu	y, 7 x 10 cm Snap Electroo ick Snap Elec ljustable-heigh	le Assembly trode Assem t combs	ıbly	-
704330** 704434 704362 704363	Original UV- Mini-Sub Ce Mini-Sub Ce Mini-Sub Ce Mini-Comb	-Transpare ell GT Casti ell GT Anoc ell GT Cath	nt Mini-Gel Tra ing Gates, 2 le (Red) Quick ode (Black) Qu	y, 7 x 10 cm Snap Electroo ick Snap Elec	le Assembly trode Assem	ibly Length of	d-height combs) Volume, µl (in 5 mm deep gel)
704330** 704434 704362 704363 704331 Catalog #	Original UV- Mini-Sub Ce Mini-Sub Ce Mini-Sub Ce Mini-Comb	-Transpared ell GT Casti ell GT Anoc ell GT Cath Holder, for Wells	nt Mini-Gel Tra ing Gates, 2 le (Red) Quick ode (Black) Qu Mini-Sub cell ac	y, 7 x 10 cm Snap Electrod ick Snap Elec ljustable-heigh Thickness,	le Assembly trode Assem t combs Width of	ibly Length of	Volume, µl
704330** 704434 704362 704363 704331 Catalog #	Original UV- Mini-Sub Ce Mini-Sub Ce Mini-Sub Ce Mini-Comb # of ini-Sub Cell GT	-Transpared ell GT Casti ell GT Anoc ell GT Cath Holder, for Wells	nt Mini-Gel Tra ing Gates, 2 le (Red) Quick ode (Black) Qu Mini-Sub cell ac	y, 7 x 10 cm Snap Electrod ick Snap Elec ljustable-heigh Thickness,	le Assembly trode Assem t combs Width of	ibly Length of	Volume, µl
704330** 704434 704362 704363 704331 Catalog # Combs for M	Original UV- Mini-Sub Ca Mini-Sub Ca Mini-Sub Ca Mini-Comb # of ini-Sub Cell GT	-Transpare ell GT Casti ell GT Anoc ell GT Anoc ell GT Cath Holder, for Wells	nt Mini-Gel Tra ing Gates, 2 de (Red) Quick ode (Black) Qu Mini-Sub cell ac Height [†]	y, 7 x 10 cm Snap Electrod ick Snap Elec ljustable-heigh Thickness, mm	le Assembly trode Assem t combs Width of Well, mm	ibly Length of Teeth, mm	Volume, µl (in 5 mm deep gel)
704330** 704434 704362 704363 704331 Catalog # Combs for M 704464	Original UV- Mini-Sub Ce Mini-Sub Ce Mini-Sub Ce Mini-Comb # of	-Transpare ell GT Casti ell GT Anoc ell GT Anoc ell GT Cath Holder, for Wells T Systems 15	nt Mini-Gel Tra ing Gates, 2 de (Red) Quick ode (Black) Qu Mini-Sub cell ac Height [†] Fixed	y, 7 x 10 cm Snap Electroc ick Snap Elec ljustable-heigh Thickness, mm 0.75	le Assembly trode Assem t combs Width of Well, mm 2.6	Length of Teeth, mm	Volume, µl (in 5 mm deep gel) 9.7
704330** 704434 704362 704363 704331 Catalog # Combs for M 704464 704465***	Original UV- Mini-Sub Ce Mini-Sub Ce Mini-Sub Ce Mini-Comb # of	Transpare ell GT Casti ell GT Anoc ell GT Anoc ell GT Cath Holder, for Wells T Systems 15	nt Mini-Gel Tra ing Gates, 2 le (Red) Quick ode (Black) Qu Mini-Sub cell ac Height [†] Fixed Fixed	y, 7 x 10 cm Snap Electroc ick Snap Elec ijustable-heigh Thickness, mm 0.75 1.5	le Assembly trode Assem t combs Width of Well, mm 2.6 2.6	Length of Teeth, mm 10.2 10.2	Volume, µl (in 5 mm deep gel) 9.7 19.4
704330** 704434 704362 704363 704331 Catalog # Combs for M 704464 704465*** 704332	Original UV- Mini-Sub Ce Mini-Sub Ce Mini-Sub Ce Mini-Comb # of ini-Sub Cell GT	-Transpare ell GT Casti ell GT Anoc ell GT Anoc ell GT Cath Holder, for Wells T Systems 15 15	nt Mini-Gel Tra ing Gates, 2 le (Red) Quick ode (Black) Qu Mini-Sub cell ac Height [†] Fixed Fixed Adjustable	y, 7 x 10 cm Snap Electrod ick Snap Elec ijustable-heigh Thickness, mm 0.75 1.5 1.0	le Assembly trode Assem t combs Width of Well, mm 2.6 2.6 2.6 2.6	Length of Teeth, mm 10.2 10.2 10.2	Volume, μl (in 5 mm deep gel) 9.7 19.4 13.0
704330** 704434 704362 704363 704331 Catalog # Combs for M 704464 704465*** 704332 704462	Original UV- Mini-Sub Ce Mini-Sub Ce Mini-Comb # of ini-Sub Cell GT	Transpare ell GT Casti ell GT Anoc ell GT Anoc ell GT Cath Holder, for Wells T Systems 15 15 15 15	nt Mini-Gel Tra ing Gates, 2 de (Red) Quick ode (Black) Qu Mini-Sub cell ac Height [†] Fixed Fixed Adjustable Fixed	y, 7 x 10 cm Snap Electrod ick Snap Elec ijustable-heigh Thickness, mm 0.75 1.5 1.0 0.75	le Assembly trode Assem t combs Width of Well, mm 2.6 2.6 2.6 2.6 5.5	10.2 10.2 10.2 10.2 10.2 11.0	Volume, μl (in 5 mm deep gel) 9.7 19.4 13.0 20.8
704330** 704434 704362 704363 704331 Catalog # Combs for M 704464 704465*** 704332 704462 704463*** 704333	Original UV- Mini-Sub Ce Mini-Sub Ce Mini-Comb # of ini-Sub Cell GT	Transpare ell GT Casti ell GT Anoc ell GT Anoc ell GT Cath Holder, for Wells T Systems 15 15 15 8 8	nt Mini-Gel Tra ing Gates, 2 de (Red) Quick ode (Black) Qui Mini-Sub cell ac Height [†] Fixed Fixed Adjustable Fixed Fixed Adjustable	y, 7 x 10 cm Snap Electroc ick Snap Elec ijustable-heigh Thickness, mm 0.75 1.5 1.0 0.75 1.5 1.0 0.75 1.5 1.0	le Assembly trode Assem t combs Width of Well, mm 2.6 2.6 2.6 2.6 5.5 5.5	Length of Teeth, mm 10.2 10.2 10.2 11.0 11.0 11.0 10.2	Volume, μl (in 5 mm deep gel) 9.7 19.4 13.0 20.8 41.6
704330** 704434 704362 704363 704331 Catalog # Combs for M 704464 704465*** 704332 704462 704463***	Original UV- Mini-Sub Ce Mini-Sub Ce Mini-Comb # of ini-Sub Cell GT	Transpare ell GT Casti ell GT Anoc ell GT Anoc ell GT Cath Holder, for Wells T Systems 15 15 15 8 8 8 8	nt Mini-Gel Tra ing Gates, 2 de (Red) Quick ode (Black) Qu Mini-Sub cell ac Height [†] Fixed Fixed Adjustable Fixed Fixed Fixed	y, 7 x 10 cm Snap Electrod ick Snap Elec ijustable-heigh Thickness, mm 0.75 1.5 1.0 0.75 1.5 1.0 0.75 1.5	le Assembly trode Assem t combs Width of Well, mm 2.6 2.6 2.6 2.6 5.5 5.5 5.5	Length of Teeth, mm 10.2 10.2 10.2 10.2 11.0 11.0	Volume, μl (in 5 mm deep gel) 9.7 19.4 13.0 20.8 41.6 27.7
704330** 704434 704362 704363 704331 Catalog # Combs for M 704464 704465*** 704322 704462 704463*** 704333 704461	Original UV- Mini-Sub Ce Mini-Sub Ce Mini-Comb # of ini-Sub Cell GT	Transpare ell GT Casti ell GT Anoc ell GT Anoc ell GT Cath Holder, for Wells T Systems 15 15 15 8 8 8 8 8 barative	nt Mini-Gel Tra ing Gates, 2 de (Red) Quick ode (Black) Qui Mini-Sub cell ac Height [†] Fixed Fixed Adjustable Fixed Adjustable Fixed	y, 7 x 10 cm Snap Electroc ick Snap Elec ijustable-heigh Thickness, mm 0.75 1.5 1.0 0.75 1.5 1.0 0.75 1.5 1.0 0.75 1.5 1.0 0.75 1.5 1.0 0.75 1.5 1.0 0.75 1.5 1.0 0.75 1.5 1.0 0.75 1.5 1.0 0.75 1.5 1.0 0.75 1.5 1.0 0.75 1.5 1.0 0.75 1.5 1.5 1.0 0.75 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.	le Assembly trode Assem t combs Width of Well, mm 2.6 2.6 2.6 2.6 5.5 5.5 5.5 5.5 20.0	10.2 10.2 10.2 10.2 11.0 11.0 11.0 10.2 10.2	Volume, µl (in 5 mm deep gel) 9.7 19.4 13.0 20.8 41.6 27.7 152.4
704330** 704434 704362 704363 704331 Catalog # Combs for M 704464 704465*** 704332 704462 704463*** 704333	Original UV- Mini-Sub Ce Mini-Sub Ce Mini-Comb # of ini-Sub Cell GT 2 prep 2 refe 1 prep	Transpare ell GT Casti ell GT Anoc ell GT Anoc ell GT Cath Holder, for Wells T Systems 15 15 15 15 8 8 8 8 8 8 barative erence	nt Mini-Gel Tra ing Gates, 2 de (Red) Quick ode (Black) Qui Mini-Sub cell ac Height [†] Fixed Fixed Adjustable Fixed Fixed Adjustable	y, 7 x 10 cm Snap Electroc ick Snap Elec ijustable-heigh Thickness, mm 0.75 1.5 1.0 0.75 1.5 1.0 0.75 1.5 1.0	le Assembly trode Assert t combs Width of Well, mm 2.6 2.6 2.6 5.5 5.5 5.5 20.0 4.0 43.4	Length of Teeth, mm 10.2 10.2 10.2 11.0 11.0 11.0 10.2	Volume, μl (in 5 mm deep gel) 9.7 19.4 13.0 20.8 41.6 27.7 152.4 30.0
704330** 704434 704362 704363 704331 Catalog # Combs for M 704464 704465*** 704322 704462 704463*** 704333 704461	Original UV- Mini-Sub Ce Mini-Sub Ce Mini-Comb # of ini-Sub Cell GT 2 prep 2 refe 1 prep 2 refe 2 refe	Transpare ell GT Casti ell GT Anoc ell GT Anoc ell GT Cath Holder, for Wells T Systems 15 15 15 15 8 8 8 8 8 8 8 9 9 9 9 9 9 9 9 9 9 9 9	nt Mini-Gel Tra ing Gates, 2 de (Red) Quick ode (Black) Qui Mini-Sub cell ac Height [†] Fixed Fixed Adjustable Fixed Adjustable Fixed	y, 7 x 10 cm Snap Electroc ick Snap Elec ijustable-heigh Thickness, mm 0.75 1.5 1.0 0.75 1.5 1.0 0.75 1.5 1.0 0.75 1.5 1.0 0.75 1.5 1.0 0.75 1.5 1.0 0.75 1.5 1.0 0.75 1.5 1.0 0.75 1.5 1.0 0.75 1.5 1.0 0.75 1.5 1.0 0.75 1.5 1.0 0.75 1.5 1.5 1.0 0.75 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.	le Assembly trode Assem t combs Width of Well, mm 2.6 2.6 2.6 2.6 5.5 5.5 5.5 5.5 5.5 20.0 4.0	10.2 10.2 10.2 10.2 11.0 11.0 11.0 10.2 10.2	Volume, µl (in 5 mm deep gel) 9.7 19.4 13.0 20.8 41.6 27.7 152.4 30.0 325.7

* Allows casting gels in the cell using casting gates; 7 x 10 cm gels can be cast with a gel caster.

** Mini-Sub cell systems purchased before 1996 (Mini-Sub DNA cell) require casting tray #1704330. This tray is not compatible with the Mini-Sub cell GT system.

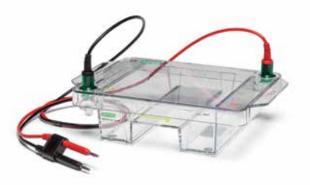
*** Combs included in systems.

⁺ Fixed-height combs must be used with Mini-Sub cell GT system gel trays. Adjustable-height combs require comb holder, #1704331.

Wide Mini-Sub[®] Cell GT Cells

The redesigned wide Mini-Sub cell GT cell offers updated features that make electrophoresis even easier for multiple samples and rapid screening applications. This popular system has a wide platform that can separate 30 samples per comb. The wide Mini-Sub cell GT cell is the same width as the Sub-Cell[®] GT cell, so the comb holders, combs, and 15 x 10 cm gel trays are interchangeable with the larger Sub-Cell GT units. All wide mini cells accommodate ReadyAgarose[™] precast gels and include a buffer tank, safety lid with cables, and leveling bubble.

The wide mini ReadySub-Cell[™] GT cell (#1704489 and #1640304) is identical to the wide Mini-Sub cell GT cell, except it is dedicated to running ReadyAgarose precast gels. This cell does not include casting gates, tray, or combs. Kits are available to upgrade the wide mini ReadySub-Cell GT cell for handcasting capability.



For More Information

Ordering Information

Web: bio-rad.com/DNAelectro

	Casting	Gel	UVTP	Tray, cm	Co	mbs	PowerPac [™] Basic Power
Catalog #	Gates	Caster	15 x 7*	15 x 10	15-Well	20-Well	Supply (#1645050)
Wide Mini-Sul	o Cell GT Sys	tems**					
1704405	•		•		•	•	
1704468				•	•	•	
1704485	•	•	•		•	•	
1704469		•		•	•	•	
1640301		•		•	•	•	•
1704489							
1640304							•
Catalog #	Description						
Wide Mini-Sul	o Cell GT Acc	essories					
1704497	Wide Mini 20-well 1.5		U /		n tray, castinę	g gates, 15-v	vell 1.5 mm fixed-height comb,
1704422	Mini-Gel Ca	aster , for Mi	ni-Sub and	wide Mini-Sub	cell GT syste	ms	
1704426	Sub-Cell G	T UV-Trans	parent Wid	e Mini-Gel Tr	ay , 15 x 7 cm	(trays have 2	slots for fixed-height combs)
1704416**,***	Sub-Cell G	T UV-Trans	parent Gel	Tray, 15 x 10	om (trays have	2 slots for fix	ked-height combs)
1704425	Wide Mini-	Sub Cell G	Casting G	ates, 2			
1704372	Wide Mini-	Sub Cell G	Γ Anode (Re	ed) Quick Sna	ap Electrode	Assembly	
1704373	Wide Mini-	Sub Cell G	Cathode (Black) Quick	Snap Electro	de Assemb	ly
1704320	Comb Hold	ler, for Sub-	Cell and wic	le Mini-Sub ce	ell adjustable-h	neight combs	3

704320 Comb Holder, for Sub-Cell and wide Mini-Sub cell adjust

1704331 Mini-Comb Holder, for Mini-Sub cell adjustable-height combs

* Allows casting gels in the cell using casting gates; 15 x 10 cm gels can be cast with a gel caster.

** Tray is compatible with the Sub-Cell DNA system.

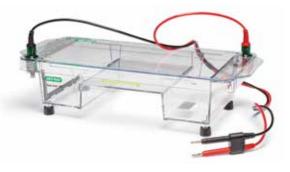
*** 15 x 10 cm gel tray can be used for both wide Mini-Sub cell GT and Sub-Cell GT cells.

Sub-Cell[®] GT Cell

The redesigned Sub-Cell GT cell is the most versatile horizontal electrophoresis cell in the Sub-Cell family, offering the greatest choice of gel lengths, combs, and separation modes that make it ideal for Southern and northern blotting protocols. Up to 30 samples can be resolved over a distance of 25 cm. Using four rows of combs, the cell can run up to 120 samples. All Sub-Cell GT cells include a buffer tank, safety lid with cables, leveling bubble, and combs (15- and 20-well). System configurations that include additional accessories are also available.

For More Information

Web: bio-rad.com/DNAelectro



Ordering Infor	mation				Tray, cm		Cor	nbs	PowerPac [™] Basic
Catalog #	Casting Gates	Gel Caster	15 x 10		•	15 x 25	15-Well	20-Well	Power Supply (#1645050)
Sub Cell GT Sy	stems**								
1704401			•				•	•	
1704402	•			•			•	•	
1704403					•		•	•	
1704404						•	•	•	
1704481		•	•				•	•	
1704482	•	•		•			•	•	
1704483		•			•		•	•	
1704484		•				•	•	•	
1640302	•	•		•			•	•	•
Catalog #	Description								

Sub-Cell GT Accessories

Sub-Cell GT AC	Cessories
1704412	Gel Caster, full size
1704416**	Sub-Cell GT UV-Transparent Gel Tray, 15 x 10 cm (trays have 2 slots for fixed-height combs)
1704417*	Sub-Cell GT UV-Transparent Gel Tray, 15 x 15 cm
1704418	Sub-Cell GT UV-Transparent Gel Tray, 15 x 20 cm
1704419	Sub-Cell GT UV-Transparent Gel Tray, 15 x 25 cm
1704415	Sub-Cell GT Casting Gates, 2
1704392	Sub-Cell GT Anode (Red) Quick Snap Electrode Assembly
1704393	Sub-Cell GT Cathode (Black) Quick Snap Electrode Assembly
1704320	Comb Holder, for Sub-Cell and wide Mini-Sub cell adjustable-height combs

* Allows casting gels in the cell using casting gates. Other gel sizes can be cast with a gel caster.

** 15 x 10 cm gel tray can be used for both Sub-Cell GT and wide Mini-Sub cell GT cells.

Combs for Wide Mini-Sub[®] Cell and Sub-Cell[®] GT Cells

Ordering Information

b-Cell and Su 30 20 20 20 20 20 15 15 15 15 15 15 10 10 10	b-Cell GT Sys Fixed Adjustable Fixed Adjustable Adjustable Fixed Adjustable Adjustable Adjustable Fixed	stems* 1.5 1.5 0.75 1.5 0.75 1.5 0.75 1.5 0.75 1.5 0.75 1.5	2.7 2.7 4.8 4.8 4.8 4.8 5.5 5.5 5.5	14.0 19.1 14.0 14.0 19.1 19.1 14.0 14.0	20.2 20.2 18.2 36.3 18.2 36.4 20.7 41.4	
30 20 20 20 15 15 15 15 15 15 15 10	Adjustable Fixed Fixed Adjustable Adjustable Fixed Fixed Adjustable Adjustable	1.5 0.75 1.5 0.75 1.5 0.75 1.5 0.75	2.7 4.8 4.8 4.8 4.8 5.5 5.5	19.1 14.0 19.1 19.1 14.0 14.0 14.0	20.2 18.2 36.3 18.2 36.4 20.7	
20 20 20 15 15 15 15 15 10 10	Fixed Fixed Adjustable Adjustable Fixed Fixed Adjustable Adjustable	0.75 1.5 0.75 1.5 0.75 1.5 0.75	4.8 4.8 4.8 5.5 5.5	14.0 14.0 19.1 19.1 14.0 14.0	18.2 36.3 18.2 36.4 20.7	
20 20 15 15 15 15 15 10 10	Fixed Adjustable Adjustable Fixed Fixed Adjustable Adjustable	1.5 0.75 1.5 0.75 1.5 0.75	4.8 4.8 4.8 5.5 5.5	14.0 19.1 19.1 14.0 14.0	36.3 18.2 36.4 20.7	
20 20 15 15 15 15 10 10	Adjustable Adjustable Fixed Fixed Adjustable Adjustable	0.75 1.5 0.75 1.5 0.75	4.8 4.8 5.5 5.5	19.1 19.1 14.0 14.0	18.2 36.4 20.7	
20 15 15 15 15 10 10	Adjustable Fixed Fixed Adjustable Adjustable	1.5 0.75 1.5 0.75	4.8 5.5 5.5	19.1 14.0 14.0	36.4 20.7	
15 15 15 15 10 10	Fixed Fixed Adjustable Adjustable	0.75 1.5 0.75	5.5 5.5	14.0 14.0	20.7	
15 15 15 10 10	Fixed Adjustable Adjustable	1.5 0.75	5.5	14.0		
15 15 10 10	Adjustable Adjustable	0.75			41.4	
15 10 10	Adjustable		55			
10 10	,	1.5	0.0	19.1	20.7	
10	Fixed		5.5	19.1	41.4	
		0.75	9.9	14.0	37.0	
10	Fixed	1.5	9.9	14.0	74.0	
	Adjustable	0.75	9.9	19.1	37.0	
10	Adjustable	1.5	9.9	19.1	74.0	
ub-Cell GT S	ystems*					
· preparative 2 reference	Fixed	1.5	26.4	14.0	200.0	
2 preparative 2 reference	Adjustable	1.5	50.3	14.0	377.0	
preparative 2 reference	Fixed	1.5	106.4	14.0	800.0	
preparative 2 reference	Adjustable	3.0	106.4	14.0	1,596.0	
patible Com	os for Wide M	ini Sub-Cell and S	Sub-Cell GT S	stems*		
26	Fixed	0.75	2.9	14.0	10.9	
26	Fixed	1.5	2.9	14.0	21.8	
18	Fixed	0.75	2.9	14.0	11.2	
18	Fixed	1.5	2.9	14.0	22.5	
14	Fixed	0.75	5.8	14.0	22.5	
14	Fixed	1.5	5.8	14.0	45.0	
10	Fixed	0.75	5.8	14.0	22.5	
10	Fixed	1.5	5.8	14.0	45.0	
	preparative 2 reference preparative 2 reference patible Coml 26 26 18 18 18 14 14 14 10 10	preparative 2 reference preparative 2 reference 2 refe	preparative 2 reference preparative 2 reference 2 refe	preparative Fixed 1.5 106.4 2 reference Adjustable 3.0 106.4 2 reference Fixed 0.75 2.9 26 Fixed 1.5 2.9 26 Fixed 0.75 2.9 18 Fixed 0.75 2.9 14 Fixed 1.5 5.8 10 Fixed 0.75 5.8 10 Fixed 1.5 5.8	preparative 2 reference Fixed 1.5 106.4 14.0 2 reference Adjustable 3.0 106.4 14.0 2 reference Adjustable 3.0 106.4 14.0 2 reference Adjustable 3.0 106.4 14.0 2 reference Adjustable 0.75 2.9 14.0 26 Fixed 1.5 2.9 14.0 26 Fixed 0.75 2.9 14.0 18 Fixed 1.5 2.9 14.0 14 Fixed 0.75 5.8 14.0 14 Fixed 1.5 5.8 14.0 10 Fixed 0.75 5.8 14.0	$\begin{array}{c c c c c c c c c c c c c c c c c c c $

* Fixed-height combs must be used with GT gel trays. Adjustable-height combs require comb holder, #1704320.

** Combs included in systems.

Sub-Cell[®] Model 96 Cell

This electrophoresis cell is ideal for medium- to highthroughput analyses because it accommodates two 51-well combs that are also multichannel pipet compatible. The shorter gel lengths (10 and 15 cm) and 26-well comb also allow the Sub-Cell Model 96 cell to be used for routine applications. This model also contains buffer recirculation ports for applications that require high voltages or extended runs. All Sub-Cell Model 96 systems include a buffer tank, safety lid with cables, leveling bubble, and combs (26- and 51-well). System configurations that include additional accessories are also available.

For More Information

Web: bio-rad.com/DNAelectro

Ordering Information

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j	Casting	Gel	UVTP	Tray, cm	Co	mbs	PowerPac [™] Basic Power	
Catalog #	Gates	Caster	25 x 10*	25 x 15	26-Well	51-Well	Supply (#1645050)	
Sub-Cell Mo	del 96 Systems	S						
1704502	•		•		•	•		
1704503				•	•	•		
1704500	•	•	•		•	•		
1704501		•		•	•	•		
1640305	•	•	•		•	•	•	
Catalog #	Description							
Sub-Cell Mo	del 96 Accesso	ories						
1704514	Model 96 G	el Caster						
1704521*	Model 96/1	92 UV-Tran	sparent Ge	l Tray , 25 x 10) cm			
1704522	Model 96/1	92 UV-Tran	sparent Ge	l Tray , 25 x 15	5 cm			
1704520	Model 96/1	92 Gel Cas	ting Gates,	2				
1704518	Model 96/1	92 Anode (Red) Electro	de Assemb	ly			
1704519	Model 96/1	92 Cathod	e (Black) Ele	ctrode Asse	mbly			
1704537	Model 96/1	92 Buffer F	Recirculation	n Kit, includes	s 2 recirculatio	n port fittings	s, 6' Tygon tubing, 4 tubing clips	
1704525	Sub-Cell M	odels 96 a	nd 192 Com	b Holder				

Catalog #	# of Wells	Height [†]	Thickness, mm	Width of Well, mm	Length of Teeth, mm	Volume, µl (in 5 mm deep gel)	
Adjustable-Heig	ht Combs for Sub-Cell	Model 96 Sy	stems**				
1704528***	51	_	0.75	3.0	15.0	11.2	
1704529***,†	51	_	1.5	3.0	15.0	22.5	
1704526***	26	—	0.75	6.0	15.0	22.5	
1704527***,†	26	—	1.5	6.0	15.0	45.0	
1704530	2 or 4 preparative 2 reference	_	075	46.0 or 97.0 6.0	15.0	172.5 or 364.0 22.5	
1704531	2 or 4 preparative 2 reference	-	1.5	46.0 or 97.0 6.0	15.0	345.0 or 727.5 45.0	

* Allows casting gels in the cell using casting gates; 25 x 15 cm gels can be cast with a gel caster.

** Combs for Sub-Cell Model 96 cells can be used with Sub-Cell Model 192 cells and vice versa. Adjustable-height combs require comb holder, #1704525. Each system includes one comb holder.

*** Multichannel pipet compatible.

[†] Combs included in systems.

Sub-Cell[®] Model 192 Cell

The Sub-Cell Model 192 electrophoresis cell has higher throughput capabilities and is compatible with multichannel pipets. It can run gels up to 25 cm long and allows four or more 51-well combs to be used, accommodating more than two microplates of samples. The longer gels and buffer recirculation ports of the Model 192 make this cell ideal for RFLP, Southern and northern blotting, and separation of cosmid DNA restriction digests. All Sub-Cell Model 192 cells include a buffer tank, safety lid with cables, leveling bubble, and combs (26- and 51-well). System configurations that include additional accessories are also available.



For More Information

Web: bio-rad.com/DNAelectro

Ordering Info				UVTP T	ray, cm		Co	mbs	PowerPac [™] Basic	
Catalog #	Casting Gates	Gel Caster	25 x 10	25 x 15*	25 x 20	25 x 25	26-Well	51-Well	Power Supply (#1645050)	
Sub-Cell Mod	del 192 System	IS								
1704508			•				•	•		
1704509	•			•			•	•		
1704510					•		•	•		
1704511						•	•	•		
1704504		•	•				•	•		
1704505	•	•		•			•	•		
1704506		•			•		•	•		
1704507		•				•	•	•		
1640306	•	•		•			•	•	•	
Catalog #	Description									
Sub-Cell Mod	del 192 Access	ories								
1704517	Model 192 (Gel Caster	•							
1704521	Model 96/1	92 UV-Trai	nsparent (Gel Tray, 2	25 x 10 d	cm				
1704522*	Model 96/1	92 UV-Trai	nsparent (Gel Tray, 2	25 x 15 c	m				
1704523	Model 192 l	JV-Transp	arent Gel	Tray , 25 ×	20 cm					
1704524	Model 192 U	JV-Transp	arent Gel	Tray , 25 ×	25 cm					
1704520	Model 96/1	92 Gel Cas	sting Gate	s , 2						
1704518	Model 96/1	92 Anode	(Red) Elec	trode As	sembly					
1704519	Model 96/1	92 Cathod	le (Black) l	Electrode	Assem	bly				
1704537	Model 96/1	92 Buffer I	Recirculat	ion Kit, in	cludes 2	2 recirculati	on port fittings	s, 6' Tygon tubi	ing, 4 tubing clips	
							Width of	Length of	Volume, µl	
Catalog #	# of V	Vells	Heig	ght [†]	Thickne	ess, mm	Well, mm	Teeth, mm	(in 5 mm deep gel)	
Adjustable-H	leight Combs f	or Sub-Ce	ell Model	192 Syste	ems**					
1704528***	5					75	3.0	15.0	11.2	

Adjustable-Hei	ght Combs for Sub-Cell	Model 192 Sys	stems**				
1704528***	51	_	0.75	3.0	15.0	11.2	
1704529***,†	51	_	1.5	3.0	15.0	22.5	
1704526***	26	_	0.75	6.0	15.0	22.5	
1704527***,†	26	_	1.5	6.0	15.0	45.0	
1704530	2 or 4 preparative 2 reference	-	0.75	46.0 or 97.0 6.0	15.0	172.5 or 364.0 22.5	
1704531	2 or 4 preparative 2 reference	-	1.5	46.0 or 97.0 6.0		345.0 or 727.5 45.0	

* Allows casting gels in the cell using casting gates; other gel sizes can be cast with a gel caster.

** Combs for Sub-Cell Model 192 cells can be used with Sub-Cell Model 96 cells and vice versa. Adjustable-height combs require comb holder, #1704525. Each system includes one comb holder.

*** Multichannel pipet compatible.

[†] Combs included in systems.

See Also

Certified agaroses: page 261. Nucleic acid reagents: page 259. PowerPac Basic and PowerPac HC power supplies: page 155. Premixed electrophoresis buffers: page 260.

ReadyAgarose[™] Precast Gel System

ReadyAgarose precast gels are prepared in gel trays designed to fit securely in Mini-Sub[®] cell GT and wide Mini-Sub cell GT cells (page 245). They come in a choice of 27 gel types, including ReadyAgarose 96 Plus gels, which resolve DNA fragments from 20–10,000 bp. Gels are individually packaged and cast in their own running tray with Bio-Rad's Certified[™] line of agaroses. Gel types to choose from include:

- Mini, wide, and 96-sample formats
- 1% and 3% agarose
- TBE or TAE buffer
- With or without ethidium bromide
- Multichannel pipet–compatible wells
- Compatible with Mini-Sub and wide Mini-Sub cell GT cells

ReadyAgarose 96 Plus Products – Ideal for High-Throughput Applications

ReadyAgarose 96 Plus products include:

- ReadyAgarose 96 Plus precast gels
- Wide mini ReadySub-Cell[™] GT cell
- ReadyAgarose 96 Plus wizard for data analysis with Quantity One[®] Basic software

ReadyAgarose 96 Plus gels are 4- and 12-channel multichannel pipet compatible. The ReadyAgarose 96 Plus wizard of Quantity One software rearranges the lanes from samples run on the gel and displays them in the original 96-well microplate format, simplifying sample tracking for analysis.

For More Information

Web: bio-rad.com/agarosegel; to download ReadyAgarose 96 Plus wizard, go to bio-rad.com/software Request or download bulletins: 2647 and 2980

Description		8-Well	2 x 8-Well	2 x 8-Well
	Agarose Gels, TBE			
-	idium bromide	1613004	1613010	_
	idium bromide	1613006	1613012	_
Mini Ready/	Agarose Gels, TAE			
1.0%	.gu. 000 0.0.0, 77.1	1613015	_	1613057
1.0% plus eth	idium bromide	1613016	1613022	_
3.0%		1613017	_	_
3.0% plus eth	idium bromide	1613018	1613024	_
		20-Well	32-Well	2 x 32-Well
Wide Mini R	eadyAgarose Gels, TBE			
1.0% plus eth	idium bromide	1613028	1613034	1613038
3.0% plus eth	idium bromide	1613030	1613036	1613040
Wide Mini R	eadyAgarose Gels, TAE			
1.0% plus eth	idium bromide	1613044	1613050	1613054
3.0% plus eth	idium bromide	1613046	1613052	1613056
ReadyAgard	se 96 Plus Gels, TBE, 4	26-Well (96 Plus)		
1.0% plus eth	idium bromide	1613060		
3.0% plus eth	idium bromide	1613062		
ReadyAgaro	se 96 Plus Gels, TAE, 4	26-Well (96 Plus)		
1.0% plus eth	idium bromide	1613063		
3.0% plus eth	idium bromide	1613065		
Catalog #	Description			
ReadySub-C	Cell GT Cells for ReadyAg	jarose Gels		
1704487		GT Cell, includes buffer tank, lid	, 0	le;
		12-well mini ReadyAgarose gel		
1704489		-Cell GT Cell, includes buffer ta		bubble;
1040000		2-, and 2 x 32-wide mini ReadyA		
1640303	•	GT Cell and PowerPac Basic I		
1640304		-Cell GT Cell and PowerPac E	sasic Power Supply	
Application				
1613000	ReadyAgarose Instru	ction Manual, free upon reque	st with ReadyAgarose gel purc	hase

bio-rad.com/PFGE

Pulsed Field Gel Electrophoresis

Pulsed field gel electrophoresis (PFGE) resolves large DNA molecules by alternating the electrical field between spatially distinct pairs of electrodes, causing DNA molecules as large as several megabases to reorient and move at different speeds through the pores in an agarose gel. Bio-Rad offers three clamped homogenous electrical field (CHEF) systems that incorporate different PFGE technologies for optimal resolution in various size ranges (see CHEF Systems Selection Guide below).

Learn More about the Technology

Web: bio-rad.com/tech/pfge

Agaroses, Reagents, and Standards for PFGE

Bio-Rad offers a comprehensive line of agaroses (page 261), standards, and markers (page 257), buffers (page 260), and other reagents to make PFGE simple and convenient. See page 257 for genomic DNA plug preparation kits.

For More Information

Web: bio-rad.com/PFGE

CHEF Systems Selection Guide

Feature	CHEF Mapper® XA	CHEF-DR [®] III	CHEF-DR II
Fragment size	100 bp–10 Mb	100 bp–10 Mb	5 kb–6 Mb
Optimal separation size range	100 bp–10 Mb	100 bp-6 Mb	100 kb–2 Mb
Auto-algorithm and interactive algorithm	•	_	-
Program storage	20 complex programs	Last program run	-
Programming blocks of run conditions	8 blocks	3 blocks	2 blocks
Battery-operated backup RAM	•	•	-
Pulse angle	0-360°	90–120° in 1° increments	Fixed angle of 120°
Asymmetrical angles	•	_	-
Nonlinear switch-time ramping (expands linear range of fragment separation to 50–700 kb)	•	-	-
Multistate separation	•	_	-
Secondary pulses (voltage interrupts)	•	_	-
FIGE and asymmetric FIGE (resolution of fragments in the 100 bp–250 kb range)	•	-	-
Resolution	All size ranges	DNA fragments >2 Mb	DNA fragments <2 Mb
Recommended use	Ideal for all PFGE applications	Better suited for more advanced separations than CHEF-DR II system	Suitable for routine separations with the same organism
	Most accurate results		
	Most reproducible results		
	Fastest runs		

bio-rad.com/PFGE

CHEF Mapper[®] XA System

The CHEF Mapper XA system is ideal for any PFGE application. Features include:

Automation

- Built-in auto-algorithm and interactive algorithm

Customization

• Store up to 99 simple programs or 20 complex programs with up to 8 blocks of programming each

Application Versatility

- Ability to choose any pulse angle from 0–360°
- Optimal resolution of both megabase- and kilobase-sized DNA fragments
- Resolution of very large DNA molecules with secondary pulses that release DNA caught in the gel matrix



- Rapid resolution of small fragments in the 100 bp–250 kb range with FIGE and AFIGE technologies
- Expanded linear range of fragment separation to 50-700 kb
- Enhanced resolution in selected fragment size ranges

For More Information Web: bio-rad.com/chefXA Request or download bulletin: 1906

Catalog #	Description
CHEF Mapp	er XA System*
1703670	CHEF Mapper XA System, 120 V, includes power module, embedded auto-algorithm for protocol optimization, interactive algorithm program disk, electrophoresis cell, cooling module, variable-speed pump, Tygon tubing (12'), 14 x 13 cm (W x L) casting stand, 15-well 1.5 mm comb and comb holder, screened cap, disposable plug molds, leveling bubble, cables, S. <i>cerevisiae</i> DNA size standards, two 0.5 A FB fuses, 5 g pulsed field Certified agarose, 5 g Certified megabase agarose, for North America
1703671	CHEF Mapper XA System, 100 V, for Japan
1703672	CHEF Mapper XA System, 220 V, for Asia Pacific/Europe
1703673	CHEF Mapper XA System, 240 V, for Asia Pacific/Europe

CHEF-DR[®] III Variable Angle System

The CHEF-DR III variable angle system combines PACE and CHEF technologies in an easy-to-use instrument that yields high-resolution separations.

Automation

- Recalls last used conditions and uses them as the default protocol
- Recalls current run conditions and run progress if interrupted by power failure and resumes the run without intervention

Customization

• Customize desired conditions using examples provided in the instruction manual for a variety of size separation ranges

Application Versatility

- Ability to program the electrophoresis angle from 90–120° for separations of DNA molecules ranging from 100 bp–10 Mb
- Selection of optimal voltage gradient, switch time, and angle for specific DNA size ranges
- Ability to program up to 3 consecutively executing blocks of run conditions

For More Information Web: bio-rad.com/chef3





Ordering Information		
Catalog #	Description	
CHEF-DR III	Variable Angle System*	
1703700	CHEF-DR III Variable Angle System, 120 V, includes power module, electrophoresis cell, cooling module variable-speed pump, 14 x 13 cm casting stand with frame and platform, comb holder, 15-well 1.5 mm thick comb, screened cap, disposable plug molds, 12' Tygon tubing, 2 plugs <i>S. cerevisiae</i> DNA size standards, two 0.5 A FB fuses, 5 g pulsed field Certified agarose, 5 g Certified megabase agarose, for North America	
1703702	CHEF-DR III Variable Angle System, 220/240 V, for Asia Pacific/Europe	
1703703	CHEF-DR III Variable Angle System, 100 V, for Japan	
* All accesso	ries are compatible with CHEF Mapper, CHEF-DR II, and CHEF-DR III systems. Accessories can be found on	

* All accessories are compatible with CHEF Mapper, CHEF-DR II, and CHEF-DR III systems. Accessories can be found o page 256. A comprehensive listing of replacement parts can be found at **bio-rad.com**.

bio-rad.com/PFGE

CHEF-DR® II Chiller System

The CHEF-DR II chiller system resolves DNA fragments in the 5 kb–6 Mb range and is the most cost-effective PFGE instrument. It is simple to program and lets you enhance resolution by executing two blocks of running conditions successively.

Customization

You can program run conditions into the CHEF-DR II system. The instrument manual provides examples of run conditions for a variety of size separation ranges for easy startup.

Application Versatility

The CHEF-DR II system uses the most common angle for PFGE, 120°. This unit can be used to separate fragments up to 6 Mb by adjusting the running conditions for low voltage and extended run times; optimal separation range is up to 2 Mb.

For More Information Web: bio-rad.com/chef2



Catalog #	Description
CHEF-DR II (Chiller System*
1703725	CHEF-DR II System, 120 V, includes electrophoresis cell, drive module, cooling module, control module, variable-speed pump, 14 x 13 cm casting stand with frame and platform, comb holder, 15-well 1.5 mm thick comb, screened cap, disposable plug molds, 12' Tygon tubing, 2 plugs <i>S. cerevisiae</i> DNA size standards, 5 g pulsed field Certified agarose, 5 g Certified megabase agarose, for North America
1703727	CHEF-DR II System, 220/240 V, for Asia Pacific/Europe
1703728	CHEF-DR II System, 100 V, for Japan
Accessories	for Chef Mapper, CHEF-DR III, and CHEF-DR II Systems*
1703654	Cooling Module, 120 V, for North America
1703688	Cooling Module, 100 V, for Japan
1703655	Cooling Module, 220/240 V, for Asia Pacific/Europe
1703644	Variable-Speed Pump, 120 V
1703648	Electrodes, thick gauge (0.02"), 6
1703711	Screened Caps, 5
1703713	50-Well Disposable Plug Molds, enough for 250 plugs
1703622	Reusable Plug Mold, 10 plug
1703689	Standard Casting Stand, includes 14 x 13 cm frame and platform
1703704	Wide/Long Combination Casting Stand, includes 21 x 14 cm frame and platform
1703699	Combination Comb Holder
1704326	10-Well Adjustable-Height Comb, 1.5 mm
1704325	10-Well Adjustable-Height Comb, 0.75 mm
1704324	15-Well Adjustable-Height Comb, 1.5 mm
1704323	15-Well Adjustable-Height Comb, 0.75 mm
1704322	20-Well Adjustable-Height Comb, 1.5 mm
1704344	30-Well Adjustable-Height Comb, 1.5 mm
1703627	15-Well Comb, 21 cm wide, 1.5 mm thick
1703628	30-Well Comb, 21 cm wide, 1.5 mm thick
1703645	45-Well Comb, 21 cm wide, 1.5 mm thick
1703623	Preparative Comb, 14 cm wide, 1.5 mm thick, with 2 outer wells for size standards
1704046	Leveling Table, 20 x 30 cm
1703643	Gel Scoop
	ies are compatible with CHEF Mapper, CHEF-DR III, and CHEF-DR II systems. A comprehensive listing of t parts can be found at bio-rad.com .

CHEF Genomic DNA Plug Kits

CHEF genomic DNA plug kits provide a convenient means for preparing intact, chromosome-sized DNA for PFGE. Three kits are available for the preparation of bacterial (lysozyme-sensitive) or mammalian genomic DNA and yeast chromosomes (YACs). Each kit contains all the enzymes, reaction buffers, and restriction digestqualified CleanCut[™] agarose necessary to prepare 100 plugs as well as disposable plug molds and screened caps for simplified plug processing. Each kit is thoroughly tested to ensure that prepared genomic DNA can be restriction digested and separated on a CHEF electrophoresis system.



Ordering Information

Catalog # Description

CHEF Genon	nic DNA Plug Kits
1703591	CHEF Mammalian Genomic DNA Plug Kit, contains 12 ml cell suspension buffer, 1.3 ml proteinase K, 30 ml proteinase K reaction buffer, 12 ml 2% CleanCut agarose, 60 ml 10x wash buffer, screened cap, 2 disposable
	plug molds; makes 100 plugs
1703592	CHEF Bacterial Genomic DNA Plug Kit, contains 12 ml cell suspension buffer, 1.3 ml proteinase K, 30 ml proteinase K reaction buffer, 12 ml 2% CleanCut agarose, 60 ml 10x wash buffer, 1.6 ml lysozyme (25 mg/ml), 30 ml lysozyme buffer, screened cap, 2 disposable plug molds; makes 100 plugs
1703593	CHEF Yeast Genomic DNA Plug Kit, contains 12 ml cell suspension buffer, 1.3 ml proteinase K, 30 ml proteinase K reaction buffer, 12 ml 2% CleanCut agarose, 60 ml 10x wash buffer, 1.6 ml lyticase, 25 ml lyticase buffer, screened cap, 2 disposable plug molds; makes 100 plugs
1703594	CleanCut Agarose, 2%, 12 ml

Agaroses and Standards for Pulsed Field Gel Electrophoresis

Bio-Rad offers a comprehensive line of agaroses for use with PFGE as well as CHEF DNA standards and convenient buffers and reagents to simplify your PFGE experiments. See page 261 for agaroses, page 257 for size standards and buffers.

Pulsed Field Standards

Bio-Rad offers standards for applications from FIGE separation of cosmid inserts to the largest chromosomal separations. The higher MW standards are prepared in low-melt agarose blocks that can be cut to fit most well dimensions.

DNA Ladders Selection Guide

Туре	Description
Pulsed Field Standards	
CHEF DNA standards	Derived from plasmids and lambda phage
CHEF DNA markers	Chromosomal DNA in low-melt agarose blocks

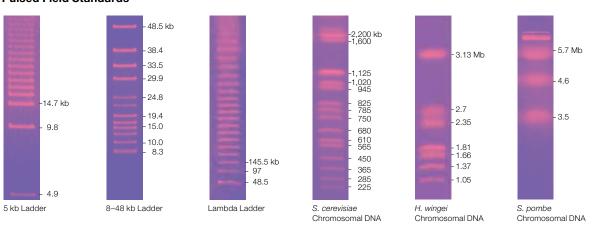
Pulsed Field Standards Selection Guide

	Range	Contents	Amount	Number of Applications
5 kb ladder	4.9–120 kb	Concatemers of pBR328	20 µg in 200 µl	20-25
8–48 kb ladder	8.3–48.5 kb	Mixed digest of phage	25 µg in 125 µl	125
Lambda ladder	0.05–1 Mb	Concatemers of phage cl857Sam7	5 agarose blocks	25-40
S. cerevisiae	0.225-2.2 Mb	Saccharomyces cerevisiae chromosomal DNA	5 agarose blocks	25-40
H. wingei	1–3.1 Mb	Hansenula wingei chromosomal DNA	5 agarose blocks	25-40
S. pombe	3.5-5.7 Mb	Schizosaccharomyces pombe chromosomal DNA	5 agarose blocks	25-40

See Also

Pulsed field gel electrophoresis systems: page 253. Imaging systems: page 280. Bioinformatics software: page 292. Certified agaroses: page 261.

bio-rad.com/PFGE



Pulsed Field Standards

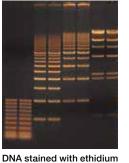
Catalog #	Description
0	
•	d Standards for Pulsed Field Gel Electrophoresis
1613108	Certified Megabase Agarose, 25 g
1613109	Certified Megabase Agarose, 125 g
1613110	Certified Megabase Agarose, 500 g
1613100	Certified Molecular Biology Agarose, 25 g
1613101	Certified Molecular Biology Agarose, 125 g
1613102	Certified Molecular Biology Agarose, 500 g
1620137	Pulsed Field Certified Agarose, 100 g
1620138	Pulsed Field Certified Agarose, 500 g
Premixed Nu	cleic Acid Electrophoresis Buffers
1610733	10x Tris/Boric Acid/EDTA (TBE), 1 L
1610770	10x Tris/Boric Acid/EDTA (TBE), 5 L cube
1610743	50x Tris/Acetic Acid/EDTA (TAE), 1 L
1610773	50x Tris/Acetic Acid/EDTA (TAE), 5 L cube
Pulsed Field	Standards*
1703624	CHEF DNA Size Standard, 5 kb ladder, 4.9–120 kb, 20–25 lanes
1703707	CHEF DNA Size Standard, 8–48 kb, 125 lanes
1703635	CHEF DNA Size Standard, lambda ladder, 0.05–1 Mb, 5 agarose blocks, sufficient for 25–40 plugs
Pulsed Field	Markers*
1703605	CHEF DNA Size Marker, S. cerevisiae, 0.2-2.2 Mb, 5 agarose blocks, sufficient for 25-40 plugs
1703667	CHEF DNA Size Marker, H. wingei, 1–3.1 Mb, 5 agarose blocks, sufficient for 25–40 plugs
1703633	CHEF DNA Size Marker, S. pombe, 3.5–5.7 Mb, 5 agarose blocks, sufficient for 25–40 plugs
	bed homogeneous electrical field. For more information, see page 253–257.

Buffers and Reagents for Nucleic Acid Electrophoresis

Ethidium Bromide Solution

Ethidium bromide is a sensitive fluorescent stain for visualizing DNA or RNA in agarose and polyacrylamide gels. Ethidium bromide is excited with a standard 302 nm UV transilluminator and emits a red-orange signal that can be photographed with Polaroid film or with a CCD-based gel documentation system.

Bio-Rad's premixed ethidium bromide solution eliminates preparation steps and minimizes exposure to hazardous ethidium bromide. Ethidium bromide solution is supplied as a 10 mg/ml solution in 10 ml bottles.



bromide.



For More Information Web: bio-rad.com/nastains

Ordering Information

Catalog # 1610433

Ethidium Bromide Solution, 10 mg/ml, 10 ml

Tracking Dyes

Bio-Rad offers two tracking dyes to monitor electrophoresis runs:

Description

- Bromophenol blue for monitoring nucleic acid and protein electrophoresis
- Xylene cyanol (FF) for monitoring nucleic acid electrophoresis

Ordering Information

Catalog #	Description
1610404	Bromophenol Blue, 10 g
1610423	Xylene Cyanol FF, 25 g

UView[™] 6x Loading Dye

Eliminate the need for gel staining with this easy-to-use UView 6x loading dye. Because it also acts as an in-gel stain, it saves precious time.

- Loading dye plus in-gel stain
- Saves time
- Nontoxic
- UV detection

For More Information Web: bio-rad.com/fishbarcoding



Buffers and Reagents for Nucleic Acid Electrophoresis

bio-rad.com/dnareagents

Ordering Information		
Catalog #	Description	
1665111	UView 6x Loading Dye, 0.2 ml	
1665112	UView 6x Loading Dye, 1 ml	

Premixed Sample Loading and Running Buffers

Premixed Sample Loading Buffers

The concentrated formulas of these buffers allow them to be used with both liquid and lyophilized samples. All premixed sample buffers are tested to ensure quality and consistency.



Premixed Sample Loading Buffer Selection Guide

Buffer	Formulation	Applications
TBE-urea sample buffer	89 mM Tris-HCl, pH 8.0, 89 mM boric acid, 2 mM EDTA, 7 M urea, 12% ficoll, 0.01% BPB, 0.02% xylene cyanole FF	Denaturing ssDNA, RNA
Nucleic acid sample buffer	50 mM Tris-HCl, pH 8.0, 25% glycerol, 5 mM EDTA, 0.2% BPB, 0.2% xylene cyanole (FF)	Nondenaturing dsDNA, TBE gels

Premixed Running Buffers

Premixed running buffers can be used with handcast or precast gels. Simply dilute with distilled deionized water. Save time and standardize electrophoresis runs with these premixed running buffers.



Premixed Running Buffer Selection Guide

Buffer	1x Formulation	Applications
Nucleic Acid Electrophoresis		
10x TBE	89 mM Tris, 89 mM boric acid, 2 mM EDTA, pH 8.3	Nucleic acid electrophoresis/sequencing; polyacrylamide or agarose gels
10x TBE extended range	130 mM Tris, 45 mM boric acid, 2.5 mM EDTA, pH 8.3	Nucleic acid electrophoresis/sequencing; polyacrylamide or agarose gels; extends the buffer capacity for longer DNA sequencing runs
50x TAE	40 mM Tris, 20 mM acetic acid, 1 mM EDTA, pH 8.0	Nucleic acid electrophoresis; polyacrylamide or agarose gels

Catalog #	Description
Premixed Nu	ucleic Acid Sample Loading Buffers
1610767	5x Nucleic Acid Sample Buffer, 10 ml
1610768	1x TBE-Urea Sample Buffer, 30 ml
Premixed N	ucleic Acid Electrophoresis Buffers
1610773	50x Tris/Acetic Acid/EDTA (TAE), 5 L cube
1610770	10x Tris/Boric Acid/EDTA (TBE), 5 L cube
1610741	10x Tris/Boric Acid/EDTA (TBE), extended range, 1 L bottle
1610743	50x Tris/Acetic Acid/EDTA (TAE), 1 L bottle
1610733	10x Tris/Acetic Acid/EDTA (TBE), 1 L bottle

bio-rad.com/agarose

Buffers and Reagents for Nucleic Acid Electrophoresis

Certified[™] Agaroses

All Certified agarose products are 100% pure and GQT grade, guaranteeing the absence of inhibitors, DNases, and RNases and minimizing background staining. Use the guide below to choose the agarose for your application.



Certified Agarose Selection Guide

oei illeu Agalose Selection c	aulue						
Application	Molecular Biology Agarose	PCR Agarose	Low Range Ultra Agarose	Low-Melt Agarose	PCR Low-Melt Agarose	Megabase Agarose	Pulsed Field Agarose
Analytical Separation							
≥1,000 bp	•			•			
≤1,000 bp		•			•		
10-200 bp			•				
1 kb-2 Mb						•	•
1 kb–5 Mb						•	

Certified molecular biology agarose — this generalpurpose agarose ensures that DNA recovered from a preparative gel can be manipulated without compromising quality. It has a very low sulfate content that yields a very high gel strength and higher exclusion limit. The high electrophoretic mobility increases resolution and reduces run time, and the gels are easy to handle even at low agarose percentages.

Certified PCR agarose — Certified PCR agarose is recommended for separation of DNA fragments ≤1,000 bp. This high-strength agarose forms gels that are easy to handle even at high gel percentages, minimizing the risk of cracking or breaking. PCR agarose gels at 40°C so it is faster and easier to prepare than GQT products with similar sieving properties that gel at higher temperatures.

Certified low range ultra agarose — this agarose provides superior resolution of small PCR fragments and primers. A 3% gel clearly resolves a 10 bp ladder and a 4% gel approaches the resolution of an 8% polyacrylamide gel.

Certified low-melt agarose — this low melting temperature agarose has a high resolving capacity for DNA fragments ≥1,000 bp. It is recommended for preparative electrophoresis

and for in-gel applications such as digestion and ligation. It is also recommended for embedding chromosomes and megabase-sized DNA for pulsed field applications.

Certified PCR low-melt agarose — this agarose yields excellent resolution of fragments ≤1,000 bp in an analytical or preparative format. It is ideal for digestion by agarase and for all in-gel applications.

Certified megabase agarose — this Certified agarose is the superior choice for CHEF and FIGE applications. The gels are easy to handle even at concentrations as low as 0.3%. The separation range is between 1 kb and 5 Mb. Low background staining also provides superior imaging of high MW DNA.

Pulsed field Certified agarose — this agarose enables excellent separation and resolution of large DNA fragments in pulsed field gel applications. The optimal separation range is 1 kb–2 Mb. Running conditions for this agarose are a preset selectable method of the CHEF Mapper[®] XA system auto-algorithm.

For More Information Web: bio-rad.com/agarose Download bulletin: 2755

Description		5 x 1 ml	1 x 5 ml	5 x 5 ml	
· · · ·	aroses for Standard Applicatio				
•	ecular biology agarose	1613100	1613101	1613102	
Certified PCR	0, 0	1613103	1613104	1613105	
Certified low r	ange ultra agarose	1613106	1613107	_	
Certified megabase agarose		1613108	1613109	1613110	
Certified low-melt agarose		1613111	1613112	_	
Certified PCR low-melt agarose		1613113	1613114	1613115	
Catalog #	Description				
1620137	Pulsed Field Certified Agar	ose , 100 g			
1620138	Pulsed Field Certified Agar	ose , 500 g			

See Also

DNA gel electrophoresis: page 244. Overlay agaroses: page 208. CleanCut agarose: page 257. CHEF genomic DNA plug kits: page 257. Buffers: page 260.

DNA Ladders

DNA Ladders

See Also Pipet tips: page 405.

Micro test tubes: page 409. ReadyAgarose

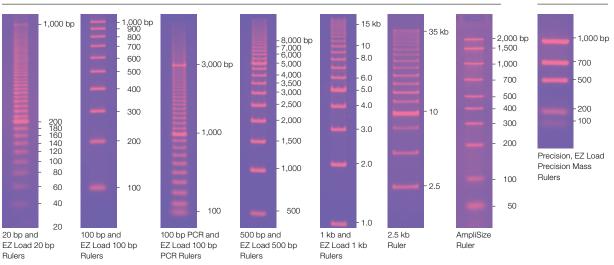
precast gels: page 252. Imaging systems: page 280. DNA gel electrophoresis systems: page 244. Bio-Rad offers a broad variety of DNA ladders for conventional DNA gel electrophoresis, including molecular rulers with evenly spaced banding patterns and EZ Load[™] rulers premixed with loading buffer.

DNA Ladder Selection Guide

Туре	Description
Molecular Rulers Standard and EZ Load molecular rulers	DNA ladders of even base pair length increments, available in 5 size ranges
AmpliSize [®] molecular ruler	Blunt-end DNA of precise length and known sequence
Molecular Mass Rulers Standard and EZ Load molecular mass rulers	Multiple bands of defined mass ranging from 10–100 ng for DNA quantitation

Molecular Rulers Selection Guide

Ruler	Concentration	Range	Number of Bands	Reference Band	Amount	Suggested Gel Type	Number of Applications
20 bp EZ Load 20 bp	0.2 μg/μl 0.1 μg/μl	20–1,000 bp	50 in 20 bp increments	200 bp	50 µg DNA	2.5–4% agarose	100
100 bp EZ Load 100 bp	0.1 μg/μl 0.05 μg/μl	100–1,000 bp	10 in 100 bp increments	None	25 µg DNA	2.5–4% agarose	100
100 bp PCR EZ Load 100 bp PCF	0.2 µg/µl 8 0.08 µg/µl	100–3,000 bp	30 in 100 bp increments	1,000 bp and 3,000 bp	40 µg DNA	0.8–3% agarose	100
500 bp EZ Load 500 bp	0.2 μg/μl 0.08 μg/μl	500–8,000 bp	16 in 500 bp increments	5,000 bp	40 µg DNA	0.8–1% agarose	100
1 kb EZ Load 1 kb	0.2 µg/µl 0.08 µg/µl	1–15 kb	15 in 1 kb increments	5 kb	40 µg DNA	0.8–1% agarose	100
2.5 kb	0.1 µg/µl	2.5–35 kb	14 in 2.5 kb increments	10 kb	40 µg DNA	0.8% agarose	100
AmpliSize	0.1 µg/µl (10 ng/band/µl)	50–2,000 bp	10	None	25 µg DNA	1.5–3% agarose	50
Precision	0.1 µg/µl	100–1,000 bp	5, from 10–100 ng	None	25 µg DNA	1-3% agarose	100
EZ Load precision	0.05 µg/µl	100–1,000 bp	5, from 10–100 ng	None	25 µg DNA	1–3% agarose	100



Molecular Rulers

Molecular Mass Rulers

Molecular Rulers

Molecular rulers are DNA ladders with precisely defined size intervals between bands for simplified estimation of the length of single- and double-stranded DNA separated on agarose gels. Bio-Rad provides three types of molecular rulers for simplified estimation of length.

- Standard molecular rulers DNA ladders of even base pair length increments; ready for dilution
- EZ Load[™] molecular rulers similar to standard molecular rulers but prediluted to a concentration appropriate for most electrophoresis runs
- AmpliSize[®] molecular rulers blunt-end DNA of precise length and known sequence

Catalog #	Description
20 bp Molec	ular Rulers
1708201	20 bp Molecular Ruler , 250 μl, 20–1,000 bp, 100 applications
1708351	EZ Load 20 bp Molecular Ruler, 500 μl, 20–1,000 bp, includes 1 ml 5x nucleic acid sample buffer,
	100 applications
100 bp Mole	cular Rulers
1708202	100 bp Molecular Ruler , 250 μl, 100–1,000 bp, 100 applications
1708352	EZ Load 100 bp Molecular Ruler, 500 μl, 100–1,000 bp, includes 1 ml 5x nucleic acid sample buffer,
	100 applications
1708206	100 bp PCR Molecular Ruler, 200 µl, 100–3,000 bp, 100 applications
1708353	EZ Load 100 bp PCR Molecular Ruler, 500 μ l, 100–3,000 bp, includes 1 ml 5x nucleic acid sample buffer,
	100 applications
500 bp Mole	cular Rulers
1708203	500 bp Molecular Ruler, 200 μl, 500–8,000 bp, 100 applications
1708354	EZ Load 500 bp Molecular Ruler, 500 μl, 500–8,000 bp, includes 1 ml 5x nucleic acid sample buffer,
	100 applications
1 kb Molecu	lar Rulers
1708204	1 kb Molecular Ruler , 200 μl, 1–15 kb, 100 applications
1708355	EZ Load 1 kb Molecular Ruler, 500 μl, 1–15 kb, includes 1 ml 5x nucleic acid sample buffer, 100 applications
2.5 kb Moleo	cular Ruler
1708205	2.5 kb Molecular Ruler, 400 µl, 2.5–35 kb, 100 applications
AmpliSize M	lolecular Ruler
1708200	AmpliSize Molecular Ruler. 250 µl, 50-2.000 bp, 50 applications
	b

Molecular Mass Rulers

Bio-Rad's precision molecular mass rulers are DNA markers that allow accurate DNA quantitation in gels, making them ideal for densitometry or image analysis. These ladders have five bands, which contain 100, 70, 50, 20, and 10 ng of DNA. The EZ Load[™] precision molecular mass ruler has been blended with sample loading buffer and is ready to load.

Ordering Information

Catalog #	Description
1708207	Precision Molecular Mass Ruler, 250 µl, 100–1,000 bp, 10–100 ng, 100 applications
1708356	EZ Load Precision Molecular Mass Ruler, 500 µl, 100–1,000 bp, 10–100 ng, 100 applications

Northern and Southern Blotting

Premixed Blotting Buffers

Bio-Rad offers a complete line of reagents for preparation of buffers for your northern and Southern blot transfers.

Blotting Buffer Selection Guide

	1x Formulation	Applications			
Transfer Buffers*					
20x SSC	150 mM NaCl, 15 mM sodium citrate, pH 7.0	Capillary transfer of agarose gels			
Processing Buf	fers				
20x SSC	150 mM NaCl, 15 mM sodium citrate, pH 7.0	Northern and Southern blotting prehybridization and hybridization solutions			

* These buffers can be used for all gel types and formulations.



Ordering InformationCatalog #DescriptionBlot Transfer and Processing Buffers161077420x SSC, 1 L161077520x SSC, 5 L cube

Mutation Analysis

See Also

DNA amplification/PCR: page 349. PowerPac Basic and PowerPac HV power supplies: page 155. Acrylamide: page 195. Premixed buffers: page 260.

DCode[™] Universal Mutation Detection System

The DCode universal mutation detection system enables mutation detection by various electrophoretic techniques. The DCode system can be used to scan single-base changes with any of the following electrophoretic techniques:

- Single-strand conformation polymorphism (SSCP)
- Denaturing gradient gel electrophoresis (DGGE)
- Constant denaturing gel electrophoresis (CDGE)
- Temporal temperature gradient gel electrophoresis (TTGE)

The DCode system meets the demands of all major mutation detection techniques with:

- Ability to run 64 samples in a single gel in as little as 2 hr, with accurate temperature control between 5–70°C
- Modular design to allow customization for current and future laboratory needs
- Specific reagents and controls that are optimized for each electrophoretic technique



bio-rad.com/dnaelectro

Model 475 Gradient Delivery System

The cam-operated manual gradient former creates linear gradient gels for the DCode system. It mixes and delivers high- and low-density solutions without using a peristaltic pump or magnetic stirrer. The gradients formed are linear and reproducible.

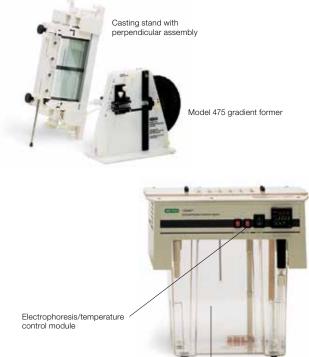
WinMelt[™] Software Optimizes Primer Placement

Windows-based WinMelt software predicts the melting profile of any DNA sequence up to 3,200 bp (Lerman and Silverstein 1987). Placement of primers and GC clamps can be optimized by analysis of the placement effect on the DNA melting profile. WinMelt (Windows XP system compatible) software is recommended for all DGGE, CDGE, and TTGE applications.

An interactive CD-ROM describes the principles of DGGE, CDGE, TTGE, and SSCP (training guide, #1709241) and includes videos on setting up and using the DCode system, a WinMelt software tutorial, DCode application notes, instruction manual, and other literature.

For More Information

Web: bio-rad.com/dcode For more information on the DCode system and accessories, request or download bulletins: 2069 and 2100. For complete ordering information, request or download bulletin: 2100



Electrophoresis tank

Catalog #	Description	
DCode Syst	ems*	
1709080	DCode System for DGGE, 120 V, for 16 cm gels with single prep well (1 mm), includes comb gasket, 2 sets of clamps, Model 475 gradient former, all parts required to cast gradient gels	
1709081	DCode System for DGGE, 220/240 V, for 16 cm gels with single prep well (1 mm)	
1709082	DCode System for DGGE, 100 V, for 16 cm gels with single prep well (1 mm)	
1709088	DCode System for CDGE, 100 V, for 16 cm gels with 20 wells (1 mm)	
1709091	DCode System for TTGE, 100 V, for 16 cm gels with 20 wells (1 mm)	
1709105**	Complete DCode System, 120 V, PC, for all gel sizes and types described above, includes software, standard and cooling tanks, Model 475 gradient former, sandwich clamps, pressure clamp, comb gasket and holder, fittings required for gradient gels	
		continues

Mutation Analysis

Ordering Information				
Catalog #	Description			
Adaptor Kits***	κ.			
1709125	DGGE Kit, for 16 cm gels with single prep well (1 mm), includes sandwich clamps, pressure clamp,			
	comb gasket and holder, fittings required for gradient gel casting			
1709126	DGGE Kit, for 10 cm gels with 2 prep wells (1 mm)			
1709127	CDGE/TTGE Kit, for 16 cm gels with 20 prep wells (1 mm)			
1709128	Complete SSCP Kit, for 20 cm gels with 20 wells (0.75 mm), includes sandwich clamps,			
	cooling finger adaptor for use with external chiller			
Accessories [†]				
1709240	WinMelt Software, PC/Windows			
1709241	Interactive CD-ROM Training Guide			
1709042	Model 475 Gradient Delivery System, includes cam-operated manual gradient former, 2 each of 10 and 30 ml			
	syringes, all accessories required to cast gradient gels			
Electrophores	is Reagents and DNA Control Reagents			
1709150	DCode Control Reagent Kit for DGGE/CDGE/TTGE, includes primers (one GC-clamped) and DNA templates			
	for production of wild-type and mutant DNA			
1709151	DCode Control Reagent Kit for SSCP, includes primers and DNA templates for production of wild-type and mutant DNA			
1709170	DCode Electrophoresis Reagent Kit for DGGE, includes 500 ml 40% acrylamide/bis (37.5:1), 2 x 1 L 50x TAE			
	buffer, 225 ml 100% deionized formamide, 10 ml 10 mg/ml ethidium bromide, 10 ml DCode dye solution, 5 ml			
	TEMED, 1 ml 2x gel loading dye, 10 g ammonium persulfate			
* Each system includes electrophoresis/temperature control module, sandwich core, kit to cast gels of indicated size and type				
(2 sets of plates, 2 sets of clamps and spacers, 2 combs), control reagents for indicated application(s).				
** For PC, inclu	ides WinMelt software.			
*** Each kit includes 2 sets of plates, 2 sets of spacers, 2 combs.				

[†] For a complete list of accessories, including combs and spacers, for the DCode system, go to **bio-rad.com/dcode**.

Experion[™] Automated Electrophoresis System

The Experion automated electrophoresis system automatically performs all the steps of gel-based electrophoresis, providing a comprehensive platform for the analysis of nucleic acids and proteins.

Learn More about the Technology Web: bio-rad.com/tech/experion

Rapid Analysis of Proteins, RNA, and DNA

The Experion system performs automated sample separation, staining, destaining, imaging, band detection, quantitation, and data analysis in as little as 30 minutes. Results are digitally stored for easy record keeping and reporting. The software interface and functionality are intuitive, and the system's microfluidic technology provides good reproducibility and accuracy for routine analysis.

Reproducible Separation, Sizing, and Quantitation

- Single-step protein sizing from 10–260 kD
- Protein sensitivity down to 2.5 ng/µl
- RNA concentration and integrity (RQI) determination at nanogram and picogram levels
- Single-step sizing and quantitation analysis of DNA fragments
- Simple chip priming automated method for reproducible, error-free results

Convenient Data Analysis Tools

- Automatic sizing and quantitation calculations
- Intuitive navigation of separation and data analysis screens
- Quick comparisons of samples across the chip or from chip to chip
- Digital data storage for easy record keeping and reporting
- Flexible and easy export options and annotation ability for publications, reports, and presentations

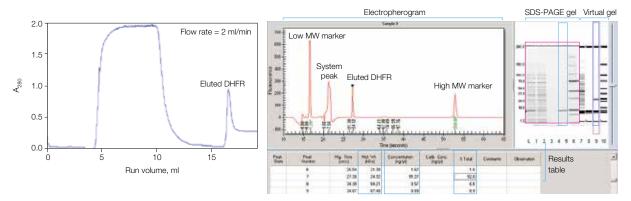


A Powerful Complement to Many Applications

The Experion system is the ideal complement to a number of applications including sizing and quantitation of DNA fragments for PCR and restriction digest experiments, RNA integrity assessments prior to real-time PCR, microarray, and next-generation sequencing experiments (for example, using Illumina or Roche sequencers). RNA integrity assessment via RQI has been recommended as part of the MIQE guidelines. Leading scientists have developed these guidelines to increase the quality and reproducibility of quantitative PCR and real-time PCR data. The Experion system also provides quick protein purity analysis and results in digitized formats, which complement protein applications such as laboratory-scale chromatography, crystallography, and process-scale purification.

For More Information Web: bio-rad.com/experion Request or download bulletins: 3140, 3169, 3170, 3171, 3174A, and 5520

Note: The Experion automated electrophoresis system will be discontinued in 2016. Analysis kits and support for this system will continue to be available through 2021.



Analysis of chromatographic fractions with the Experion system. Left, chromatogram showing purification of histidine-tagged DHFR using Profinity[™] IMAC resin and the BioLogic DuoFlow[™] system. **Right**, comparison of analysis of fractions using the Experion system and SDS-PAGE (shown as inset). The Experion system generated an electropherogram and virtual gel image of the separation. Note that the virtual gel image is comparable to the SDS-PAGE gel image. The Experion system also automatically reports the size (MW), relative concentration, and percent of each resolved protein in the total sample in the results table.

See Also

Real-time PCR systems: page 361. BioLogic DuoFlow systems: page 122.

Experion[™] Priming Station

The Experion automated priming station consistently prepares chips for successful automated electrophoresis with minimal hands-on time. It is used with all Experion chips regardless of whether the application is for protein, RNA, or DNA samples. Preset time and pressure settings ensure optimal priming of the gel matrix into the microchannels of the chip in preparation for sample analysis. This device helps ensure higher quality and more reproducible results than those obtainable with less reliable manual priming methods.

Automated Chip Priming

- Large LCD display clearly shows the preset time and pressure settings
- Integrated timer conveniently counts down the time-sensitive priming step
- Coordinating alignment arrows on the chip and priming station ensure proper chip placement



Experion priming station.

The priming station primes the chip by applying pressure and pushing the gel-stain solution into the microchannels of the chip. This automated priming method helps ensure reproducible chip performance.

- Built-in, pressure-activated release mechanism ensures precise priming
- Secure locking mechanism prevents early release while priming

Ordering Information		
Catalog #	Description	
7007030	Experion Priming Station, 100–240 V, includes 2 priming seals	
7007031	Experion Priming Seals, replacement, provides air seal on top of priming well, 2	

Experion[™] Vortex Station II

The Experion vortex station II ensures complete mixing of RNA or DNA samples and analysis reagents. The specially designed vortex adaptor prongs securely hold the chip during the 1 minute vortex cycle. Preset speed and time settings provide single-step, precise mixing of samples and reagents.



Experion vortex station II. The vortex station is needed for nucleic acid analysis.

Ordering I	nformation
Catalog #	Description
7007043	Experion Vortex Station II, 100–240 V, for preparing Experion RNA/DNA chips

Note: The Experion automated electrophoresis system will be discontinued in 2016. Analysis kits and support for this system will continue to be available through 2021.

Experion[™] Software

Experion software adds to the efficiency of the Experion automated electrophoresis system. Results are displayed with peak electropherograms, in a virtual gel view, and as results tables. Additionally, versions 3.0 and above automatically generate a validated RNA quality indicator (RQI) number that correlates with eukaryotic total RNA sample integrity. The RQI complements the electropherogram and reported ribosomal peak area ratio visual assessments.

Key Features

- Real-time display of data acquisition
- Manual integration of peaks
- Automatic sizing, quantitation, and % total calculations
- Statistical evaluations (mean, std deviation, and %CV)
- Multiple protein quantitation method options
- Flexible printing and data export options

Experion Validation Kit (Optional)

The IQ/OQ validation kit includes automated protocols that test the critical functions of the system to verify and validate the system to the specified functionality. Validation should be performed at least biannually, when troubleshooting, and after moving the instrument.

Experion Security Edition Software (Optional)

The optional Security Edition offers tools for compliance with U.S. FDA 21 CFR Part 11 regulations:

- Different levels of access to different software functions
- Audit trail table tracks daily use of the system
- Password protection and auto lock function maintain database and file integrity
- Electronic signatures facilitate record keeping and tracking
- Report generation enables quick viewing and archiving of multiple run parameters, data, audit trail, and electronic signatures

For More Information

Web: bio-rad.com/experionsoftware Request or download bulletins: 3171 and 5761

Note: The Experion automated electrophoresis system will be discontinued in 2016. Analysis kits and support for this system will continue to be available through 2021.

System Requirements

Operating system	Windows XP (Service Pack 3), Windows Vista (Service Pack 1), WIndows 7 (32 bit)
Processor (CPU)	Pentium 4 (3 GHz processor) PC only
RAM	1 GB
Hard drive space	80 GB
USB 2.0	1 port
Other drives	CD-ROM

Ordering Information

Description
Experion Software, system operation and standard data analysis tools, includes software CD-ROM
Experion Validation Kit, includes 3 test chips, qualification procedures, dongle for PC
Experion Software, Security Edition, standard and 21 CFR Part 11 compliance data analysis tools,
includes 3 test chips, qualification procedures, dongle for PC

bio-rad.com/experion

See Also

Chromatography systems: page 111. Real-time PCR systems: page 361. Sample preparation products: page 22.

Experion[™] Analysis Kits

Experion analysis kits combine innovative chip design with high-quality reagents to perform reproducible, quantitative, and accurate protein, RNA, or DNA analyses in minutes. Streamlined chip preparation methods and low sample and reagent volume requirements result in rapid experiments with minimal hands-on time.

For More Information

Web: bio-rad.com/experionanalysiskits Request or download bulletins: 3140, 3169, 3170, 3171, 3174A, 5520, and 5761

Note: The Experion automated electrophoresis system will be discontinued in 2016. Analysis kits and support for this system will continue to be available through 2021.

Experion Pro260 Analysis Kit

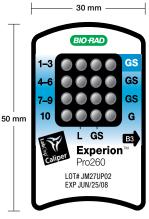
The Experion Pro260 analysis kit makes protein separation, sizing, and quantitation fast and easy. The Pro260 kit offers the ability to analyze ten protein samples (10–260 kD) in approximately 30 minutes. Accurate sizing is achieved with the Experion Pro260 ladder, part of the Precision Plus Protein[™] family of standards. Refer to the specifications table for more details.

Experion RNA HighSens and RNA StdSens Analysis Kits

For accurate assessment of RNA quality prior to downstream experiments, Experion RNA analysis kits offer rapid single-step quality assessments and the ability to analyze 11 or 12 samples in approximately 30 minutes. Sample concentrations in nanogram or picogram amounts can be analyzed, depending on the kit. Refer to the specifications table for more details. For a fast and objective assessment of total RNA integrity, an RNA quality indicator (RQI) value is automatically generated for eukaryotic samples.

Experion DNA 1K and DNA 12K Analysis Kits

The Experion DNA 1K and DNA 12K analysis kits allow analysis of DNA samples with size ranges between 15–1,500 bp and 50–17,000 bp, respectively. These DNA assays provide high sensitivity and excellent



Experion Pro260 Chip

resolution (down to 5 bp) over a broad dynamic range. Consuming only 1 μ l of sample for each analysis, the Experion automated system can analyze 11 samples in approximately 30–40 minutes. These assays are recommended for analysis of restriction digests, amplified DNA, microsatellites, and AFLPs.

Spe	cifications
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	Pro260 Chip	RNA HighSens Chip	RNA StdSens Chip	DNA 1K Assay	DNA 12K Assay
Number of samples	1–10	1–11	1–12	1–11	1–11
Sample volume	4 µl	1 µl	1 µl	1 µl	1 µl
Linear dynamic range	5–2,000 ng/µl BSA	-	-	_	_
Concentration range	5–2,000 ng/µl	100–5,000 pg/µl	5–500 ng/µl	0.1–50 ng/µl	0.1–50 ng/µl
Separation range	10–260 kD	-	-	15–1,500 bp	50–17,000 bp
Sensitivity	2.5 ng/µl of carbonic anhydrase in 1x PBS	100 pg	5 ng	0.1 ng	0.1 ng

bio-rad.com/experion

Ordering Information

Description	
Experion Pro260 Analysis Kit for 25 Chips, includes 25 Pro260 chips, 1 cleaning chip, 5 x 520 µl Pro260 gel,	
Experion RNA StdSens Analysis Kit for 10 Chips, includes 10 RNA StdSens chips, 2 cleaning chips,	
Experion RNA StdSens Analysis Kit for 25 Chips, includes 25 RNA StdSens chips, 2 cleaning chips, 2 x 1,250 μl RNA gel, 2 x 20 μl RNA StdSens stain, 2 x 20 μl RNA ladder, 2 x 900 μl RNA StdSens	
Experion RNA HighSens Analysis Kit for 10 Chips, includes 10 RNA HighSens chips, 2 cleaning chips, 1,250 μl RNA gel, 20 μl RNA HighSens stain, 20 μl RNA ladder, 900 μl RNA HighSens loading	
Experion RNA HighSens Analysis Kit for 25 Chips, includes 25 RNA HighSens chips, 2 cleaning chips, 2 x 1,250 µl RNA gel, 2 x 20 µl RNA HighSens stain, 20 µl RNA ladder, 2 x 900 µl RNA HighSens loading buffer, 2 x 100 µl RNA sensitivity enhancer, 4 spin filters	
Experion DNA 1K Analysis Kit for 10 Chips, includes 10 DNA chips, 1 cleaning chip, 3 x 250 µl DNA 1K gel, 40 µl DNA 1K stain, 20 µl DNA 1K ladder, 750 µl DNA 1K loading buffer, 3 spin filters	
Experion DNA 12K Analysis Kit for 10 Chips, includes 10 DNA chips, 1 cleaning chip, 650 µl DNA 12K gel, 40 µl DNA 12K stain, 20 µl DNA 12K ladder, 750 µl DNA 12K loading buffer, 3 spin filters	
Experion DNA 1K Analysis Kit for 30 Chips, includes 30 DNA chips, 3 cleaning chips, 9 x 250 µl DNA 1K gel, 3 x 40 µl DNA 1K stain, 3 x 20 µl DNA 1K ladder, 3 x 750 µl DNA 1K loading buffer, 9 spin filters	
Experion DNA 12K Analysis Kit for 30 Chips, includes 30 DNA chips, 3 cleaning chips, 3 x 650 µl DNA 12K gel, 3 x 40 µl DNA 12K stain, 3 x 20 µl DNA 12K ladder, 3 x 750 µl DNA 12K loading buffer, 9 spin filters	
alysis Kit Accessories	
Experion Pro260 Chips, 10, plus 1 cleaning chip	
Experion Pro260 Reagents and Supplies for 10 Chips , includes 3 x 520 μl Pro260 gel, 45 μl Pro260 stain, 60 μl Pro260 ladder (10–260 kD), 400 μl Pro260 sample buffer, 3 spin filters	
Experion RNA StdSens Chips, 10, plus 2 cleaning chips	
Experion RNA StdSens Reagents and Supplies for 10 Chips , includes 1,250 μl RNA gel, 20 μl RNA StdSens stain, 20 μl RNA ladder, 900 μl RNA StdSens loading buffer, 2 spin filters	
Experion RNA HighSens Chips, 10, plus 2 cleaning chips	
Experion RNA HighSens Reagents and Supplies for 10 Chips, includes 1,250 µl RNA gel, 20 µl RNA HighSens stain, 20 µl RNA ladder, 900 µl RNA HighSens loading buffer, 100 µl RNA sensitivity enhancer, 2 spin filters	
Experion DNA Chips, 10, for DNA 1K and 12K analyses, plus 1 cleaning chip	
Experion DNA 1K Reagents and Supplies for 10 Chips, includes 3 x 250 µl DNA 1K gel, 40 µl DNA 1K stain, 20 µl DNA 1K ladder, 750 µl DNA 1K loading buffer, 3 spin filters	
Experion DNA 12K Reagents and Supplies for 10 Chips, includes 650 µl DNA 12K gel, 40 µl DNA 12K stain, 20 µl DNA 12K ladder, 750 µl DNA 12K loading buffer, 3 spin filters	
Experion Cleaning Chips, 10	
Experion Electrode Cleaner, 250 ml	
Experion DEPC-Treated Water, 100 ml	
Experion Spin Filters, 10	
Experion RNA Ladder, 20 µl	
o	
	 2 × 45 µl Pro260 stain, 2 × 60 µl Pro260 ladder (10–260 kD), 2 × 400 µl Pro260 sample buffer, 5 spin filters Experion RNA StdSens Analysis Kit for 10 Chips, includes 10 RNA StdSens chips, 2 cleaning chips, 1.250 µl RNA gel, 20 µl RNA StdSens stain, 20 µl RNA ladder, 900 µl RNA StdSens chaing, chips, 2 × 1,250 µl RNA gel, 20 µl RNA StdSens stain, 20 µl RNA ladder, 900 µl RNA StdSens chaing, chips, 2 × 1,250 µl RNA gel, 20 µl RNA HNA StdSens stain, 20 µl RNA haldder, 20 µl RNA HighSens chaing, chips, 1.250 µl RNA gel, 20 µl RNA HighSens tain, 20 µl RNA HighSens chips, 2 cleaning chips, 2 × 1,250 µl RNA gel, 20 µl RNA HighSens tain, 20 µl RNA haldader, 900 µl RNA HighSens loading buffer, 4 spin filters Experion RNA HighSens Analysis Kit for 10 Chips, includes 25 RNA HighSens chips, 2 cleaning chips, 2 × 1,250 µl RNA gel, 20 µl RNA HighSens tain, 20 µl RNA HighSens loading buffer, 2 × 100 µl RNA sensitivity enhancer, 2 spin filters Experion RNA HighSens Analysis Kit for 10 Chips, includes 25 RNA HighSens chips, 2 cleaning chips, 2 × 1,250 µl RNA gel, 22 × 00 µl RNA HighSens stain, 20 µl RNA HighSens loading buffer, 2 × 100 µl RNA sensitivity enhancer, 4 spin filters Experion DNA 1K Analysis Kit for 10 Chips, includes 10 DNA chips, 1 cleaning chip, 630 µl DNA 1K gel, 40 µl DNA 1K stain, 20 µl DNA 1K ladder, 750 µl DNA 1K ladder, 3 spin filters Experion DNA 12K Analysis Kit for 10 Chips, includes 10 DNA chips, 3 cleaning chips, 9 × 250 µl DNA 1K gel, 40 µl DNA 12K stain, 30 µl DNA 1K ladder, 3 × 750 µl DNA 1K ladder, 9 spin filters Experion DNA 12K Analysis Kit for 30 Chips, includes 30 DNA chips, 3 cleaning chips, 9 × 250 µl DNA 1K gel, 3 × 40 µl DNA 12K stain, 3 × 20 µl DNA 1K ladder, 3 × 750 µl DNA 12K loading buffer, 9 spin filters Experion DNA 12K Analysis Kit for 30 Chips, includes 3 × 520 µl DNA 12K loading buffer, 9 spin filters Experion Pro260 Chips, 10, plus 1 cleaning chip Experion RNA 5tdSens Reagents and Supplies fo

Note: The Experion automated electrophoresis system will be discontinued in 2016. Analysis kits and support for this system will continue to be available through 2021.

bio-rad.com/experion

Experion[™] Starter Kits

Experion starter kits include all the necessary consumables to illustrate the utility of the Experion system in protein or RNA applications.

The Experion protein starter kit (using the Pro260 chip) provides information on:

- How best to prepare and load a protein chip
- Protein quantitation and sizing using a known standard
- Creating and running a calibration curve
- The concept of scaling for the virtual gel
- Tips and common mistakes

The Experion RNA starter kit (using RNA StdSens chip) provides information on:

Spin filters

Electrode cleaner

Control sample

loading video

Cleaning swabs (lint free)

introduction and chip

- How best to prepare and load an RNA chip
- How to confirm RNA quality and integrity
- The concept of scaling for the virtual gel
- Tips and common mistakes

Each kit contains:

- Experion reagents
- Three Experion chips
- Cleaning chips
- RNase-free tips
- RNase-free tubes
- DEPC-treated water
- DTT (protein kit only)

e tubesDetailed instruction manualCD-ROM with system

For More Information Web: bio-rad.com/experionstarterkits Request or download bulletin: 5732

Note: The Experion automated electrophoresis system will be discontinued in 2016. Analysis kits and support for this system will continue to be available through 2021.

Ordering In	Ordering Information		
Catalog #	Description		
7007110	Experion Pro260 Starter Kit, includes 3 Experion chips, 1 cleaning chip, Experion reagents, spin filters, IgG protein standard, DTT, cleaning swabs (lint free), electrode cleaner, narrow bore polypropylene pipet tips, polypropylene 0.5 ml microcentrifuge tubes, DEPC-treated water (0.2 μm filtered)		
7007111	Experion RNA StdSens Starter Kit, includes 3 Experion chips, 2 cleaning chips, Experion reagents, spin filters, total RNA standard, cleaning swabs (lint free), electrode cleaner, narrow bore polypropylene pipet tips, RNase- and DNase-free polypropylene 0.5 ml microcentrifuge tubes, DEPC-treated water (0.2 μm filtered)		



Subject Index

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Antibodies

Antibodies

276

Antibodies

See Also

SureBeads magnetic beads system: page 2. Bio-Rad offers an extensive selection of antibodies commercialized through AbD Serotec[®], a Bio-Rad company.

More than 11,000 antibodies, kits, reagents, standards, and controls are available for research use. Specificity and performance are hallmarks of the antibody collection. Antibodies can be used for many applications, including:

- Western blotting
- Flow cytometry
- Immunohistochemistry
- Enzyme-linked immunosorbent assay
- Immunofluorescence

Antibodies are available for the following research areas:

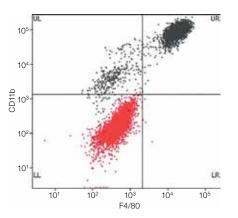
- Innate immunity
- Veterinary immunology
- Cell biology
- Apoptosis and autophagy
- Microbiology
- Neuroscience
- Immunology
- Stem cell research
- Endocrinology

Antibodies conjugated to over 20 dyes, including Alexa Fluor, DyLight, fluorescein isothiocyanate (FITC), and phycoerythrin (PE), for multicolor flow cytometry are also available.

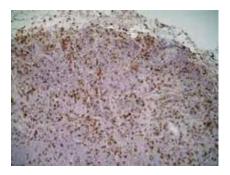
In addition, Bio-Rad offers the PrecisionAb[™] antibody product line, which is exclusively validated for western blotting (see page 277).

HuCAL[®] Technology

AbD Serotec uses the HuCAL technology to offer a custom service for the in vitro generation of fully human monoclonal antibodies. With this technique, specific Fab antibodies can be generated within 8 weeks, with a greater than 90% success rate and without the immunization of animals. The HuCAL PLATINUM[®] library contains more than 45 billion functional human antibody specificities already prefabricated in an engineered Fab format. The technology uses CysDisplay[®], a novel and proprietary phage display method that allows for the selection of high-affinity antibodies that are expressed on the surface of filamentous phage. Antibodies can be customized to specific needs. Antibodies are highly specific and come with a performance guarantee. The following data show two of the many highly specific antibody clones that are unique to AbD Serotec.



Flow cytometry analysis of anti-mouse F4/80, a macrophage marker. Forward scatter and side scatter gated mouse peritoneal macrophages were dual stained with F4/80-FITC conjugated at a 1/5 dilution and CD11b–Alexa Fluor 647 conjugated at a 1/5 dilution. The isotype control pair is shown in red. Fc receptors were blocked by mouse seroblock.



Immunoperoxidase staining of anti-rat CD68, a macrophage marker. A rat lymph node cryosection was probed with mouse anti-rat CD68 antibody, clone ED1, followed by horseradish peroxidase–conjugated goat anti-mouse lgG₁ antibody.

For More Information Web: abdserotec.com

New PrecisionAb[™] Validated Western Blotting Antibodies

PrecisionAb antibodies are highly validated for western blotting applications. Each antibody is screened using Bio-Rad's V3 Western Workflow[™] against up to 12 wholecell lysates expressing endogenous protein levels. Stringent validation and quality control (QC) procedures ensure that PrecisionAb Antibodies deliver industry-leading quality and performance.

Product features include:

- High specificity each antibody is extensively validated to ensure that it exhibits low nonspecific binding
- **High sensitivity** all antibodies must be able to detect the protein of interest at endogenous levels
- Reproducible performance stringent QC procedures
 ensure consistent lot-to-lot performance
- Trial kits for every antibody each PrecisionAb Antibody is available in a convenient 2–western blot format for a cost-effective way to assess antibody performance
- **Positive control lysate** positive control lysate is provided to facilitate target band identification and troubleshooting of experimental procedures
- Full antibody validation results and protocol the entire western blot is displayed for a complete picture of antibody performance; a detailed validation protocol is provided to help optimize experimental conditions

All PrecisionAb Antibodies are available in three formats:

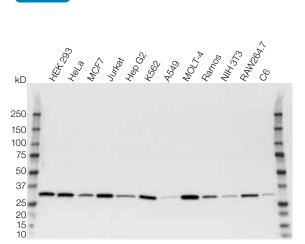


Antibody with Control Minimum ten western blots (100 µl)

For More Information Web: bio-rad.com/PrecisionAb



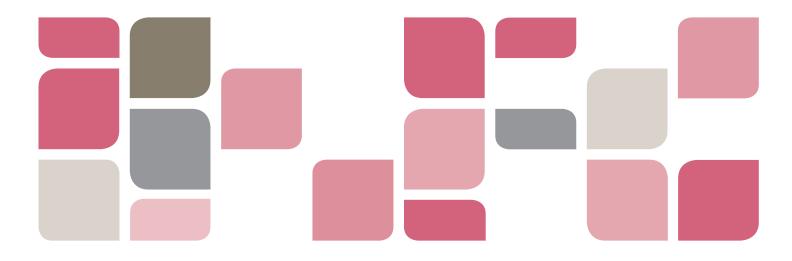
Trial Size with Control Minimum two western blots (20 µl)



Antibodies are validated against 12 whole-cell lysates (not overexpressed proteins). This blot represents one such validation, with the arrow indicating the presence of CDK2 protein in the various cell lysates.



Antibody Only (100 µl)



Imaging Instruments

Imaging Systems

280

1

Imaging Systems

Imaging systems detect images and quantitate colorimetric, chemiluminescent, and fluorescent signals. Bio-Rad offers software (page 292) that provides automation for image acquisition with data analysis and validation. Refer to the guide below to select the imaging system best suited for your applications.

-

Learn More about the Technology Web: bio-rad.com/tech/proteinimaging

Imaging System Selection Guide

			N. S. A.	Y		
Application	ChemiDoc [™] Touch	ChemiDoc MP	Gel Doc [™] EZ	GS-900 [™] Densitometer	Gel Doc XR+	ChemiDoc XRS+
Nucleic Acid Detection						
Ethidium bromide stain	5	5	4	-	4	4
SYBR [®] Green I stain	5	5	4	-	4	4
SYBR [®] Safe stain	5	5	4	-	4	4
Fast Blast [™] DNA stain	4	4	4	5	4	4
Protein Detection, 1-D Gels						
Stain-free gels	5	5	5	_	5	5
Coomassie Blue stain	4	4	4	5	4	4
Silver stain	4	4	4	5	4	4
SYPRO Ruby protein gel stain	4	4	4	_	4	4
Flamingo [™] fluorescent gel stain	4	4	3	-	4	4
Oriole [™] fluorescent gel stain	5	5	4	-	5	5
Protein Detection, 2-D Gels						
Coomassie Blue stain	4	4	3	5	3	3
Silver stain	4	4	3	5	3	3
SYPRO Ruby protein gel stain	4	4	3	-	3	3
Flamingo fluorescent gel stain	4	4	2	-	3	3
Oriole fluorescent gel stain	5	5	3	-	3	3
Pro-Q stain	4	4	2	-	2	3
Cy2, Cy3, Cy5 label	_	4	-	-	-	-
Blot Detection						
Stain-free blots	5	5	5	_	5	5
Coomassie Blue stain	5	4	_	5	4	4
Silver stain	5	5	_	5	4	4
SYPRO Ruby protein blot stain*	-	5	-	-	-	-
Chemiluminescence	5	4/5	-	-	-	4
Chemifluorescence*	1	5	_	-	1	1
Quantum dot*	2	5	2	-	2	2
Multiplex fluorescence	-	5	-	-	-	-
Micro- and Macroarray** Detection	ction					
Radiolabel	-	-	-	—	-	—
Fluorescence	5	5	_	_	2	2
Chemiluminescence	5	5	-	-	-	4
Colony Counting						
Colorimetric detection	5	5	_	_	4	4
Fluorescence detection	5	5	_	_	4	4
Isotopic Detection	U U	Ŭ				
Radiolabel	4	_	4	5	4	4
X-ray film	4	_	4	5	4	4

- Not recommended; 1-5, recommendation level (5 = highest).

* Optimal with low fluorescence PVDF membrane.

** With spot diameters ≥400 μm.

ChemiDoc[™] Touch Imaging System

The ChemiDoc Touch imaging system is the most sensitive instrument for protein and DNA gel or western blot imaging. Utilizing a compact design that integrates an intuitive touch screen with a powerful computer, it addresses chemiluminescence detection, stain-free fluorescence, and general gel documentation applications.

The system features best-in-class sensitivity, image quality, and broad dynamic range. The touch-screen user interface running Image Lab[™] Touch software is easy to use and learn and optimizes performance for fast, integrated, and automated image capture of various samples.

- Multiple imaging capabilities accommodates a variety of sample types and detection methods, including chemiluminescence and stain-free fluorescence. It is well-suited for protein and DNA electrophoresis runs as well as western blotting experiments, delivering quantitative, reproducible results for fluorescence, chemiluminescence, and colorimetric detection
- Stain-free technology UV-induced fluorescent labeling of proteins in the stain-free gels allows a 2 hr Coomassie gel-staining protocol to be condensed into a 5 min stain-and-image step. Stain-free gels can be used for western blotting. Using the V3 Western Workflow[™], you can check your electrophoresis results and protein transfer quality prior to western blotting, and apply total protein loading control in data normalization



- High-sensitivity blot detection offers advanced detection technology that determines optimal exposure, even for faint or intense samples, and achieves superior sensitivity for chemiluminescence and colorimetric gel and blot documentation
- Superior image quality exceptional dynamic range enables visualization of faint and intense bands on same blot or gel. Images are always in focus at any zoom level to ensure publication-ready images in seconds
- Ease of use precalibrated system provides the precise focus for any zoom setting or sample height. Automated hands-free operation ensures consistent, reproducible, and high-throughput performance

For More Information Web: bio-rad.com/chemidoctouch Request or download bulletin: 6517

Catalog #	Description
1708370	ChemiDoc Touch Imager, includes internal computer, 12" touch screen display, camera, Image Lab software, chemi/UV/stain-free sample tray (#1708374); other sample trays available separately
1709690	Image Lab Software, stand-alone software, for 1-D analysis, compatible with PC or Mac
1708381	ChemiDoc Touch V3 Western Workflow for Mini Gels, includes ChemiDoc Touch imager with Image Lab software, UV/stain-free sample tray, 50 Mini-PROTEAN TGX Any kD Stain-Free precast gels, SDS-PAGE accessories, Mini-PROTEAN Tetra cell, Trans-Blot Turbo starter kit, 50 PVDF transfer packs for mini gels
1708382	ChemiDoc Touch V3 Western Workflow for Midi Gels, includes ChemiDoc Touch imager with Image Lab software, UV/stain-free sample tray, 50 4–20% Criterion TGX Stain-Free precast gels, SDS-PAGE accessories, Criterion cell, Trans-Blot Turbo starter kit, 50 PVDF transfer packs for midi gels
Accessories	
1708372	White Sample Tray, for gels stained with Coomassie Blue, copper, silver, or zinc stains
1708373	Blue Sample Tray, for gels stained with GelGreen or any SYBR stain
1708374	Chemi/UV/Stain-Free Sample Tray, for chemiluminescent blots, stain-free gels/blots, and gels stained with ethidium bromide, SYPRO Ruby, Oriole, GelRed, and SYBR stains
1708375	UV Safety Shield, to protect against UV light exposure during band excision
1708376	Gel Alignment Templates, for consistent placement of gels and blots
1708377	Holder for ChemiDoc Touch Sample Trays and UV Shield, pkg of 1, holds 3 sample trays and 1 UV shield; trays and shield not included
1708378	ChemiDoc Touch IQ/OQ Protocols, protocols for installation qualification/operational qualification
1708380	ChemiDoc Touch Leveling Feet, ensures level imaging stage

See Also

Stain-free gels: pages 168, 178. mini, midi formats V3 Western Workflow: page 221. Trans-Blot Turbo transfer system: page 224.

See Also

Stain-free gels: pages 168, 178. mini, midi formats V3 Western Workflow: page 221. Trans-Biot Turbo transfer system: page 224.

ChemiDoc[™] MP Imaging System

The ChemiDoc MP imaging system is a full-featured instrument for gel and western blot imaging. Its flexibility and sensitivity are complemented by simple, intuitive operation that integrates seamlessly into your workflow.

- Versatility can be used for a variety of sample types or experiments that require differing detection methods, including multiplex fluorescence, chemiluminescence, and routine gel imaging, as well as for colorimetric gel and blot documentation
- Stain-free technology eliminates extra steps and allows you to check electrophoresis results and transfer performance before western blotting, conserving precious samples and reducing waste. This technology provides an easy and quick total protein loading control for western blot data normalization
- Ease of use auto focus, auto exposure, and simple operation mean that with little or no training you can acquire publication-quality images in seconds
- Image quality resolution remains high at any zoom level; exceptional dynamic range enables visualization of faint and intense bands on same blot or gel. With Image Lab[™] software, you can edit and analyze images on the spot without exporting to other programs
- Sensitivity advanced detection technology creates optimal exposure even for small or faint bands

Ordering Information



For More Information Web: bio-rad.com/chemidoc Request or download bulletin: 6133

Catalog #	Description
1708280	ChemiDoc MP Imaging System with Image Lab Software, compatible with PC or Mac, includes darkroom, UV transilluminator, epi-white illumination, camera, power supply, cables, Image Lab software
1708283	ChemiDoc MP Red LED Module Kit, for use with applications requiring red fluorophore detection, includes 2 epi-red LED modules, 1 red emission filter
1708284	ChemiDoc MP Green LED Module Kit, for use with applications requiring green fluorophore detection, includes 2 epi-green LED modules, 1 green emission filter
1708285	ChemiDoc MP Blue LED Module Kit, for use with applications requiring blue fluorophore detection, includes 2 epi-blue LED modules, 1 blue emission filter
1708294	ChemiDoc MP IQ/OQ, for use with Image Lab software
1708182	XcitaBlue Conversion Screen, includes view goggles; blue conversion screen for viewing SYBR Green, SYBR Safe, GFP, Flamingo, and other fluorescent gel stains
1708183	XcitaBlue Conversion Screen and Filter, includes view goggles and SYBR Safe filter #1708075; blue conversion screen for viewing SYBR Green, SYBR Safe, and other fluorescent gel stains
1708289	White Light Conversion Screen, for use with ChemiDoc MP, ChemiDoc XRS+, and Gel Doc XR+ systems
1706887	365 nm UV Lamps, 6 replacement bulbs
1708097	Standard 302 nm UV Lamps, 6 replacement bulbs
1708089	Mitsubishi Thermal Printer
1707581	Mitsubishi Thermal Printer Paper, 4 rolls, for use with Mitsubishi printer
1708184	Gel Alignment Templates, pkg of 3, templates for aligning gels and blots, for use with ChemiDoc XRS+, ChemiDoc MP, and Gel Doc XR+ systems

Gel Doc[™] EZ Imaging System

The Gel Doc EZ imaging system is a compact, automated system for obtaining publication-quality images and analyzed results with just the push of a button.

Smart Imaging

- Modular design use specific trays for specific applications; clearly defined and color-coded trays eliminate any confusion in usage
- Flexible options purchase only what you want and upgrade when your needs change
- Simplicity create your default protocol once and simply log in to use the tray
- Image Lab[™] software automate image capture, analysis, user preferences, and a myriad of other features
- Completely analyzed results obtain high-quality images and analyzed results, including relative MW, quantitation of bands, Excel reports, and PDFs
- Reproducibility user-introduced errors are minimized; rely on the system to give consistent results time after time
- Stain-free technology convert a 2 hr Coomassie staining protocol into a 5 min visualization step, no staining or destaining required





UV Tray For use with fluorescent stains such as ethidium bromide, SYBR®, Oriole[™] fluorescent gel stain, GelRed, SYPRO Ruby, Coomassie Fluor Orange, and Krypton stains.

White Tray For use with protein stains such as Coomassie Blue, copper, silver, and zinc stains.



- Compatibility stain-free gels are western blot compatible, allowing you to check electrophoresis results and quality prior to western blotting
- Publication-quality images obtain clean and smooth images that are visually appealing and publication ready
- Increased image resolution get better resolution when images are cropped or zoomed
- Greater functionality no need to export images to another image editing program to change the dpi before importing for publication; define your desired dpi with Image Lab software

For More Information Web: bio-rad.com/geldocez Request or download bulletins: 5976 and 6088



Blue Tray For use with nucleic acid stains such as GelGreen, SYBR[®] Green, SYBR[®] Safe, and SYBR[®] Gold stains.



Stain-Free Tray For use with stain-free gels, such as Mini-PROTEAN® TGX Stain-Free[™] gels and Criterion[™] TGX Stain-Free[™] gels, and stain-free blots.

Ordering Information		
Catalog #	Description	
1708270	Gel Doc EZ Imaging System with Image Lab Software, compatible with PC or Mac, includes darkroom, camera, cables, Image Lab software; stain-free sample tray #1708274; other sample trays available separately	
1708277	Gel Doc EZ IQ/OQ, for use with Image Lab software	
Gel Doc EZ S	Sample Trays	
1708271	UV Sample Tray, for gels using ultraviolet illumination	
1708272	White Sample Tray, for gels stained with Coomassie Blue, copper, silver, or zinc stains	
1708273	Blue Sample Tray, for gels stained with GelGreen or any SYBR stain	
1708274	Stain-Free Sample Tray, for stain-free gels and blots	
1708276	Sample Tray Holder, holds 4 sample trays	
Accessories		
1707581	Mitsubishi Thermal Printer Paper, 4 rolls, for use with Mitsubishi thermal printer	
1708089	Mitsubishi Thermal Printer	
1708097	Standard 302 nm UV Lamps, 6 replacement bulbs	

bio-rad.com/imaging

See Also

Protein gel stains: page 199. Nucleic acid gel stain: page 259. Gel analysis software: page 293. ReadyAgarose precast gel system: page 252. Western blotting: page 221. Northern and Southern blotting: page 264.

Gel Doc[™] XR+ and ChemiDoc[™] XRS+ Systems

The Gel Doc XR+ and ChemiDoc XRS+ systems are based on CCD high-resolution, high-sensitivity detection technology and provide application flexibility. Key benefits include:

- Accurate, protocol-driven gel and blot imaging and analysis
- Automated quantitative analysis of protein and DNA samples in seconds
- Wide range of applications with special accessories to preserve sample integrity for downstream research while ensuring user safety
- Publication-quality results

Gel Doc XR+ System

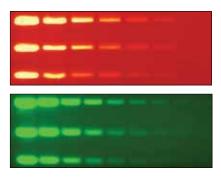
The Gel Doc XR+ system consists of a darkroom hood, CCD camera and software-controlled motorized optics, UV and white light illumination, filter slider with standard filter, and UV-protection shield. The system enables you to:

- Use stain-free technology to rapidly visualize proteins, allowing you to check electrophoresis results and transfer performance before western blotting, conserving precious samples and reducing waste
- Increase cloning efficiency and protein production by protecting DNA electrophoresis samples from UV exposure using the XcitaBlue[™] conversion screen and blue light–excitable stains such as GelGreen, SYBR[®] Safe, and SYBR[®] Green I
- Maintain standard operating procedures or criteria for sample performance as there is no loss in sensitivity compared to UV and ethidium bromide staining

The Gel Doc XR+ system can be upgraded to the ChemiDoc XRS+ system.

For More Information Request or download bulletin: 5838





An alternative to UV illumination to better preserve DNA samples. Top, serial dilutions of precision molecular mass ruler (Bio-Rad) stained with ethidium bromide (EtBr) on agarose gel imaged with UV light; bottom, serial dilutions of precision molecular mass ruler stained with SYBR® Safe stain on agarose gel imaged with XcitaBlue conversion screen. Lane 1 load is 51.2 ng. The Gel Doc XR+ system detects down to 100 pg. There is no loss in sensitivity when a combination of SYBR® Safe nucleic acid fluorescent stain and less harmful blue excitation is used instead of UV-excitable EtBr. The SYBR® Safe image was taken using the XcitaBlue conversion screen and SYBR® Safe/GFP emission filter.

ChemiDoc XRS+ System

The ChemiDoc XRS+ system offers sensitive chemiluminescence detection in addition to gel and blot documentation of fluorescent and colorimetric samples. The system includes a sensitive 16-bit CCD camera that is cooled for detection of faint samples. The XRS+ system is now compatible with stain-free technology, which offers checkpoints in western blot experiments and a convenient total protein loading control for data normalization.

For More Information

Web: bio-rad.com/imagingsystems Request or download bulletin: 5837

Ordering Information Catalog # Description 1708195 Gel Doc XR+ System with Image Lab Software, compatible with PC or Mac, includes darkroom, UV transilluminator, epi-white illumination standard filter, camera, cables, Image Lab software 1708193 Gel Doc XR+ IQ/OQ, for use with Image Lab software 1708265 ChemiDoc XRS+ System with Image Lab Software, compatible with PC or Mac, includes darkroom, UV transilluminator, epi-white illumination standard filter, camera, power supply, cables, Image Lab software ChemiDoc XRS+ IQ/OQ, for use with Image Lab software 1708256 Accessories 1708199 Gel Doc XR+ Installation Kit 1708299 ChemiDoc XRS+ Installation Kit 1708289 White Light Conversion Screen, for use with ChemiDoc MP, ChemiDoc XRS+, and Gel Doc XR+ systems 1708074 Filter, 520DF30, 62 mm, for SYBR Green I/GFP/SYBR Gold/fluorescein stain 1708075 Filter, 560DF50, 62 mm, for Cy3/rhodamine stains 1708076 Filter, 630BP30, 62 mm, for SYPRO Ruby/Texas Red stains Filter, standard emission, 62 mm 1708081 365 nm UV Lamps, 6 replacement lamps 1706887 1708097 Standard 302 nm UV Lamps, 6 replacement bulbs 1708089 Mitsubishi Thermal Printer 1707581 Mitsubishi Thermal Printer Paper, 4 rolls, for use with Mitsubishi thermal printer 1708183 XcitaBlue Conversion Screen Kit, includes viewing goggles and standard detection filter 1708008 **Orange Fluorescence Reference Plate Bio-Rad Fluorescent Ruler** 1703759 1703760 Gel Cutter Ruler 1708184 Gel Alignment Templates, pkg of 3, templates for aligning gels and blots, for use with ChemiDoc XRS+, ChemiDoc MP, and Gel Doc XR+ systems 1708026 Image Lab Focus Calibration Target

See Also

Stain-free gels: pages 168, 178. mini, midi formats V3 Western Workflow: page 221. Trans-Blot Turbo transfer system: page 224.

See Also

Fluorescent protein gel stains: page 201. Nucleic acid stain: page 259. Gel analysis software: page 293.

PharosFX[™] and Personal Molecular Imager[™] (PMI[™]) Systems Accessories

Accessories for the discontinued Pharos FX and PMI systems are still available and include replacement filters, external laser upgrades, sample trays, imaging screens, exposure cassettes, and screen erasers. For alternative imaging solutions, please see the imager selection guide (page 280) and ChemiDoc[™] MP (page 282) for differential gel electrophoresis needs.

For More Information Web: bio-rad.com/pharos



Ordering Inf	formation
Catalog #	Description
Accessories	for PharosFX and PharosFX Plus Systems
1707896	Filter 640 nm BP, for Texas Red dye
1709459	Filter 530 nm BP, for ECL Plus, AttoPhos, SYBR Green I, Alexa Fluor 488, FITC, Cy2, and Pro-Q Emerald dyes
1707866	Filter 605 nm BP, for ethidium bromide, SYPRO Red, SYPRO Ruby, Alexa Fluor 532 and 546, and Cy3 dyes
1707865	Filter 695 nm BP, for Cy5 and Alexa Fluor 635 dyes
1707863	Filter 555 nm LP, for Texas Red dye
1707867	Blank Filter Holder
Accessories	for PharosFX, PharosFX Plus, and PMI Systems
1707811	Sample Tray
1707812	Multi-Sample Tray I, for small aluminum-mounted screens and microplates
1707814	Microplate Adaptor, for multi-sample tray I
1707819	Multi-Sample Tray II, for scanning gels mounted to glass plates
Accessories	for PharosFX Plus and PMI Systems
1707843	Imaging Screen-K (Kodak), 20 x 25 cm
1707841	Imaging Screen-K (Kodak), 35 x 43 cm
1707861	Exposure Cassette-K, for 20 x 25 cm Kodak screen
1707862	Exposure Cassette-K, for 35 x 43 cm Kodak screen
1707809	Eraser Screen-K, 110/120 V
1707806	Eraser Screen-K, 220/240 V

GS-900[™] USB Calibrated Densitometer

The GS-900 calibrated densitometer delivers superior accuracy, sensitivity, and data reproducibility. To ensure the accuracy of each scan, the GS-900 calibrated densitometer contains an internal optical density tablet, which is scanned and used for calibration before each run. Features include:

- Transmissive and reflective imaging using red, green, and blue CCD technology to optimally scan and quantitate colorimetric blots and gels treated with a variety of stains
- Accurate quantitation of samples over a large dynamic range (up to 3.4 OD) ensuring detection of both highly abundant and dilute proteins
- Scanning of larger gels for enhanced separation of proteins on oversized 29 x 33 cm imaging area
- IQ/OQ kit available for validation of the calibration functions using a NIST-traceable external target to confirm the accuracy of the internal target, guaranteeing accurate and reproducible results
- High resolution and analysis of closest bands on a gel due to 16-bit precision and 36.3 µm resolution
- Sealed imaging area to accommodate wet samples of variable thickness
- Purity analysis and lane background tools for manufacturing QC
- U.S. FDA 21 CFR Part 11 regulation compliance software available

For More Information Web: bio-rad.com/gs900

Request or download bulletin: 6385

Ordering Information		
Catalog #	Description	
1707991	GS-900 Calibrated Densitometry System , PC-compatible calibrated densitometer, cables, Image Lab software, Biologics Analysis Workflow Starter Kit (Criterion cell, Criterion TGX precast gels, Precision Plus Protein standards, QC colloidal Coomassie stain, buffers)	
1707993	GS-900 Regulatory Tools Package, includes GS-900 IQ/OQ Kit and Image Lab Security Edition 21 CFR Part 11 module, 1 license	
1707994	GS-900 IQ/OQ Kit , set of protocols for installation qualification/operational qualification and NIST-traceable external step tablet for the GS-900 calibrated densitometer	



See Also

Mini-format vertical electrophoresis: page 164.
Midi-format vertical electrophoresis: page 175.
Protein standards: page 157.
QC colloidal Coomassie stain: page 199.
Image Lab software: page 293.

bio-rad.com/imaging

EXQuest[™] Spot Cutter Accessories

Accessories for the discontinued EXQuest systems are still available and include cutting tips and sheets, accessories, and calibration tools.



Ordering Information		
Catalog #	Description	
Accessories		
1657202	Cutting Tip, 1.0 mm	
1657203	Cutting Tip, 1.5 mm	
1657204	Glass Bottle, 1 L	
1657205	Calibration Pucks, 10	
1657206	Membrane Cutting Head, with 1.0 mm tip	
1657207	Membrane Cutting Tip, 1.0 mm	
1657208	Gel Cutting Sheets, 15	
1657209	Gel Holding Clips, 2 pair	
1657210	Calibration Target	
1657211	Camera Target	
1657212	Micro Tubes, 1.5 ml, 20	
1657214	Bottle Holder	
1657215	Gel Tray	
1657217	Round-Bottom Microplates, 96-well, 20	
1657218	Ferrule, 10–32, 1/16" OD, 10	
1657219	Barcode Reader	
1709630	PDQuest Advanced 2-D Analysis Software, 1 user license, 2-D analysis software provides advanced functionality	

Imaging Instruments Subject Index

Subject Index

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Imaging and Analysis Software

Imaging and Analysis Software Overview	
Gel Analysis Software	293

Imaging and Analysis Software Overview

See Also

Imaging systems: page 280. Bio-Plex Manager software: page 302. Microplate Manager software: page 331. Bio-Rad offers stand-alone software across a range of laboratory needs for image acquisition, image and data analysis, and data management. Software for 1-D and 2-D image analysis includes advanced tools to obtain the best image data possible. Built-in quick guides and software wizards enable you to optimize images and generate printed copies quickly and easily. Advanced software tools for pattern recognition and trend analysis utilize image and other data for optimal results. Image acquisition software runs in a Windows or Macintosh environment and has easy-to-use graphical interfaces with standard dropdown menus, toolbars, and keyboard commands. File formats and menu commands are shared across programs, allowing easy switching between applications.

For information on instrument specific software, refer to the appropriate instrument section of this catalog.

For More Information

Web: bio-rad.com/imageanalysisSW Request or download bulletin: 6126

Software Application Guide

	Gel Ar	nalysis
	Image Lab [™] , page 293	PDQuest [™] , page 294
Image acquisition	•	_
Automated analysis	•	•
Automated imaging and analysis	•	-
1-D gel analysis	•	-
Dot/slot blot analysis	•	-
2-D gel analysis	—	•
Image stacking*	-	•
Integrated gel excision (spot cutting)	-	•
U.S. FDA 21 CFR Part 11 compliance tools	•	•

* Image stacking is available in PDQuest Advanced software only.

Gel Imaging and Analysis Software System Minimum Requirements

Component	Image Lab 5.2	PDQuest
Operating system	Windows 7 (32- and 64-bit)/Windows 8 (64-bit), Mac OS X 10.9 Note: GS-900 is not compatible with Mac	Win XP Pro SP3 Win 7 (32-bit) Mac OS X 10.4, 10.5
Processor	Intel Core i3 or equivalent	Intel 2.0 GHz; Pentium 4, dual core or better (Windows) Power PC (Mac)
Hard disk space	60 GB	Minimum >20 GB; recommend ≥100 GB
System memory (RAM)	4 GB	Minimum 1 GB; recommend ≥2 GB
Screen resolution	1280 x 1024 or higher; 128 MB video RAM	1280 x 1024 or higher; 128 MB video RAM
USB port	1 free USB 2.0 port	1 free USB 2.0 port

Gel Analysis Software

Image Lab[™] Software

Image Lab image acquisition and analysis software runs the Gel Doc[™] EZ, Gel Doc XR+, ChemiDoc[™] XRS+, ChemiDoc Touch, and ChemiDoc MP imaging systems as well as the GS-900[™] calibrated densitometer. After the sample is loaded, an automated wizard helps capture an optimized gel or blot image, analyzes the gel or blot, and produces a comprehensive report in seconds. Image Lab software includes tutorials and requires no previous imaging experience to produce optimum gel and blot images. U.S. FDA 21 CFR Part 11 compliance is available with Image Lab Security Edition software.

Automated Workflow

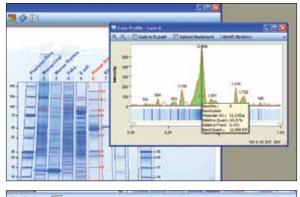
- Executes preprogrammed and user-created protocols to perform from image capture, analysis, and printed reports with a single click of the mouse
- Simplifies and optimizes imaging and analysis to save time
- Ensures that workflows are reproducible

System Optimization at Setup

- Selects the optimum detection conditions for the sample stain, label, or light-emitting reaction
- Uses proprietary algorithms to calibrate the system for automatic focus at any zoom level and automatic correction of imaging artifacts
- Performs flat fielding corrections specifically and consistently for every application
- · Generates accurate data and publication-quality images

Automated or Manual Data Analysis

- Automatically performs all the image analysis steps; can be user-modified for more precise band detection, control of background level, and lane selection
- Results table is instantly updated when experimental parameters are changed
- Offers optional manual image analysis adjustments by the user in every step



ter t				
Ravel No.	 Export analysis 	table to Excel	Kelaitve Frank	Relative Quert. (%)
a management of the state	4	178.0	0.096	1.5
	2	136.3	0.578	3.1
	3	84.9	0.267	2.8
	14	79.4	0.341	8.1
	- 5	51.2	8.475	60.6

Data analysis and reporting.

 Displays MW (or base pair) values and presents a quantitative comparison to evaluate sample purity and identify sample components for all bands and lanes

Customized Data Tables, Reports, and Visuals

- Generates a customized data table with all sample information organized lane by lane and band by band each time a data analysis is performed or modified
- Copies any part of a data table to popular document processing applications such as Adobe Acrobat, Microsoft Word, or Microsoft Excel
- Saves reports within customized protocols designed by the user
- Provides multiple tools for displaying, viewing, and annotating images. Provides various file formats for exporting images for publications and presentations.

For More Information Web: bio-rad.com/imagelabsoftware

Ordering Information

Catalog #	Description
1709690	Image Lab Software, compatible with PC or Mac, for automated image capture, optimization, and 1-D gel or blot analysis, for use with Gel Doc EZ, Gel Doc XR+, ChemiDoc XRS+, ChemiDoc Touch, ChemiDoc MP, and GS-900 systems
1709691	Image Lab Software, Security Edition for 21 CFR Part 11 compliance, 1 license
1709692	Image Lab Software, Security Edition for 21 CFR Part 11 compliance, 5 licenses
1709693	Image Lab Software, Security Edition for 21 CFR Part 11 compliance, 10 licenses

See Also

2-D electrophoresis: page 202. PROTEAN 112 IEF system: page 202. Second-dimension electrophoresis systems: pages 151, 202. 2-D buffers and reagents: page 208.

PDQuest[™] 2-D Analysis Software, Version 8.0

PDQuest software offers comprehensive and flexible 2-D gel analysis. Choose PDQuest Basic software for simple 2-D gel analysis or PDQuest Advanced software for comprehensive functionality used in 2-D gel-based expression proteomics studies. Whether you choose the basic or advanced version, the sophisticated analysis tools reveal subtle differences among 2-D gels. Powerful auto-matching algorithms quickly and accurately match gels with little or no manual intervention.

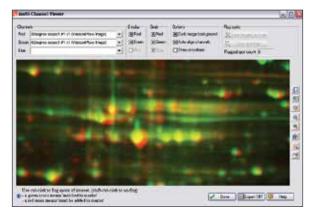
Ease of Use

- User-friendly, application-directed user interface
- Quick guides and wizards simplify the workflow through the major applications of the software, from image acquisition to output of analyzed data and spot cutting
- Onscreen, context-sensitive help
- Right-click menus for quick access to common commands
- True multiplatform files for PC and Mac
- TIFF file import; TIFF and JPEG file export

Image Optimization and Visualization

- Adjustment of brightness, contrast, and image filtering
- Full incremental image rotation
- Color palette for realistic color representation
- Multichannel merging of up to 3 images in independent color channels — allows convenient viewing of merged data
- Viewing function for 3-D modeling of any user-defined area of the gel (gel analysis software)
- Compatible with Win 7 32-bit and Win XP Pro SP3
 operating systems

New Experiment	
	Name the Experiment
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Setup Experiment	C My Documents Acrive files 1996s Treining
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Experiment wizards and image warping enable easy identification of differentially expressed proteins from 2-D gels.

Advanced Data Analysis

- Wide variety of statistical tools
- Comparative analysis
- Biological relationship models
- Comprehensive reports

Automation

- Repeatable analysis for samples of similar types
- Recallable templates
- Batch processing of multiple experiments

Information Repository

- Flexible annotation features
- Any type of characterizing data can be linked to each spot on a master gel image
- Easy to view and share information associated with identified proteins

Ordering Information

Data Security

- Compliance with U.S. FDA 21 CFR Part 11 regulations
- Options for network licenses

For More Information Web: bio-rad.com/pdquest Request or download bulletin: 3121

Ordering information	
Catalog #	Description
1709630	PDQuest Advanced 2-D Analysis Software
1709631	PDQuest Advanced 1-User Network License
1709632	PDQuest Advanced 2-User Network License
1709633	PDQuest Advanced 3-User Network License
1709635	PDQuest Advanced 5-User Network License
1709636	PDQuest Advanced 10-User Network License
1709640	PDQuest Basic to Advanced Software Version Upgrade
1709645	PDQuest Advanced CFR Module
1709620	PDQuest Basic 2-D Analysis Software
1709660	PDQuest Basic Software Version Upgrade, 7.x-8.0
1709670	PDQuest Advanced Software Version Upgrade, 7.x-8.0

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Bio-Plex[®] Multiplex System

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Bio-Plex® Multiplex System

The Bio-Plex multiplex platform is built on the most flexible technology available. Bio-Rad offers instruments to satisfy a variety of research needs and budgets for multiplex applications. These readers include the versatile Bio-Plex 200 system and the high-throughput capacity Bio-Plex 3D suspension array system.

Learn More about the Technology Web: bio-rad.com/tech/bio-plex

Instruments, Software, and Tools

Bio-Plex	System	Selection	Guide
DIO-FIEX	System	Selection	Guiue

	Bio-Plex 200	Bio-Plex 3D
Features	Versatile — accommodates multiple users Flexible — can read both magnetic and nonmagnetic assays One acquisition and analysis software package User-friendly data management	Meets high-throughput needs Optimal for labs with fewer budget restrictions Offers robotics interfacing
Read time (1 x 96-well plate)	~45 min	~20 min
Plate compatibilities	96-well	96- and 384-well
Number of measurable analytes/well	100	500
Assay compatibility	All magnetic and nonmagnetic (polystyrene) bead-based assays	Most magnetic and all nonmagnetic (polystyrene) bead-based assays
Acquisition software	Bio-Plex Manager	XPONENT
Analysis software	Bio-Plex Manager and Bio-Plex Data Pro	Bio-Plex Manager and Bio-Plex Data Pro
Robotics and LIMS/LIS compatible	_	Yes*
On-site training	Included	Included
Footprint (W \times D \times H)	16.9 x 20.1 x 9.1" (43 x 51 x 23 cm)	23 x 25.7 x 18" (58.4 x 65.3 x 45.7 cm)

* Included in xPONENT automation module.

Bio-Plex® 200 System

The Bio-Plex 200 system integrates xMAP suspension array technology with a reliable instrument, dedicated software, and validation tools. The system includes:

- Array reader distinguish up to 100 different color-coded bead sets, each representing a different assay. Results in up to 9,600 data points in 45 min from a familiar 96-well format
- Optional high-throughput fluidics (HTF) delivers up to 20 L of sheath fluid (40 plates) without user intervention
- Bio-Plex MCV plate IV customized for hands-free startup, shutdown, and performance testing
- Bio-Plex Manager[™] software controls the instrument, data acquisition, and analysis (Standard and Security Editions)

Time-saving features include:

- Simplified startup, shutdown, control, and pre- and post-run maintenance routines
- Sophisticated analysis and instrument control software
- Automated IQ/OQ



- Integrated system validation and calibration logs for a record of system performance
- Superior curve fitting, statistics reporting, and charting features
- Calibration capabilities for both broad and low range standard dilutions

For More Information Web: bio-rad.com/bio-plex200 Request or download bulletin: 6006

Ordering Inf	Ordering Information		
Catalog #	Description		
171000201	Bio-Plex 200 System, 100–240 V, includes array reader, microplate platform, Bio-Plex Manager software with workstation license, PC, monitor, calibration kit, validation kit 4.0, MCV plate IV, Bio-Plex reservoir,		
	20 L sheath fluid, spare sample needle		
171000205	Bio-Plex 200 System with HTF, same as #171000201 with high-throughput fluidics (HTF)		
Bio-Plex 200	Accessories and Replacement Parts		
171203050	Bio-Plex Reservoir		
171000055	Sheath Fluid, 1x, 20 L		
171002002	Communication Cable, 3' CAN BUS cable, connects the array reader with the HTF system		
171002003	Communication Cable, 5' USB cable, connects the array reader with a PC USB port		
171002010	Sheath Fluid Bottle, 1 L		
171002012	Sheath Waste Bottle, 1 L		
171002020	Sample Needle, 4.6" (11.6 cm)		
171002024	Alignment Guide, aligns the array reader on the microplate platform		
171002026	Needle Adjustment Wrench		
171002030	Protective Shield for Sample Needle		
171002032	Air Intake Filter		
171002033	Syringe Seal		
171002034	Syringe Seal with Cylinder		
171002038	Sheath Fluid Filter with Quick Connect Tubing, removes particles >5 µm in diameter		
171002040	Sheath Cube Filter, pkg of 1, air tubing HTF to reader, sheath tubing HTF to reader, tubing sheath container to HTF (including 10 μm filter), and waste tubing (reader to waste container)		
171002056	HTF Tubing, pkg of 1, air tubing HTF to reader, sheath tubing HTF to reader, tubing sheath container to HTF		
	(including 10 μm filter), waste tubing (reader to waste container)		
171002023	Needle Guide, allows sample needle access to microplates		
Bio-Plex 200	System Performance Validation and Calibration Tools		
171203001	Bio-Plex Validation Kit 4.0, includes optics validation, reporter validation, classify validation, and		
	fluidics validation bead sets for approximately 50 validation routines using Bio-Plex Manager software,		
171002022	current version (Standard or Security Edition), and MCV plate IV		
171203033	Bio-Plex MCV Plate IV, for use with Bio-Plex Manager software, current version (Standard or Security Edition), and validation kit 4.0		
171203060	Bio-Plex Calibration Kit, includes Cal1 and Cal2 calibration beads for approximately 50 daily calibration routines		

Bio-Plex[®] 3D Multiplex System

The Bio-Plex 3D multiplex system is the next-generation multiplexing platform based on xMAP technology. Expanded multiplexing capability, faster time to results, and automation capability make it the platform of choice for high-throughput testing for nucleic acid and protein applications.

Features include:

- Rapid read times twice as fast as with the Bio-Plex 200 system
- Measurement of up to 500 unique analytes in a single sample
- 96- and 384-well plate capability
- Laboratory information system (LIMS/LIS)-compatible software
- Automation-compatible tray design and software
- Robotics interfacing capabilities
- Compatibility with magnetic or nonmagnetic assays
- Bio-Plex Manager[™] software for data analysis
- On-site training

For More Information Web: bio-rad.com/bio-plex3D Request or download bulletins: 5967 and 5980



Bio-Plex 3D Suspension Array System with Bio-Plex Manager Software

System Throughput Capabilities

Test (50 µl well volume,		
2,500 beads/well)	Read Time*	Tests/Hr
96-well (100-plex)	18 min	32,000
384-well (100-plex)	1 hr 15 min	30,700
96-well (500-plex)	45 min	64,000
384-well (500-plex)	2 hr 15 min	85,000

* Read times measured across four instruments. Actual results may vary.

Ordering Information		
Catalog #	Description	
BioPlex3D	Bio-Plex 3D Multiplex System, includes Bio-Plex 3D multiplex system, xPONENT acquisition software, PC, calibration and verification reagents, Bio-Plex Manager desktop license	
892018500001*	xPONENT 21 CFR Part 11 Software Module, enables U.S. FDA 21 CFR Part 11 compliance	
892018700001*	xPONENT Automation Module, enables interfacing with robotics workstations	
171022001*	Swivel Base, allows rotation of the instrument away from the robotics workstation for maintenance and sample loading	
892018600001*	xPONENT LIS Software Module, enables interfacing with LIMS/LIS databases	
892018200001*	xPONENT Extra Seat Licenses, 3 additional seats of xPONENT software	
FM3D-CAL-K25	Bio-Plex 3D Calibration Kit, good for 25 uses; includes reagents, CD, 25 stripwells	
FM3D-PVER-K2	5 Bio-Plex 3D Performance Verification Kit, good for 25 uses; kit includes reagents, fluidics, CD, 25 stripwells	
* All additional ac	cessories may be purchased through Bio-Rad Laboratories, Inc. at the time of system purchase.	

Post-system purchase accessories must be purchased directly from Luminex Corporation.

Instruments, Software, and Tools

Bio-Plex[®] MAGPIX[™] Multiplex Reader Accessories and Software

Catalog #	Description
Kits and Rea	gents
71213003	Bio-Plex MAGPIX Drive Fluid, 4 x 700 ml drive fluid for use with Bio-Plex MAGPIX multiplex reader
71213001	Bio-Plex MAGPIX Calibration Kit, calibration kit good for 25 uses; kit includes 5 ml calibrator, microspheres, CD, pkg of 25 8-well strips
71213002	Bio-Plex MAGPIX Verification Kit , verification kit good for 25 uses; kit includes MAGPIX verifier, 5 ml of microspheres, MAGPIX fluidics 1, MAGPIX fluidics 2, MAGPIX performance verification kit CD, pkg of 25 8-well strips
Bio-Plex MA	APIX Software
71051555	Bio-Plex Manager MP Software Upgrade, includes Bio-Plex Manager MP software, getting started guide, probe height adjustment plate, upgrade quick guide, and Bio-Plex Manager 6.1
Bio-Plex MA	APIX Accessories
71012004	Bio-Plex MAGPIX Replacement Waste Fluid Container, pkg of 1, 850 ml container, holds waste fluid, for use with Bio-Plex MAGPIX reader
71012005	Bio-Plex MAGPIX Sample Probe, sample probe needle for use with Bio-Plex MAGPIX multiplex reader
71012006	Bio-Plex MAGPIX Sample Probe Height Adjustment Kit, sample probe height adjustment kit for use with Bio-Plex MAGPIX multiplex reader
71012008	Bio-Plex MAGPIX 96-Well Plate Heater Block, 96-well plate heater block for use with Bio-Plex MAGPIX multiplex reader
80034376	Bio-Plex Pro Wash Station, for magnetic bead-based assays, includes magnetic plate carrier, waste bottle, 2 liquid bottles
71020100	Bio-Plex Handheld Magnetic Washer, includes magnetic washer and adjustment hex tools for use in manual wash steps for all Bio-Plex magnetic assays
71061000	Bio-Plex Probe Height Adjustment Plate, replacement plate for Bio-Plex MAGPIX multiplex reader

Bio-Plex Pro[™] Washing Accessories

Automated Bio-Plex Pro Wash Station

The Bio-Plex Pro wash station streamlines multiplex assays by eliminating manual wash steps. Bio-Plex Pro wash stations help decrease variability and increase consistency in results between experiments and are specifically designed to perform Bio-Plex assay wash steps. Benefits include:

- Reliable and reproducible results
- Optimized onboard protocols
- Simple ELISA-like workflow

The Bio-Plex Pro wash station incorporates a magnetic plate carrier for simple and reliable hands-free washing of 96-well plates.

Wash stations include preset wash programs that have been optimized for Bio-Plex assays.

Bio-Plex Handheld Magnetic Washer

The Bio-Plex handheld magnetic washer is used in manual wash steps for all Bio-Plex magnetic assays.





Instruments, Software, and Tools

bio-rad.com/bio-plex

Ordering Information		
Catalog #	Description	
30034376	Bio-Plex Pro Wash Station, includes magnetic plate carrier, waste bottle, 2 buffer bottles for use with magnetic beads	
171020100	Bio-Plex Handheld Magnetic Washer, includes magnetic washer and adjustment hex tools for washing all Bio-Plex magnetic assays	
Accessories		
171025001	Bio-Plex Pro Flat Bottom Plates, 40 x 96-well plates, for washing magnetic beads using the Bio-Plex Pro or Bio-Plex Pro II wash stations	
171304500	Bio-Plex Wash Buffer, 1.5 L	
171304502	Filter Plate, 1 x 96-well filter plate with clear plastic lid, plate holder tray, for washing nonmagnetic beads using the Bio-Plex Pro II wash station, optional vacuum manifold; sealing tape not included	

Bio-Plex Manager[™] Software, Standard Edition

Bio-Plex Manager software is a comprehensive, all-in-one software package that provides advanced data analysis for multiplex assays.

Simple Operation

- Ability to self train just follow the steps outlined on the screen
- Familiar Windows interface no new terms or menus to learn

Save Time

- Simplified input values for standards are easy to enter; automatic addition of new lots reduces setup time
- Automated data processing proprietary algorithm automatically sets the appropriate dynamic range and identifies data points outside this range
- Immediate recalculation of results efficiently updates data when settings are changed

Use Tools That Meet Your Unique Needs

- Superior sensitivity and dynamic range with onboard Brendan Scientific StatLIA 4PL and 5PL weighted curve-fitting models
- Data normalization using multiple internal controls (housekeeping genes) for gene expression applications
- Gene Manager analysis module for presence and absence analysis, pathogen detection, and genotyping applications

Analyze Data with Easy-to-Use Reports

- Automated export of standard curve graphs
- View of all wells or summary (average) of replicate samples
- Data organized by sample type, group, or well
- One-click navigation between analytes
- Flexible data presentation

Data Export, Cross-Platform Capabilities, and System Compatibility

- Import and analyze data from xPONENT and other third-party software
- Use any commercial or custom xMAP assay built on any Luminex microsphere
- Copy and paste data into popular word processing and presentation software applications
- Export to text, XML, and Excel in column or 96-well format
- Analyze data in LIMS and other third-party software by customizing export options
- Request Bio-Plex Manager 4.1.1 software for installation on Luminex systems with IS 2.3 software

Bio-Plex Manager Software Licenses

Capabilities and Uses
Full-system, data acquisition and analysis; included with all Bio-Plex 200 systems
Single-user license for protocol setup and data analysis; does not control the array reader
Multiuser (5, 10, 25, or 50) licenses for data access from a server; does not control the array reader
Enables U.S. FDA 21 CFR Part 11 compliance

System Requirements

CPU	Pentium 4 or higher, PC only
Operating system	Windows XP Professional, Windows 7

For More Information

Web: bio-rad.com/bio-plexmanager Request or download bulletin: 5613

bio-rad.com/bio-plex

Ordering Information		
Catalog #	Description	
171STND01	Bio-Plex Manager Software, 1-user desktop license, to analyze Bio-Plex data and generate protocols, does not operate the instrument	
171STND05	Bio-Plex Manager Software, 5-user desktop license to analyze Bio-Plex data and generate protocols, does not operate the instrument	
171STND10	Bio-Plex Manager Software, 10-user desktop license to analyze Bio-Plex data and generate protocols, does not operate the instrument	
171STND25	Bio-Plex Manager Software, 25-user desktop license to analyze Bio-Plex data and generate protocols, does not operate the instrument	
Contact Bio-R	ad Technical Support to verify whether your current system is compatible with these software products.	

Bio-Plex Manager[™] Software Conversions and Upgrades

Bio-Plex Manager software conversions and upgrades allow you to upgrade previous versions of Bio-Plex Manager or convert non Bio-Plex[®] systems to run like a Bio-Plex 200 system.

- Preprogrammed routine processes automate startup, calibration, validation, run, and shutdown
- Unattended routine operations program preand post-run maintenance operations to save time

Ordering Information

•	
Catalog #	Description
171STND23	Bio-Plex Manager Software for IS 2.3 System, system license, most current version, for converting Luminex IS and xPONENT systems
171SUPG30	Bio-Plex Manager Software for 3.0 Instrument Control Software, system license for upgrading standard or security software version 3.0 to current Bio-Plex Manager version (Security Edition upgrade requires #171SCRT00)
171SUPG40	Bio-Plex Manager Software for 4.0 Instrument Control Software, system license for upgrading the standard or security software version 4.0 to current Bio-Plex Manager version (Security Edition upgrade requires #171SCRT00)
171SUPG41	Bio-Plex Manager Software for 4.1 Instrument Control Software, system license for upgrading the standard or security software version 4.1 to current Bio-Plex Manager version (Security Edition upgrade requires #171SCRT00)
171SUPG50	Bio-Plex Manager Software for 5.0 Instrument Control Software, system license for upgrading the standard or security software version 5.0 to current Bio-Plex Manager version (Security Edition upgrade requires #171SCRT00)

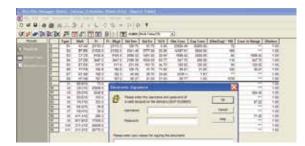
Bio-Plex Manager[™] Software, Security Edition

Includes all Standard Edition software features and has builtin security features for U.S. FDA 21 CFR Part 11 compliance:

- Control user log-in with different user levels for access to different functions
- Audit trails
- Secure protocol and data files
- Secure databases for reporting of calibration, validation, and instrument operations

For More Information

Web: bio-rad.com/bio-plexmanager Request or download bulletin: 5613



Electronic signature window allows you to bring documents into a secure environment.

Ordering Information

Catalog #	Description
171SCRT00	Bio-Plex Manager Instrument Control License, Security Edition, upgrades workstation with
	Bio-Plex Manager software, allows compliance with U.S. FDA 21 CFR Part 11 regulations
171SCRT01	Bio-Plex Manager Software, Security Edition desktop, includes 1-user desktop license,
	allows compliance with U.S. FDA 21 CFR Part 11 regulations. Does not operate the instrument.
171SCRT05	Bio-Plex Manager Software, Security Edition desktop, includes 5-user network license,
	allows compliance with U.S. FDA 21 CFR Part 11 regulations. Does not operate the instrument.

Contact Bio-Rad Technical Support to verify whether your current system is compatible with these software products.

Bio-Plex Data Pro[™] Software

Bio-Plex Data Pro software simplifies the management and analysis of large datasets generated from multiplex assays. The software allows up to ten data file imports per project; optional Bio-Plex Data Pro Plus software is available for projects with more than ten data file imports.

Organize Data

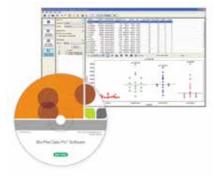
· Merge, import, sort, and filter data from multiple datasets

Automate Calculations

 Perform common calculations and statistical tests quickly and confidently

Visualize Results

Present data clearly with customized graphs and tables



For More Information and to Download a Free Trial Web: bio-rad.com/datapro

Ordering Info	Ordering Information		
Catalog #	Description		
171001523	Bio-Plex Data Pro Plus Software, includes 5 Bio-Plex Data Pro Plus software licenses		
171001513	Bio-Plex Data Pro Software, includes 5 Bio-Plex Data Pro software licenses		

Bio-Plex® Assays

Bio-Plex Pro[™] Human MMP and TIMP Assays

The Bio-Plex Pro assays for human matrix metalloproteinases (MMPs) and tissue inhibitors of matrix metalloproteinases (TIMPs) consist of panels of 9 MMPs and 4 TIMPs.

MMPs degrade extracellular matrix proteins, whereas TIMPs work to inhibit the activity of MMPs. Studying MMPs and TIMPs together can reveal disruptions in the balance of activity between these two protein families, providing insights into complex disease states.

These immunoassays are built on magnetic beads to enable robust quantification of multiple proteins in human samples for research involving the following conditions and disease pathways:

Associated Research	Associated Pathways
Cancer	Inflammation
Cardiovascular disease	Metastasis
Infectious disease	Apoptosis
Autoimmune disease	Angiogenesis
Neurology	Tumor invasion
	Wound healing

Product features include:

- Single dilution factor protocol, measure 9 MMPs with less work
- Magnetic beads for simplified plate processing
- Flexible ordering options order either premixed all-in-one kits or singleplex sets, or customize your assay with the Bio-Plex assay builder (bio-rad.com/assaybuilder)
- Single-level quality controls with lot-specific ranges
- Assay quick guide to get you started right away
- High-quality design for robust and reproducible measurements

For More Information

Web: bio-rad.com/bio-plexmmpsandtimps Request or download bulletin: 6551

Analytes in the MMP Panel	Analytes in the TIMP Panel
MMP-1	TIMP-1
MMP-2	TIMP-2
MMP-3	TIMP-3
MMP-7	TIMP-4
MMP-8	
MMP-9	
MMP-10	
MMP-12	
MMP-13	

Catalog #	Description		
BioPlex Pro H	uman MMP and TIMP Premixed All-in-0	One Kits	
171AM001M	Bio-Plex Pro Human MMP Panel 9-Ple detection antibodies, standards, quality of HB, assay buffer, wash buffer, streptavidi detection of MMP-1, MMP-2, MMP-3, MI	controls, detection antibody diluent l in-PE, 96-well flat bottom plate, sea	HB, standard diluent HB, sample diluent ling tape, and instructions, for the
171AM002M	Bio-Plex Pro Human TIMP Panel 4-Ple detection antibodies, standards, quality of buffer, streptavidin-PE, 96-well flat bottor TIMP-3, and TIMP-4	controls, detection antibody diluent I	HB, diluent HD, assay buffer, wash
Bio-Plex Pro I	MMP Singleplex Sets		
171BM001M	MMP-1 Set	171BM006M	MMP-9 Set
171BM002M	MMP-2 Set	171BM007M	MMP-10 Set
171BM003M	MMP-3 Set	171BM008M	MMP-12 Set
171BM004M	MMP-7 Set	171BM009M	MMP-13 Set
171BM005M	MMP-8 Set		
Standards			
171DM0001	MMP Standard, 1 pkg of 1 vial, lyophilize MMP-8, MMP-9, MMP-10, MMP-12, and	,	/MP-1, MMP-2, MMP-3, MMP-7,
171DM0501	MMP Standard, pkg of 50 lot-matched MMP-3, MMP-7, MMP-8, MMP-9, MMP-		rd analytes: MMP-1, MMP-2,

Bio-Plex Pro RBM Human Metabolic and Hormone Panels

bio-rad.com/bio-plex

Bio-Plex Pro[™] RBM Human Metabolic and Hormone Panels

The Bio-Plex Pro RBM human metabolic and hormone panels, developed in partnership with Myriad RBM[®], comprise a highly relevant set of biomarkers involved in diabetes, obesity, metabolic syndrome, cardiovascular disease, and hormonal control of metabolism and reproductive organs.

The assays are built on magnetic beads to enable robust quantification of multiple proteins in human serum, plasma, and cell culture media samples. Assays are offered as premixed all-in-one kits for research involving:

- Gut hormones and adipokines
- Pituitary hormones
- Diabetes, type I and type II
- Metabolic syndrome
- Obesity
- Cardiovascular disease
- Inflammation

Key features include:

- Analytically validated to standards set forth by the Clinical Laboratory Standards Institute (CLSI)
- Manufactured in accordance with GMP guidelines
- Lot-to-lot correlation specification of R² ≥ 0.9 for consistently reproducible results
- 2-level quality controls with lot-specific ranges
- Assay quick guide to get you started right away
- Fastest available assay protocols and a convenient all-in-one kit format
- Magnetic beads for simplified plate processing

For More Information

Web: bio-rad.com/bio-plexmetabolic Request or download bulletin: 6571

The Bio-Plex Pro RBM human metabolic and hormone assays are available in 7 panels:

Human Metabolic Panel 1	Human Metabolic Panel 2	Human Metabolic Panel 3	Human Metabolic Panel 4	Human Hormone Panel 1	Human IGFBP Panel	Human IGF Panel
C-Peptide	FGF-21	AAT	ANGPTL3	FSH	IGFBP-1	IGF-1
Cortisol	FGF-23	AGP-1	Chemerin	GH	IGFBP-2	IGF-2
Pancreatic polypeptide	Galectin-3	Hemopexin	DPP4	LH	IGFBP-3	
Proinsulin	sLeptin R	RBP-4	Protein S	Prolactin	IGFBP-4	
Peptide YY	Omentin-1	Transferrin	SEPP	TSH	IGFBP-5	
	Pentraxin-3	Transthyretin			IGFBP-6	
	PON-1	VDBP			IGFBP-7	
	Vaspin					

Ordering Information

Catalog #	Description	
Human Metal	polic Premixed All-in-One Kits	
171AMR1CK	Bio-Plex Pro RBM Human Metabolic Panel 1 , 1 x 96-well, includes premixed magnetic capture beads and detection antibodies, standards, 2-level controls, standard diluent, buffers (blocking, sample dilution, and 10x assay), 10x streptavidin-PE, flat bottom plate/seals, and instructions, for the detection of C-Peptide, cortisol, pancreatic polypeptide, proinsulin, and peptide YY	
171AMR2CK	Bio-Plex Pro RBM Human Metabolic Panel 2 , 1 x 96-well, includes premixed magnetic capture beads and detection antibodies, standards, 2-level controls, standard diluent, buffers (blocking, sample dilution, and 10x assay), 10x streptavidin-PE, flat bottom plate/seals, and instructions, for the detection of FGF-21, FGF-23, galectin-3, sLeptin R, omentin-1, pentraxin-3, PON-1, and vaspin	
171AMR3CK	Bio-Plex Pro RBM Human Metabolic Panel 3 , 1 x 96-well, includes premixed magnetic capture beads and detection antibodies, standards, 2-level controls, standard diluent, buffers (blocking, sample dilution, and 10x assay), 10x streptavidin-PE, flat bottom plate/seals, and instructions, for the detection of AAT, AGP-1, hemopexin, RBP-4, transferrin, transthyretin, and VDBP	
		continue

continues

bio-rad.com/bio-plex

Ordering Info	Ordering Information			
Catalog #	Description			
171AMR4CK	Bio-Plex Pro RBM Human Metabolic Panel 4, 1 x 96-well, includes premixed magnetic capture beads and detection antibodies, standards, 2-level controls, standard diluent, buffers (blocking, sample dilution, and 10x assay), 10x streptavidin-PE, flat bottom plate/seals, and instructions, for the detection of ANGPTL3, chemerin, DPP4, protein S, and SEPP			
171AHR1CK	Bio-Plex Pro RBM Human Hormone Panel 1, 1 x 96-well, includes premixed magnetic capture beads and detection antibodies, standards, 2-level controls, standard diluent, buffers (blocking, sample dilution, and 10x assay), 10x streptavidin-PE, flat bottom plate/seals, and instructions, for the detection of FSH, GH, LH, prolactin, and TSH			
171AGR1CK	Bio-Plex Pro RBM Human IGFBP Panel , 1 x 96-well, includes premixed magnetic capture beads and detection antibodies, standards, 2-level controls, standard diluent, buffers (blocking, sample dilution, and 10x assay), 10x streptavidin-PE, flat bottom plate/seals, and instructions, for the detection of IGFBP-1, IGFBP-2, IGFBP-3, IGFBP-4, IGFBP-5, IGFBP-6, and IGFBP-7			
171AFR1CK	Bio-Plex Pro RBM Human IGF panel , 1 x 96-well, includes premixed magnetic capture beads and detection antibodies, standards, 2-level controls, standard diluent, buffers (blocking, sample dilution, and 10x assay), 10x streptavidin-PE, flat bottom plate/seals, and instructions, for the detection of IGF-1 and IGF-2			

Bio-Plex Pro[™] Human Inflammation Assays

The Bio-Plex Pro human inflammation assays consist of 37 assays for biomarkers associated with inflammation pathways and consist of a 37-plex, 24-plex, and Treg cytokine 12-plex assay and 37 singleplex sets that can be combined for a custom multiplex kit.

The assays are built on magnetic beads to enable robust quantification of multiple proteins in human serum, plasma, and cell culture media samples. These assays are perfect for broad research applications, including academic and preclinical studies in:

- Inflammation
- Autoimmune diseases
- Cancer research

The Bio-Plex Pro human inflammation panel includes the following targets:

	•		
APRIL / TNFSF13	sIL-6Rα	IL-27 (p28)	Osteocalcin
BAFF / TNFSF13B	IL-8	IL-28A / IFN-λ2	Osteopontin
sCD30 / TNFRSF8	IL-10	IL-29 / IFN-λ1	Pentraxin-3
sCD163 Set	IL-11	IL-32	sTNFR-1
Chitinase 3-like 1	IL-12 (p40)	IL-34	sTNFR-2
gp130 / sIL-6Rβ	IL-12 (p70)	IL-35	TSLP
IFN-α2	IL-19	LIGHT / TNFSF14	TWEAK / TNFSF12
IFN-β	IL-20	MMP-1	
IFN-γ	IL-22	MMP-2	
IL-2	IL-26	MMP-3	

Key features include:

- Reproducibility validated to meet analytical standards
- Reliability lot-to-lot calibration with low variability
- Speed to results Up to 1,480 data points in 4 hours
- Flexible ordering options order either premixed all-in-one kits or singleplex sets, or customize your assay with the Bio-Plex assay builder (bio-rad.com/assaybuilder)

For More Information

Web: bio-rad.com/bio-plexhumaninflammation Request or download bulletin: 6625

Bio-Plex Pro Human Inflammation Assays

Catalog #	Description				
BioPlex Pro H	luman Inflammation Premixed All-in-One	Kits			
171AL001M Bio-Plex Pro Human Inflammation Panel 1, 37-Plex, 1 x 96-well, includes coupled magnetic beads, detection					
	antibodies, standards, control, buffers, diluents, streptavidin-PE, 96-well plate, and sealing tape, for the detection				
	of 37 human inflammation biomarkers				
171AL002M	Bio-Plex Pro Human Inflammation Panel 2, 24-Plex, 1 x 96-well, includes coupled magnetic beads, detection				
	antipodies, standards, control, buffers, diluents, streptavidin-PE, 96-well plate, and sealing tape, for the detection				
1714100014	of 24 human inflammation biomarkers				
171AL003M	Bio-Plex Pro Human Inflammation Treg detection antibodies, standards, control, bu				
	for the detection of 12 human Treg biomark		o-weil plate, and sealing tape,		
Bio-Pley Pro	Human Inflammation Singleplex Sets				
171BL001M	APRIL / TNFSF13 Set	171BL021M	IL-27 (p28) Set		
171BL001M	BAFF / TNFSF13B Set	171BL022M	IL-28A / IFN-λ2 Set		
171BL003M	sCD30 / TNFRSF8 Set	171BL023M	IL-29 / IFN-λ1 Set		
171BL004M	sCD163 Set	171BL024M	IL-32 Set		
171BL005M	Chitinase 3-like 1 Set	171BL025M	IL-34 Set		
171BL006M	gp130 / sIL-6Rβ Set	171BL026M	IL-35 Set		
171BL007M	IFN-α2 Set	171BL027M	LIGHT / TNFSF14 Set		
171BL008M	IFN-β Set	171BL028M	MMP-1 Set		
171BL009M	IFN-γ Set	171BL029M	MMP-2 Set		
171BL010M	IL-2 Set	171BL030M	MMP-3 Set		
171BL011M	sIL-6Rα Set	171BL031M	Osteocalcin Set		
171BL012M	IL-8 Set	171BL032M	Osteopontin Set		
171BL013M	IL-10 Set	171BL033M	Pentraxin-3 Set		
171BL014M	IL-11 Set	171BL034M	sTNFR-1 Set		
171BL015M	IL-12 (p40) Set	171BL035M	sTNFR-2 Set		
171BL016M	IL-12 (p70) Set	171BL036M	TSLP Set		
171BL017M	IL-19 Set	171BL037M	TWEAK / TNFSF12 Set		
171BL018M	IL-20 Set	171DL0001	Std, 1PK		
171BL019M	IL-22 Set	171DL0050	Std, 50PK		
171BL020M	IL-26 Set				
Standards					
171304090M	Bio-Plex Pro Reagent Kit III Flat Bottom	Plate, 1 x 96-well, includes dete	ction antibody diluent HB,		
	standard diluent HB, sample diluent HB, as		uffer, streptavidin-PE,		
	flat bottom plate, sealing tape, for magnetic				
171DL0001	Bio-Plex Pro Human Inflammation Panel	1, 37-Plex Standard, pkg of 1	vial lyophilized mixture of		
	37 standard analytes				
171DL0050	Bio-Plex Pro Human Inflammation Panel	1, 37-Plex Standard, pkg of 50) lot-matched vials,		
	lyophilized mixture of 37 standard analytes				

Bio-Plex Pro[™] Cytokine, Chemokine, and Growth Factor Assays

Bio-Plex Pro cytokine, chemokine, and growth factor assays are magnetic bead–based multiplex immunoassays offering accurate and reproducible measurements of multiple analytes simultaneously. These assays have been developed to provide reliable performance with the flexibility required to meet all of your research needs. Assays are available for human, mouse, or rat studies.

Key features includes:

- Magnetic beads automated plate washing and improved reproducibility across experiments
- Increased productivity measure multiple analytes simultaneously, get results in about 3 hours
- Flexible ordering options order either premixed all-in-one kits or singleplex sets, or customize your assay with the Bio-Plex assay builder (bio-rad.com/assaybuilder)
- Cross-platform compatibility can be used with all xMAP life science instruments supplied by any Luminex partner
- Convenient pathway panels Th17, Th1/Th2, and TGF- β available

For More Information Web: bio-rad.com/CCGFassays Request or download bulletins: 5828, 6054, 6100, and 6110

Human Assays

6Ckine / CCL21	IL-1α	IL-18	PDGF-BB
Basic FGF	IL-1β*	IP-10 / CXCL10*	RANTES
BCA-1 / CXCL13	IL-1ra	I-TAC / CXCL11	SCF
CTACK / CCL27*	IL-2*	LIF	SCGF-B
ENA-78 / CXCL5	IL-2Rα	MCP-1 / CCL2*	SCYB16 / CXCL16
Eotaxin / CCL11*	IL-3	MCP-2 / CCL8	SDF-1a
Eotaxin-2 / CCL24	IL-4*	MCP-3 / CCL7*	SDF-1a+B / CXCL12
Eotaxin-3 / CCL26	IL-5	MCP-4 / CCL13	TARC / CCL17
Fractalkine / CX3CL1	IL-6*	M-CSF	TECK / CCL25
GCP-2 / CXCL6	IL-7	MDC / CCL22	TGF-β1
G-CSF	IL-8 / CXCL8*	MIF*	TGF-β2
GM-CSF*	IL-9	MIG / CXCL9*	TGF-β3
Gro-α/CXCL1*	IL-10*	MIP-1a / CCL3*	TNF-α*
Gro-β / CXCL2	IL-12 (p40)	MIP-1β	TNF-β
HGF	IL-12 (p70)	MIP-18 / CCL15	TRAIL
I-309 / CCL1	IL-13	MIP-3a / CCL20	VCAM-1
ICAM-1	IL-15	MIP-3β / CCL19	VEGF
IFN-α2	IL-16*	MPIF-1 / CCL23	
IFN-γ*	IL-17A	β-NGF	

* Analyte is present in multiple panels. If multiplexing, select analytes from the same panel to avoid cross reactivity.

Bio-Plex Pro Cytokine, Chemokine, and Growth Factor Assays

bio-rad.com/bio-plex

Catalog #	Description				
	ne Premixed All-in-One Kits*				
M50000007A	Bio-Plex Pro Human Cytokine 8-Plex Par	nel, 1 x 96-well, includes couple	d magnetic beads, detection antibodies,		
	standards, assay buffer, wash buffer, detecti	ion antibody diluent, streptavidir	n-PE, flat bottom plate, sealing tape,		
	standard diluent, sample diluent, for the dete	ection of IL-2, IL-4, IL-6, IL-8, IL-10), GM-CSF, IFN-γ, TNF-α		
M5000031YV	Bio-Plex Pro Human Cytokine 17-Plex Pa	anel, 1 x 96-well, includes coup	led magnetic beads, detection		
	antibodies, standards, assay buffer, wash buffer, detection antibody diluent, streptavidin-PE, flat bottom plate,				
	sealing tape, standard diluent, sample diluer	nt, for the detection of IL-1 β , IL-2,	IL-4, IL-5, IL-6, IL-7, IL-8, IL-10,		
	IL-12 (p70), IL-13, IL-17, G-CSF, GM-CSF, IFN		, , , , , , ,		
MF0005KMII	Bio-Plex Pro Human Cytokine 21-Plex Pa		led magnetic beads, detection		
	antibodies, standards, assay buffer, wash bu		0		
	sealing tape, standard diluent, sample diluer				
	GRO- α , HGF, IFN- α 2, LIF, MCP-3, M-CSF, N				
M500KCAF0Y	Bio-Plex Pro Human Cytokine 27-Plex Pa				
	antibodies, standards, assay buffer, wash bu				
	sealing tape, standard diluent, sample diluer				
	IL-10, IL-12 (p70), IL-13, IL-15, IL-17, basic FGF.				
	· · · · · · · · · · · · · · · · · · ·	, eolaxin, G-CSF, Givi-CSF, IFIN-	γ , IF-10, MOF-1, MIF-1 α , MIF-1 β ,		
	PDGF-BB, RANTES, TNF-α, VEGF		alad magnetic baseds, detection		
M5000005L3	Bio-Plex Pro Human Cytokine Th1/Th2 P				
	antibodies, standards, assay buffer, wash bu				
	sealing tape, standard diluent, sample diluer	it, for the detection of IL-2, IL-4, I	L-5, IL-10, IL-12 (p/0), IL-13, GM-CSF,		
	IFN-γ, TNF-α				
Bio-Plex Pro H	uman Cytokine Singleplex Sets, Group I*	*, 1 x 96-Well			
171B5001M	IL-1β Set	171B5026M	TNF- α Set		
171B5002M	IL-1ra Set	171B5027M	VEGF Set		
171B5003M	IL-2 Set	171B6001M	IL-1α Set		
171B5004M	IL-4 Set	171B6002M	IL-2Rα Set		
171B5005M	IL-5 Set	171B6003M	IL-3 Set		
171B5006M	IL-6 Set	171B6004M	IL-12 (p40) Set		
171B5007M	IL-7 Set	171B6005M	IL-16 Set		
171B5008M	IL-8 Set	171B6006M	CTACK Set		
171B5009M	IL-9 Set	171B6007M	GRO- α Set		
171B5010M	IL-10 Set	171B6008M	HGF Set		
171B5011M	IL-12 (p70) Set	171B6009M	ICAM-1 Set		
171B5012M	IL-13 Set	171B6010M	IFN-α2 Set		
171B5013M	IL-15 Set	171B6011M	LIF Set		
171B5014M	IL-17A Set	171B6012M	MCP-3 Set		
171B5015M	Eotaxin Set	171B6013M	M-CSF Set		
171B5016M	Basic FGF Set	171B6014M	MIF Set		
171B5017M	G-CSF Set	171B6015M	MIG Set		
171B5018M	GM-CSF Set	171B6016M	β-NGF Set		
171B5019M	IFN-γ Set	171B6017M	SCF Set		
171B5020M	IP-10 Set	171B6018M	SCGF-β Set		
171B5021M	MCP-1 Set	171B6019M	SDF-1a Set		
171B5022M	MIP-1α Set	171B6020M	TNF-β Set		
171B5023M	MIP-1β Set	171B6021M	TRAIL Set		
171B5024M	PDGF-BB Set	171B6022M	VCAM-1 Set		
171B5025M	RANTES Set				
NOTE: IL-18 IS av	ailable only in multiplex format.				
Standards					
171D50001	Bio-Plex Pro Human Cytokine Standards	, pkg of 1 vial, lyophilized mixtur	e of 48 analytes		
171D10501	Bio-Plex Pro Human Cytokine Standards,	pkg of 50 lot-matched vials, lyop	hilized mixture of 48 analytes		
Reagent Kit -	for use with human cytokine singleplex s				
171304070M	Bio-Plex Pro Reagent Kit with Flat Bottor		t bottom plate, assay buffer		
	wash buffer, detection antibody diluent, strep				
	and instructions, for magnetic separation me		ard andone, bampio andone,		
	t your local Bio-Rad Sales Representative for p		-well assay kits		
Flease contac	· · · ·	0 ,	,		
	led magnetic beads and detection antibody. R				

continues

bio-rad.com/bio-plex

Catalog #	Description				
Human Th17	Premixed All-in-One Kit	· · · · · · · · · · · · · · · · · · ·			
171AA001M	Bio-Plex Pro Human Th17 Cytokine 15-Ple	Panel 1 x 96-well includes	premixed coupled magnetic beads		
	detection antibodies, standards, 2-level controls, detection antibody diluent, standard diluent HB, sample diluent				
	HB, assay buffer, wash buffer, streptavidin-PE,	, 96-well flat bottom plate, seal	ling tape, and instructions, for detecting		
	IL-1β, IL-4, IL-6, IL-10, IL-17A, IL-17F, IL-21, IL-2	22, IL-23, IL-25, IL-31, IL-33, IF	N-γ, sCD40L,TNF-α, (IL-17A/F		
	available as singleplex only)				
	luman Th17 Cytokine Singleplex Sets**, 1 x 9				
171BA001M		171BA009M	IL-23		
171BA002M	IL-4	171BA010M	IL-25		
171BA003M	IL-6	171BA011M	IL-31		
171BA003M	IL-10	171BA012M	IL-33		
	IL-17A	171BA012M			
171BA005M	IL-17A		IFN-γ		
171BA006M		171BA014M	sCD40L		
171BA007M	IL-21	171BA015M			
171BA008M	IL-22	171BA016M	IL-17A/F**		
Standards					
171DA0001	Bio-Plex Pro Human Th17 Cytokine Standa	rd, pkg of 1 vial, lyophilized mi	xture of 16 standard analytes		
171DA0501	Bio-Plex Pro Human Th17 Cytokine Standa	rd, pkg of 50 lot-matched vials	, lyophilized mixture of 16		
	standard analytes				
Reagent Kit II	- for use with human Th17 cytokine singler	nlex sets			
171304055M	Bio-Plex Pro Reagent Kit II with Flat Botton		detection antibody diluent		
17 1004000101					
	standard diluent HB, sample diluent HB, assa		un-PE, nat bottom plate,		
	and sealing tape, for magnetic separation me	thods			
Human Chem	okine Premixed All-in-One Kit				
171AK99MR2	Bio-Plex Pro Human Chemokine Panel 40-	plex. 1 x 96-well. includes pre	mixed coupled magnetic beads.		
	detection antibodies, standards, single-level co				
	dotootion antiboaloo, standardo, singlo isvoi ot				
	comple diluont UP, coopy buffer week buffer (
	sample diluent HB, assay buffer, wash buffer, s	streptavidin-PE, 96-well flat bo			
	sample diluent HB, assay buffer, wash buffer, s instructions, for detecting 40 human chemokir	streptavidin-PE, 96-well flat bo			
Bio-Plex Pro I		streptavidin-PE, 96-well flat bo nes shown below.			
Bio-Plex Pro I 171BK11MR2	instructions, for detecting 40 human chemokin	streptavidin-PE, 96-well flat bo nes shown below.			
	instructions, for detecting 40 human chemokin Human Cytokine Singleplex Sets, Group II**,	streptavidin-PE, 96-well flat bo nes shown below. 1 x 96-Well	ttom plate, sealing tape, and		
171BK11MR2	instructions, for detecting 40 human chemokin Iuman Cytokine Singleplex Sets, Group II **, 6Ckine / CCL21 Set	streptavidin-PE, 96-well flat bo nes shown below. 1 x 96-Well 171BK33MR2	ttom plate, sealing tape, and IL-16 Set		
171BK11MR2 171BK12MR2 171BK13MR2	instructions, for detecting 40 human chemokir Iuman Cytokine Singleplex Sets, Group II **, 6Ckine / CCL21 Set BCA-1 / CXCL13 Set	streptavidin-PE, 96-well flat bo nes shown below. 1 x 96-Well 171BK33MR2 171BK34MR2 171BK35MR2	ttom plate, sealing tape, and IL-16 Set IP-10 / CXCL10 Set		
171BK11MR2 171BK12MR2 171BK13MR2 171BK14MR2	instructions, for detecting 40 human chemokir Iuman Cytokine Singleplex Sets, Group II **, 6Ckine / CCL21 Set BCA-1 / CXCL13 Set CTACK / CCL27 Set ENA-78 / CXCL5 Set	streptavidin-PE, 96-well flat bo nes shown below. 1 x 96-Well 171BK33MR2 171BK34MR2 171BK35MR2 171BK36MR2	IL-16 Set IL-16 Set IP-10 / CXCL10 Set I-TAC / CXCL11 Set MCP-1 / CCL2 Set		
171BK11MR2 171BK12MR2 171BK13MR2 171BK14MR2 171BK15MR2	instructions, for detecting 40 human chemokir tuman Cytokine Singleplex Sets, Group II **, 6Ckine / CCL21 Set BCA-1 / CXCL13 Set CTACK / CCL27 Set ENA-78 / CXCL5 Set Eotaxin / CCL11 Set	streptavidin-PE, 96-well flat bo nes shown below. 1 x 96-Well 171BK33MR2 171BK34MR2 171BK35MR2 171BK36MR2 171BK37MR2	IL-16 Set IP-10 / CXCL10 Set I-TAC / CXCL11 Set MCP-1 / CCL2 Set MCP-2 / CCL8 Set		
171BK11MR2 171BK12MR2 171BK13MR2 171BK14MR2 171BK15MR2 171BK15MR2 171BK16MR2	instructions, for detecting 40 human chemokir Iuman Cytokine Singleplex Sets, Group II** , 6Ckine / CCL21 Set BCA-1 / CXCL13 Set CTACK / CCL27 Set ENA-78 / CXCL5 Set Eotaxin / CCL11 Set Eotaxin-2 / CCL24 Set	streptavidin-PE, 96-well flat bo nes shown below. 1 x 96-Well 171BK33MR2 171BK34MR2 171BK35MR2 171BK35MR2 171BK37MR2 171BK38MR2	ttom plate, sealing tape, and IL-16 Set IP-10 / CXCL10 Set I-TAC / CXCL11 Set MCP-1 / CCL2 Set MCP-2 / CCL8 Set MCP-3 / CCL7 Set		
171BK11MR2 171BK12MR2 171BK13MR2 171BK14MR2 171BK15MR2 171BK16MR2 171BK16MR2 171BK17MR2	instructions, for detecting 40 human chemokir Iuman Cytokine Singleplex Sets, Group II **, 6Ckine / CCL21 Set BCA-1 / CXCL13 Set CTACK / CCL27 Set ENA-78 / CXCL5 Set Eotaxin-2 / CCL11 Set Eotaxin-2 / CCL24 Set Eotaxin-3 / CCL26 Set	streptavidin-PE, 96-well flat bo tes shown below. 1 x 96-Well 171BK33MR2 171BK34MR2 171BK35MR2 171BK36MR2 171BK37MR2 171BK38MR2 171BK39MR2	ttom plate, sealing tape, and IL-16 Set IP-10 / CXCL10 Set I-TAC / CXCL11 Set MCP-1 / CCL2 Set MCP-2 / CCL8 Set MCP-3 / CCL7 Set MCP-4 / CCL13 Set		
171BK11MR2 171BK12MR2 171BK13MR2 171BK14MR2 171BK15MR2 171BK15MR2 171BK16MR2 171BK17MR2 171BK18MR2	instructions, for detecting 40 human chemokir Human Cytokine Singleplex Sets, Group II **, 6Ckine / CCL21 Set BCA-1 / CXCL13 Set CTACK / CCL27 Set ENA-78 / CXCL5 Set Eotaxin / CCL11 Set Eotaxin-2 / CCL24 Set Eotaxin-3 / CCL26 Set Fractalkine / CX3CL1	streptavidin-PE, 96-well flat bo nes shown below. 1 x 96-Well 171BK33MR2 171BK35MR2 171BK35MR2 171BK36MR2 171BK37MR2 171BK38MR2 171BK39MR2 171BK39MR2 171BK39MR2 171BK39MR2	ttom plate, sealing tape, and IL-16 Set IP-10 / CXCL10 Set I-TAC / CXCL11 Set MCP-1 / CCL2 Set MCP-2 / CCL3 Set MCP-4 / CCL13 Set MDC / CCL22 Set		
171BK11MR2 171BK12MR2 171BK13MR2 171BK14MR2 171BK15MR2 171BK16MR2 171BK16MR2 171BK17MR2 171BK18MR2 171BK19MR2	instructions, for detecting 40 human chemokir tuman Cytokine Singleplex Sets, Group II **, 6Ckine / CCL21 Set BCA-1 / CXCL13 Set CTACK / CCL27 Set ENA-78 / CXCL5 Set Eotaxin / CCL11 Set Eotaxin-2 / CCL24 Set Eotaxin-2 / CCL24 Set Eractalkine / CX3CL1 GCP-2 / CXCL6 Set	streptavidin-PE, 96-well flat bo nes shown below. 1 x 96-Well 171BK33MR2 171BK35MR2 171BK35MR2 171BK35MR2 171BK37MR2 171BK37MR2 171BK43MR2 171BK41MR2 171BK41MR2 171BK42MR2	IL-16 Set IP-10 / CXCL10 Set I-TAC / CXCL11 Set MCP-1 / CCL2 Set MCP-2 / CCL8 Set MCP-3 / CCL7 Set MCP-4 / CCL13 Set MDC / CCL22 Set MIF Set		
171BK11MR2 171BK12MR2 171BK13MR2 171BK14MR2 171BK15MR2 171BK16MR2 171BK16MR2 171BK17MR2 171BK18MR2 171BK19MR2 171BK21MR2	instructions, for detecting 40 human chemokir Human Cytokine Singleplex Sets, Group II **, 6Ckine / CCL21 Set BCA-1 / CXCL13 Set CTACK / CCL27 Set ENA-78 / CXCL5 Set Eotaxin / CCL11 Set Eotaxin-2 / CCL24 Set Eotaxin-3 / CCL26 Set Fractalkine / CX3CL1 GCP-2 / CXCL6 Set GM-CSF Set	streptavidin-PE, 96-well flat bo nes shown below. 1 x 96-Well 171BK33MR2 171BK34MR2 171BK35MR2 171BK35MR2 171BK37MR2 171BK39MR2 171BK43MR2 171BK42MR2 171BK42MR2 171BK43MR2	ttom plate, sealing tape, and IL-16 Set IP-10 / CXCL10 Set I-TAC / CXCL11 Set MCP-1 / CCL2 Set MCP-2 / CCL8 Set MCP-3 / CCL7 Set MCP-4 / CCL13 Set MDC / CCL22 Set MIF Set MIG / CXCL9 Set		
171BK11MR2 171BK12MR2 171BK13MR2 171BK13MR2 171BK15MR2 171BK15MR2 171BK17MR2 171BK18MR2 171BK18MR2 171BK21MR2 171BK22MR2	instructions, for detecting 40 human chemokir Iuman Cytokine Singleplex Sets, Group II** , 6Ckine / CCL21 Set BCA-1 / CXCL13 Set CTACK / CCL27 Set ENA-78 / CXCL5 Set Eotaxin / CCL11 Set Eotaxin-2 / CCL24 Set Eotaxin-3 / CCL26 Set Fractalkine / CX3CL1 GCP-2 / CXCL6 Set GM-CSF Set Gro-α / CXCL1 Set	streptavidin-PE, 96-well flat bo tes shown below. 1 x 96-Well 171BK33MR2 171BK35MR2 171BK35MR2 171BK35MR2 171BK37MR2 171BK37MR2 171BK38MR2 171BK43MR2 171BK43MR2 171BK43MR2 171BK43MR2 171BK44MR2	ttom plate, sealing tape, and IL-16 Set IP-10 / CXCL10 Set I-TAC / CXCL11 Set MCP-1 / CCL2 Set MCP-2 / CCL3 Set MCP-4 / CCL13 Set MCP-4 / CCL22 Set MIF Set MIG / CXCL9 Set MIP-1α / CCL3 Set		
171BK11MR2 171BK12MR2 171BK13MR2 171BK15MR2 171BK15MR2 171BK15MR2 171BK16MR2 171BK18MR2 171BK19MR2 171BK21MR2 171BK22MR2 171BK22MR2	instructions, for detecting 40 human chemokir Iuman Cytokine Singleplex Sets, Group II **, 6Ckine / CCL21 Set BCA-1 / CXCL13 Set CTACK / CCL27 Set ENA-78 / CXCL5 Set Eotaxin-2 / CCL24 Set Eotaxin-2 / CCL24 Set Eotaxin-3 / CCL26 Set Fractalkine / CX3CL1 GCP-2 / CXCL6 Set GM-CSF Set Gro-α / CXCL1 Set Gro-β / CXCL2 Set	streptavidin-PE, 96-well flat bo nes shown below. 1 x 96-Well 171BK33MR2 171BK35MR2 171BK35MR2 171BK36MR2 171BK36MR2 171BK37MR2 171BK39MR2 171BK41MR2 171BK41MR2 171BK44MR2 171BK44MR2 171BK44MR2 171BK46MR2	ttom plate, sealing tape, and IL-16 Set IP-10 / CXCL10 Set I-TAC / CXCL11 Set MCP-1 / CCL2 Set MCP-2 / CCL3 Set MCP-4 / CCL13 Set MDC / CCL22 Set MIF Set MIG / CXCL9 Set MIP-1α / CCL3 Set MIP-1α / CCL15 Set		
171BK11MR2 171BK12MR2 171BK13MR2 171BK14MR2 171BK15MR2 171BK16MR2 171BK16MR2 171BK18MR2 171BK19MR2 171BK21MR2 171BK22MR2 171BK22MR2 171BK24MR2	instructions, for detecting 40 human chemokin tuman Cytokine Singleplex Sets, Group II **, 6Ckine / CCL21 Set BCA-1 / CXCL13 Set CTACK / CCL27 Set ENA-78 / CXCL5 Set Eotaxin-2 / CCL24 Set Eotaxin-2 / CCL24 Set Eotaxin-3 / CCL26 Set Fractalkine / CX3CL1 GCP-2 / CXCL6 Set GM-CSF Set Gro- α / CXCL1 Set Gro- β / CXCL2 Set I-309 / CCL1 Set	streptavidin-PE, 96-well flat bo nes shown below. 1 x 96-Well 171BK33MR2 171BK35MR2 171BK35MR2 171BK35MR2 171BK37MR2 171BK37MR2 171BK37MR2 171BK43MR2 171BK41MR2 171BK42MR2 171BK44MR2 171BK46MR2 171BK46MR2 171BK47MR2	IL-16 Set IP-10 / CXCL10 Set IP-10 / CXCL10 Set I-TAC / CXCL11 Set MCP-1 / CCL2 Set MCP-2 / CCL8 Set MCP-3 / CCL7 Set MCP-4 / CCL13 Set MIF Set MIF Set MIF Set MIF 1 α / CCL3 Set MIP-1 α / CCL3 Set MIP-3 α / CCL20 Set		
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Bio-Plex Pro Cytokine, Chemokine, and Growth Factor Assays

bio-rad.com/bio-plex

Mouse Assays

Mouse Assays - Available Analytes

Basic FGF	IL-5	IL-22	MIP-1α
CD40L	IL-6	IL-23 (p19)	MIP-1β
Eotaxin	IL-9	IL-25 / IL-17E	MIP-2
G-CSF	IL-10	IL-27 (p28)	MIP-3α
GM-CSF	IL-12 (p40)	IL-31	PDGF-BB
Gro / KC	IL-12 (p70)	IL-33	RANTES
IFN-γ	IL-13	ICAM-1	TGF-β1
IL-1α	IL-15	KC	TGF-β2
IL-1β	IL-17A	LIF	TGF-β3
IL-2	IL-17F	MCP-1 / MCAF	TNF-α
IL-3	IL-18	M-CSF	VEGF
IL-4	IL-21	MIG	

Ordering Information

Catalog #	Description	
Mouse Cytokir	ne Premixed All-in-One Kits*	
M60000007A	Bio-Plex Pro Mouse Cytokine 8-Plex Panel , 1 x 96-well, includes coupled magnetic beads, detection antibodies, standards, assay buffer, wash buffer, detection antibody diluent, streptavidin-PE, flat bottom plate, sealing tape, standard diluent, sample diluent, for the detection of IL-1β, IL-2, IL-4, IL-5, IL-10, GM-CSF, IFN-γ, TNF-α	
MD000000EL	Bio-Plex Pro Mouse Cytokine 9-Plex Panel, 1 x 96-well, includes coupled magnetic beads, detection antibodies, standards, assay buffer, wash buffer, detection antibody diluent, streptavidin-PE, flat bottom plate, sealing tape, standard diluent, sample diluent, for the detection of IL-15, IL-18, basic FGF, LIF, M-CSF, MIG, MIP-2, PDGF-BB, VEGF	
M60009RDPD	Bio-Plex Pro Mouse Cytokine 23-Plex Panel , 1 x 96-well, includes coupled magnetic beads, detection antibodies, standards, assay buffer, wash buffer, detection antibody diluent, streptavidin-PE, flat bottom plate, sealing tape, standard diluent, sample diluent, for the detection of IL-1α, IL-1β, IL-2, IL-3, IL-4, IL-5, IL-6, IL-9, IL-10, IL-12 (p40), IL-12 (p70), IL-13, IL-17, eotaxin, G-CSF, GM-CSF, IFN-γ, KC, MCP-1, MIP-1α, MIP-1β, RANTES, TNF-α	
M6000003J7	Bio-Plex Pro Mouse Cytokine Th1/Th2 Panel , 1 x 96-well, includes coupled magnetic beads, detection antibodies, standards, assay buffer, wash buffer, detection antibody diluent, streptavidin-PE, flat bottom plate, sealing tape, standard diluent, sample diluent, for the detection of IL-2, IL-4, IL-5, IL-10, IL-12 (p70), GM-CSF, IFN-γ, TNF-α	
L6000004C6	Bio-Plex Pro Mouse Cytokine Th1 7-Plex Panel , 1 x 96-well, includes coupled magnetic beads, detection antibodies, standards, assay buffer, wash buffer, detection antibody diluent, streptavidin-PE, flat bottom plate, sealing tape, standard diluent, sample diluent, for the detection of IL-1β, IL-2, IL-6, IL-10, IL-12 (p70), IFNα, TFN-α	
L60000UKVT	Bio-Plex Pro Mouse Cytokine Th2 7-Plex Panel, 1 x 96-well, includes coupled magnetic beads, detection antibodies, standards, assay buffer, wash buffer, detection antibody diluent, streptavidin-PE, flat bottom plate, sealing tape, standard diluent, sample diluent, for the detection of IL-2, IL-4, IL-5, IL-6, IL-9, IL-10, IL-13	
Mouse Th17 Pr	remixed All-in-One Kits	
M6000007NY	Bio-Plex Pro Mouse Cytokine Th17 Panel A 6-Plex Group I , 1 x 96-well, includes coupled magnetic beads, detection antibodies, standard, assay buffer, wash buffer, detection antibody diluent, streptavidin-PE, flat bottom plate, sealing tape, standard diluent, sample diluent, and instructions, for the detection of IL-1β, IL-6, IL-10, IL-17A, IFN-γ, TNF-α	
171FA001M	Bio-Plex Pro Mouse Cytokine Th17 Panel B 8-Plex Group III , 1 x 96-well, includes coupled magnetic beads, detection antibodies, standards, assay buffer, wash buffer, detection antibody diluent, streptavidin-PE, flat bottom plate, sealing tape, standard diluent, sample diluent, for the detection of CD40L, IL-17F, IL-21, IL-22, IL-23 (p19), IL-31, IL-33, MIP-3α	
* Please contac	t your local Bio-Rad Sales Representative for pricing and availability of 10 x 96-well assay kits.	
		continues

bio-rad.com/bio-plex

	Description	Catalog #	Description
Bio-Plex Pro I	Nouse Cytokine Singleplex Sets, Group I*, 1 x 96-Well		
171G5001M	IL-1α Set	171G5013M	IL-17A Set
171G5002M	IL-1β Set	171G5014M	Eotaxin Set
171G5003M	IL-2 Set	171G5015M	G-CSF Set
171G5004M	IL-3 Set	171G5016M	GM-CSF Set
171G5005M	IL-4 Set	171G5017M	IFN-γ Set
171G5006M	IL-5 Set	171G5018M	KC Set
171G5007M	IL-6 Set	171G5019M	MCP-1 Set
171G5008M	IL-9 Set	171G5020M	MIP-1 a Set
171G5009M	IL-10 Set	171G5020M	MIP-1ß Set
171G5010M	IL-10 Set	171G5021M	RANTES Set
171G5010M	IL-12 (p40) Set	171G5022M	TNF- α Set
171G5011M	IL-13 Set	17 10302310	INF-a Set
17 1G5012101	IL-13 Set		
Standards			
171 50001	Bio-Plex Pro Mouse Cytokine Standards Group I, pkg		
171110501	Bio-Plex Pro Mouse Cytokine Standards Group I, pkg	of 50 lot-matched	vials, lyophilized mixture of 23 analytes
Bio-Plex Pro I	Mouse Cytokine Singleplex Sets, Group II*, 1 x 96-Well		
171G6001M	IL-15 Set	171G6005M	MIG Set
171G6002M	Basic FGF Set	171G6006M	MIP-2 Set
171G6003M	LIF Set	171G6007M	PDGF-BB Set
171G6004M	M-CSF Set	171G6008M	VEGF Set
Standarde			
Standards	Bio-Play Pro Mouse Cytoking Standards Group II. pk	n of 1 vial Ivophiliz	ad mixture of 9 analytes
171160001	Bio-Plex Pro Mouse Cytokine Standards Group II, pkg		
171160001	Bio-Plex Pro Mouse Cytokine Standards Group II, pkg		-
171160001 171110502	Bio-Plex Pro Mouse Cytokine Standards Group II , pkg 9 analytes	g of 50 lot-matched	-
171160001 171110502 Bio-Plex Pro I	Bio-Plex Pro Mouse Cytokine Standards Group II, pkg 9 analytes Mouse Cytokine Singleplex Sets, Group III*, 1 x 96-Wel	g of 50 lot-matche	d vials, lyophilized mixture of
171160001 171110502 Bio-Plex Pro I 171GA001M	Bio-Plex Pro Mouse Cytokine Standards Group II, pkg 9 analytes Mouse Cytokine Singleplex Sets, Group III*, 1 x 96-Wel CD40L Set	g of 50 lot-matched	d vials, lyophilized mixture of IL-27 (p28) Set
171160001 171110502 Bio-Plex Pro I 171GA001M 171GA002M	Bio-Plex Pro Mouse Cytokine Standards Group II, pkg 9 analytes Mouse Cytokine Singleplex Sets, Group III*, 1 x 96-Wel CD40L Set IL-17F Set	g of 50 lot-matched 171GA007M 171GA008M	d vials, lyophilized mixture of IL-27 (p28) Set IL-31 Set
171160001 171110502 Bio-Plex Pro I 171GA001M 171GA002M 171GA003M	Bio-Plex Pro Mouse Cytokine Standards Group II, pkg 9 analytes Mouse Cytokine Singleplex Sets, Group III*, 1 x 96-Wel CD40L Set IL-17F Set IL-21 Set	g of 50 lot-matched 171GA007M 171GA008M 171GA009M	d vials, lyophilized mixture of IL-27 (p28) Set IL-31 Set IL-33 Set
171160001 171110502 Bio-Plex Pro I 171GA001M 171GA002M 171GA003M 171GA004M	Bio-Plex Pro Mouse Cytokine Standards Group II, pkg 9 analytes Mouse Cytokine Singleplex Sets, Group III*, 1 x 96-Wel CD40L Set IL-17F Set IL-21 Set IL-22 Set	g of 50 lot-matched 171GA007M 171GA008M 171GA009M 171GA010M	d vials, lyophilized mixture of IL-27 (p28) Set IL-31 Set IL-33 Set ICAM-1 Set**
171160001 171110502 Bio-Plex Pro I 171GA001M 171GA002M 171GA003M 171GA004M 171GA005M	Bio-Plex Pro Mouse Cytokine Standards Group II, pkg 9 analytes Mouse Cytokine Singleplex Sets, Group III*, 1 x 96-Wel CD40L Set IL-17F Set IL-21 Set IL-22 Set IL-23 (p19) Set	g of 50 lot-matched 171GA007M 171GA008M 171GA009M	d vials, lyophilized mixture of IL-27 (p28) Set IL-31 Set IL-33 Set
171160001 171110502 Bio-Plex Pro I 171GA001M 171GA002M 171GA003M	Bio-Plex Pro Mouse Cytokine Standards Group II, pkg 9 analytes Mouse Cytokine Singleplex Sets, Group III*, 1 x 96-Wel CD40L Set IL-17F Set IL-21 Set IL-22 Set	g of 50 lot-matched 171GA007M 171GA008M 171GA009M 171GA010M	d vials, lyophilized mixture of IL-27 (p28) Set IL-31 Set IL-33 Set ICAM-1 Set**
171160001 171110502 Bio-Plex Pro I 171GA001M 171GA002M 171GA003M 171GA004M 171GA005M 171GA006M	Bio-Plex Pro Mouse Cytokine Standards Group II, pkg 9 analytes Mouse Cytokine Singleplex Sets, Group III*, 1 x 96-Wel CD40L Set IL-17F Set IL-21 Set IL-22 Set IL-23 (p19) Set	g of 50 lot-matched 171GA007M 171GA008M 171GA009M 171GA010M	d vials, lyophilized mixture of IL-27 (p28) Set IL-31 Set IL-33 Set ICAM-1 Set**
171160001 171110502 Bio-Plex Pro I 171GA001M 171GA002M 171GA003M 171GA004M 171GA005M	Bio-Plex Pro Mouse Cytokine Standards Group II, pkg 9 analytes Mouse Cytokine Singleplex Sets, Group III*, 1 x 96-Wel CD40L Set IL-17F Set IL-21 Set IL-22 Set IL-23 (p19) Set IL-25 Set	g of 50 lot-matched 171GA007M 171GA008M 171GA009M 171GA010M 171GA011M	d vials, lyophilized mixture of IL-27 (p28) Set IL-31 Set IL-33 Set ICAM-1 Set** MIP-3α Set
171160001 171110502 Bio-Plex Pro I 171GA001M 171GA002M 171GA003M 171GA004M 171GA005M 171GA006M Standards	Bio-Plex Pro Mouse Cytokine Standards Group II, pkg 9 analytes Mouse Cytokine Singleplex Sets, Group III*, 1 x 96-Wel CD40L Set IL-17F Set IL-21 Set IL-22 Set IL-23 (p19) Set	g of 50 lot-matched 171GA007M 171GA008M 171GA009M 171GA010M 171GA011M g of 1 vial, lyophiliz	d vials, lyophilized mixture of IL-27 (p28) Set IL-31 Set IL-33 Set ICAM-1 Set** MIP-3α Set ed mixture for detecting 11 analytes
171160001 171110502 Bio-Plex Pro I 171GA001M 171GA002M 171GA003M 171GA004M 171GA005M 171GA006M Standards 171IA0001	Bio-Plex Pro Mouse Cytokine Standards Group II, pkg 9 analytes Mouse Cytokine Singleplex Sets, Group III*, 1 x 96-Wel CD40L Set IL-17F Set IL-21 Set IL-22 Set IL-22 Set IL-23 (p19) Set IL-25 Set Bio-Plex Pro Mouse Cytokine Standards Group III, pk	g of 50 lot-matched 171GA007M 171GA008M 171GA009M 171GA010M 171GA011M g of 1 vial, lyophiliz	d vials, lyophilized mixture of IL-27 (p28) Set IL-31 Set IL-33 Set ICAM-1 Set** MIP-3α Set ed mixture for detecting 11 analytes
171160001 171110502 Bio-Plex Pro I 171GA001M 171GA002M 171GA003M 171GA004M 171GA005M 171GA006M Standards 171IA0001 171IA0001	Bio-Plex Pro Mouse Cytokine Standards Group II, pkg 9 analytes Mouse Cytokine Singleplex Sets, Group III*, 1 x 96-Wel CD40L Set IL-17F Set IL-21 Set IL-22 Set IL-23 (p19) Set IL-25 Set Bio-Plex Pro Mouse Cytokine Standards Group III, pk Bio-Plex Pro Mouse Cytokine Standards Group III, pk detecting 11 analytes	g of 50 lot-matched 171GA007M 171GA008M 171GA009M 171GA010M 171GA011M g of 1 vial, lyophiliz g of 50 lot-matche	d vials, lyophilized mixture of IL-27 (p28) Set IL-31 Set IL-33 Set ICAM-1 Set** MIP-3α Set ed mixture for detecting 11 analytes d vials, lyophilized mixture for
171160001 171110502 Bio-Plex Pro I 171GA001M 171GA002M 171GA003M 171GA004M 171GA005M 171GA006M Standards 171IA0001 171IA0001 171IA0501 Reagent Kits	Bio-Plex Pro Mouse Cytokine Standards Group II, pkg 9 analytes Mouse Cytokine Singleplex Sets, Group III', 1 x 96-Wel CD40L Set IL-17F Set IL-21 Set IL-22 Set IL-23 (p19) Set IL-25 Set Bio-Plex Pro Mouse Cytokine Standards Group III, pk Bio-Plex Pro Mouse Cytokine Standards Group III, pk detecting 11 analytes – for use with mouse cytokine singleplex sets from G	g of 50 lot-matched 171GA007M 171GA008M 171GA009M 171GA010M 171GA011M g of 1 vial, lyophiliz g of 50 lot-matche roups I, II, and II	d vials, lyophilized mixture of IL-27 (p28) Set IL-31 Set IL-33 Set ICAM-1 Set** MIP-3α Set ed mixture for detecting 11 analytes d vials, lyophilized mixture for
171160001 171110502 Bio-Plex Pro I 171GA001M 171GA002M 171GA003M 171GA004M 171GA005M 171GA006M Standards 171IA0001 171IA0001 171IA0501 Reagent Kits	Bio-Plex Pro Mouse Cytokine Standards Group II, pkg 9 analytes Mouse Cytokine Singleplex Sets, Group III', 1 x 96-Wel CD40L Set IL-17F Set IL-21 Set IL-22 Set IL-23 (p19) Set IL-25 Set Bio-Plex Pro Mouse Cytokine Standards Group III, pk Bio-Plex Pro Mouse Cytokine Standards Group III, pk detecting 11 analytes — for use with mouse cytokine singleplex sets from G Bio-Plex Pro Reagent Kit with Flat Bottom Plate, 1 x 9	g of 50 lot-matched 171GA007M 171GA008M 171GA009M 171GA010M 171GA011M g of 1 vial, lyophiliz g of 50 lot-matche roups I, II, and II 6-well, includes fla	d vials, lyophilized mixture of IL-27 (p28) Set IL-31 Set IL-33 Set ICAM-1 Set** MIP-3α Set ed mixture for detecting 11 analytes d vials, lyophilized mixture for I at bottom plate, assay buffer, wash
171160001 171110502 Bio-Plex Pro I 171GA001M 171GA002M 171GA003M 171GA004M 171GA005M 171GA006M Standards 171IA0001 171IA0001 171IA0501 Reagent Kits	Bio-Plex Pro Mouse Cytokine Standards Group II, pkg 9 analytes Mouse Cytokine Singleplex Sets, Group III*, 1 x 96-Wel CD40L Set IL-17F Set IL-21 Set IL-22 Set IL-23 (p19) Set IL-25 Set Bio-Plex Pro Mouse Cytokine Standards Group III, pk Bio-Plex Pro Mouse Cytokine Standards Group III, pk detecting 11 analytes – for use with mouse cytokine singleplex sets from G Bio-Plex Pro Reagent Kit with Flat Bottom Plate, 1 x 9 buffer, detection antibody diluent, streptavidin-PE, sealing	g of 50 lot-matched 171GA007M 171GA008M 171GA009M 171GA010M 171GA011M g of 1 vial, lyophiliz g of 50 lot-matche roups I, II, and II 6-well, includes fla	d vials, lyophilized mixture of IL-27 (p28) Set IL-31 Set IL-33 Set ICAM-1 Set** MIP-3α Set ed mixture for detecting 11 analytes d vials, lyophilized mixture for I at bottom plate, assay buffer, wash
171160001 17110502 Bio-Plex Pro I 171GA001M 171GA002M 171GA003M 171GA004M 171GA005M 171GA006M Standards 171IA0001 171IA0501 Reagent Kits 171304070M	Bio-Plex Pro Mouse Cytokine Standards Group II, pkg 9 analytes Mouse Cytokine Singleplex Sets, Group III*, 1 x 96-Wel CD40L Set IL-17F Set IL-21 Set IL-22 Set IL-23 (p19) Set IL-25 Set Bio-Plex Pro Mouse Cytokine Standards Group III, pk Bio-Plex Pro Mouse Cytokine Standards Group III, pk detecting 11 analytes – for use with mouse cytokine singleplex sets from G Bio-Plex Pro Reagent Kit with Flat Bottom Plate, 1 x 9 buffer, detection antibody diluent, streptavidin-PE, sealing for magnetic separation methods	g of 50 lot-matched 171GA007M 171GA008M 171GA009M 171GA010M 171GA010M 171GA011M g of 1 vial, lyophiliz g of 50 lot-matche roups I, II, and II 6-well, includes fit tape, standard dil	d vials, lyophilized mixture of IL-27 (p28) Set IL-31 Set IL-33 Set ICAM-1 Set** MIP-3α Set ed mixture for detecting 11 analytes d vials, lyophilized mixture for I t bottom plate, assay buffer, wash uent, sample diluent, and instructions,
171160001 171110502 Bio-Plex Pro I 171GA001M 171GA002M 171GA003M 171GA004M 171GA005M 171GA006M Standards 171IA0001 171IA0001	Bio-Plex Pro Mouse Cytokine Standards Group II, pkg 9 analytes Mouse Cytokine Singleplex Sets, Group III*, 1 x 96-Wel CD40L Set IL-17F Set IL-21 Set IL-22 Set IL-23 (p19) Set IL-25 Set Bio-Plex Pro Mouse Cytokine Standards Group III, pk Bio-Plex Pro Mouse Cytokine Standards Group III, pk detecting 11 analytes — for use with mouse cytokine singleplex sets from G Bio-Plex Pro Reagent Kit with Flat Bottom Plate, 1 x 9 buffer, detection antibody diluent, streptavidin-PE, sealing for magnetic separation methods Bio-Plex Pro Reagent Kit, 10 x 96-well, includes assay b	g of 50 lot-matched 171GA007M 171GA008M 171GA009M 171GA010M 171GA010M 171GA011M g of 1 vial, lyophiliz g of 50 lot-matche roups I, II, and II 66-well, includes fla tape, standard dil puffer, wash buffer	d vials, lyophilized mixture of IL-27 (p28) Set IL-31 Set IL-33 Set ICAM-1 Set** MIP-3α Set d vials, lyophilized mixture for I t bottom plate, assay buffer, wash uent, sample diluent, and instructions,
171160001 171110502 Bio-Plex Pro I 171GA001M 171GA002M 171GA003M 171GA004M 171GA005M 171GA006M Standards 171IA0001 171IA0501 Reagent Kits 171304070M	Bio-Plex Pro Mouse Cytokine Standards Group II, pkg 9 analytes Mouse Cytokine Singleplex Sets, Group III*, 1 x 96-Wel CD40L Set IL-17F Set IL-21 Set IL-22 Set IL-23 (p19) Set IL-25 Set Bio-Plex Pro Mouse Cytokine Standards Group III, pk Bio-Plex Pro Mouse Cytokine Standards Group III, pk detecting 11 analytes – for use with mouse cytokine singleplex sets from G Bio-Plex Pro Reagent Kit with Flat Bottom Plate, 1 x 9 buffer, detection antibody diluent, streptavidin-PE, sealing for magnetic separation methods Bio-Plex Pro Reagent Kit, 10 x 96-well, includes assay t streptavidin-PE, sealing tape, standard diluent, sample dil	g of 50 lot-matched 171GA007M 171GA008M 171GA009M 171GA010M 171GA010M 171GA011M g of 1 vial, lyophiliz g of 50 lot-matche roups I, II, and II 6-well, includes fla tape, standard dil buffer, wash buffer uent	d vials, lyophilized mixture of IL-27 (p28) Set IL-31 Set IL-33 Set ICAM-1 Set** MIP-3α Set ed mixture for detecting 11 analytes d vials, lyophilized mixture for I at bottom plate, assay buffer, wash uent, sample diluent, and instructions, , detection antibody diluent,
171160001 17110502 Bio-Plex Pro I 171GA001M 171GA002M 171GA003M 171GA004M 171GA005M 171GA006M Standards 171IA0001 171IA0501 Reagent Kits 171304070M	Bio-Plex Pro Mouse Cytokine Standards Group II, pkg 9 analytes Mouse Cytokine Singleplex Sets, Group III*, 1 x 96-Wel CD40L Set IL-17F Set IL-21 Set IL-22 Set IL-23 (p19) Set IL-25 Set Bio-Plex Pro Mouse Cytokine Standards Group III, pk Bio-Plex Pro Mouse Cytokine Standards Group III, pk detecting 11 analytes – for use with mouse cytokine singleplex sets from G Bio-Plex Pro Reagent Kit with Flat Bottom Plate, 1 x 9 buffer, detection antibody diluent, streptavidin-PE, sealing for magnetic separation methods Bio-Plex Pro Reagent Kit, 10 x 96-well, includes assay b streptavidin-PE, sealing tape, standard diluent, sample dil Bio-Plex Pro High Dilution Reagent Kit, 1 x 96-well, includes assay b	g of 50 lot-matched 171GA007M 171GA008M 171GA009M 171GA010M 171GA010M 171GA011M g of 1 vial, lyophiliz g of 50 lot-matche roups I, II, and II 16-well, includes fla 1 tape, standard dil buffer, wash buffer uent	d vials, lyophilized mixture of IL-27 (p28) Set IL-31 Set IL-33 Set ICAM-1 Set** MIP-3α Set ed mixture for detecting 11 analytes d vials, lyophilized mixture for I at bottom plate, assay buffer, wash uent, sample diluent, and instructions, , detection antibody diluent, r, wash buffer, detection antibody
171160001 171110502 Bio-Plex Pro I 171GA001M 171GA002M 171GA003M 171GA005M 171GA005M 171GA006M Standards 171IA0001 171IA0501 Reagent Kits 171304070M 171304071 171304080M	Bio-Plex Pro Mouse Cytokine Standards Group II, pkg 9 analytes Mouse Cytokine Singleplex Sets, Group III*, 1 x 96-Wel CD40L Set IL-17F Set IL-21 Set IL-22 Set IL-23 (p19) Set IL-25 Set Bio-Plex Pro Mouse Cytokine Standards Group III, pk Bio-Plex Pro Mouse Cytokine Standards Group III, pk detecting 11 analytes — for use with mouse cytokine singleplex sets from G Bio-Plex Pro Reagent Kit with Flat Bottom Plate, 1 x 9 buffer, detection antibody diluent, streptavidin-PE, sealing for magnetic separation methods Bio-Plex Pro Reagent Kit, 10 x 96-well, includes assay the streptavidin-PE, sealing tape, standard diluent, sample dil Bio-Plex Pro High Dilution Reagent Kit, 1 x 96-well, includes assay the streptavidin-PE, flat bottom plate, sealing tape, sta	g of 50 lot-matched 171GA007M 171GA008M 171GA009M 171GA010M 171GA010M 171GA011M g of 1 vial, lyophiliz g of 50 lot-matche roups I, II, and II 66-well, includes fla tape, standard dil puffer, wash buffer uent sludes assay buffer andard diluent, sar	d vials, lyophilized mixture of IL-27 (p28) Set IL-31 Set IL-33 Set ICAM-1 Set** MIP-3α Set ed mixture for detecting 11 analytes d vials, lyophilized mixture for I at bottom plate, assay buffer, wash uent, sample diluent, and instructions, , detection antibody diluent, r, wash buffer, detection antibody mple diluent
171160001 171110502 Bio-Plex Pro I 171GA001M 171GA002M 171GA003M 171GA005M 171GA005M 171GA006M Standards 171IA0001 171IA0501 Reagent Kits 171304070M 171304071 171304080M * Includes cou	Bio-Plex Pro Mouse Cytokine Standards Group II, pkg 9 analytes Mouse Cytokine Singleplex Sets, Group III*, 1 x 96-Wel CD40L Set IL-17F Set IL-21 Set IL-22 Set IL-23 (p19) Set IL-25 Set Bio-Plex Pro Mouse Cytokine Standards Group III, pk Bio-Plex Pro Mouse Cytokine Standards Group III, pk detecting 11 analytes – for use with mouse cytokine singleplex sets from G Bio-Plex Pro Reagent Kit with Flat Bottom Plate, 1 x 9 buffer, detection antibody diluent, streptavidin-PE, sealing for magnetic separation methods Bio-Plex Pro Reagent Kit, 10 x 96-well, includes assay b streptavidin-PE, sealing tape, standard diluent, sample dil Bio-Plex Pro High Dilution Reagent Kit, 1 x 96-well, includes assay b	g of 50 lot-matched 171GA007M 171GA008M 171GA009M 171GA010M 171GA010M 171GA011M g of 1 vial, lyophiliz g of 50 lot-matche roups I, II, and II 66-well, includes fla tape, standard dil puffer, wash buffer uent sludes assay buffer andard diluent, sar	d vials, lyophilized mixture of IL-27 (p28) Set IL-31 Set IL-33 Set ICAM-1 Set** MIP-3α Set ed mixture for detecting 11 analytes d vials, lyophilized mixture for I at bottom plate, assay buffer, wash uent, sample diluent, and instructions, , detection antibody diluent, r, wash buffer, detection antibody mple diluent

** Requires high dilution reagent kit.

Bio-Plex Pro Cytokine, Chemokine, and Growth Factor Assays

bio-rad.com/bio-plex

Rat Assays

Rat Assays – Available Analytes

EPO	IL-4	IL-17A	RANTES
G-CSF	IL-5	IL-18*	TGF-β1
GM-CSF	IL-6	KC	TGF-β2
Gro / KC	IL-7	MCP-1	TGF-β3
IFN-γ	IL-10	M-CSF	TNF-α
IL-1α	IL-12 (p40)	MIP-1α	VEGF
IL-1β	IL-12 (p70)	MIP-2	
IL-2	IL-13	MIP-3α	

* IL-18 is not available as a singleplex.

Catalog #	Description		
Rat Cytokine	Premixed All-in-One Kits*		
171K1001M	Bio-Plex Pro Rat Cytokine 24-Plex Pa antibodies, standards, assay buffer, was sealing tape, standard diluent, sample di IL-1β, IL-2, IL-4, IL-5, IL-6, IL-7, IL-10, IL-12 TNF-α, VEGF	h buffer, detection antibody diluent, luent, for the detection of EPO, G-C	, streptavidin-PE, flat bottom plate, CSF, GM-CSF, Gro/KC, IFN-γ, IL-1α,
171K1002M	Bio-Plex Pro Rat Cytokine Th1/Th2 12-Plex Panel , 1 x 96-well, includes coupled magnetic beads, detection antibodies, standard, assay buffer, wash buffer, detection antibody diluent, streptavidin-PE, flat bottom plate, sealing tape, standard diluent, sample diluent and instructions, for the detection of IL- α , IL-1 β , IL-2, IL-4, IL-5, IL-6, IL-10, IL-12 (p70), IL-13, GM-CSF, IFN- γ , TNF- α		
Catalog #	Description	Catalog #	Description
Bio-Plex Pro I	Rat Cytokine Singleplex Sets**, 1 x 96-V	Vell	
171L1002M	EPO Set	171L1015M	IL-12 (p40) Set
171L1003M	G-CSF Set	171L1016M	IL-12 (p70) Set
171L1004M	GM-CSF Set	171L1017M	IL-13 Set
171L1005M	Gro / KC Set	171L1018M	IL-17A Set
171L1006M	IFN-γ Set	171L1020M	M-CSF Set
171L1007M	IL-1α Set	171L1027M	MCP-1 Set
171L1008M	IL-1β Set	171L1021M	MIP-1α Set
171L1009M	IL-2 Set	171L1022M	MIP-2 Set
171L1010M	IL-4 Set	171L1023M	MIP-3α Set
171L1011M	IL-5 Set	171L1024M	RANTES Set
171L1012M	IL-6 Set	171L1025M	TNF-α Set
171L1013M	IL-7 Set	171L1026M	VEGF Set
171L1014M	IL-10 Set		
Standards			
171NZ0001	Bio-Plex Pro Rat Cytokine Standards, Compatible with rat cytokine and rat diak		31 analytes.
171NZ0501	Bio-Plex Pro Rat Cytokine Standards , pkg of 50 lot-matched vials, lyophilized mixture of 31 rat analytes. Compatible with rat cytokine and rat diabetes assays		
Reagent Kits	 for use with human cytokine singlep 	lex sets from groups I and II	
171304070	Bio-Plex Pro Reagent Kit , 1 x 96-well, i streptavidin-PE, sealing tape, standard d		
171304070M	Bio-Plex Pro Reagent Kit with Flat Bottom Plate , 1 x 96-well, includes flat bottom plate, assay buffer, wash buffer, detection antibody diluent, streptavidin-PE, sealing tape, standard diluent, sample diluent, and instructions, for magnetic separation methods		
171304071	Bio-Plex Pro Reagent Kit , 10 x 96-well, streptavidin-PE, sealing tape, standard d		, detection antibody diluent,
* Please conta	act your local Bio-Rad Sales Representativ	e for pricing and availability of 10	x 96-well assay kits.
	pled magnetic beads and detection antibod with others from different panels or groups.		t kit and standards. Singleplex sets should

Multi-Species TGF- β Assays

Catalog #	Description
Bio-Plex Pro 1	GF- eta Premixed All-in-One Kit (compatible with Human, Mouse, and Rat samples)
171W4001M	Bio-Plex Pro TGF- β 3-plex Assay, 1 x 96-well, includes coupled magnetic beads, detection antibodies,
	standards, assay buffer, wash buffer, detection antibody diluent, streptavidin-PE, flat bottom plate, sealing tape,
	standard diluent, sample diluent, for the detection of TGF- β 1, TGF- β 2, TGF- β 3
	GF-β Singleplex Sets*, 1 x 96-Well
171V4001M	TGF-β1 Set
171V4002M	TGF-β2 Set
171V4003M	TGF-β3 Set
Standards	
171X40001	Bio-Plex Pro TGF- β Standard , pkg of 1 vial, lyophilized standard for detecting TGF-β1, TGF-β2, and TGF-β3 analytes
171X40501	Bio-Plex Pro TGF-β Standard, pkg of 50 lot-matched vials, lyophilized standard for detecting TGF-β1, TGF-β2, and TGF-β3 analytes
Reagent Kits	– for use with rat cytokine and TGF- β singleplex sets
171304070	Bio-Plex Pro Reagent Kit, 1 x 96-well, includes assay buffer, wash buffer, detection antibody diluent,
	streptavidin-PE, sealing tape, standard diluent, sample diluent, for vacuum separation methods
171304070M	Bio-Plex Pro Reagent Kit with Flat Bottom Plate, 1 x 96-well, includes flat bottom plate, assay buffer,
	wash buffer, detection antibody diluent, streptavidin-PE, sealing tape, standard diluent, sample diluent, and instructions, for magnetic separation methods
171304071	Bio-Plex Pro Reagent Kit, 10 x 96-well, includes assay buffer, wash buffer, detection standards, assay buffer,
	wash buffer, detection antibody diluent, streptavidin-PE, flat bottom plate, sealing tape, standard diluent, sample diluent, for the detection of TGF-β1, TGF-β2, TGF-β3
Bio-Plex Pro A	Assay Accessories
171304500	Bio-Plex Wash Buffer, 1.5 L
171025001	Bio-Plex Pro Flat Bottom Plates**, 40 x 96-well plates
171304502	Filter Plate, 1 x 96-well filter plate with clear plastic lid, plate-holder tray, sealing tape not included
	bled magnetic beads and detection antibody. Requires the appropriate reagent kit and standards. Singleplex sets should with others from different panels or groups.
** Required for	washing Bio-Plex Pro assays or other magnetic bead-based assays using Bio-Plex Pro and Bio-Plex Pro II wash stations
Note v-Play as	say panels can be ordered with any combination of available assays. For more information,

Bio-Plex Pro[™] Cell Signaling Assays

Cell Signaling Assays

The Bio-Plex Pro cell signaling assays are magnetic beadbased immunoassays designed to meet the sensitivity needs of the most discerning scientists. The multiplex format enables robust, reproducible, and simultaneous measurement of proteins involved in key intracellular signaling pathways. Choose from a broad selection of phosphoprotein and total protein targets to investigate pathways associated with cancer, cardiovascular disorders, inflammation, drug mechanism of action, diabetes, toxicology, and neurological disorders. These assays incorporate several features to enhance both quality and ease of use:

- Assay quick guide to get you started right away
- Assay protocol optimized for exceptional sensitivity and broad dynamic range
- Flexible ordering options order singleplex sets or visit bio-rad.com/assaybuilder to configure a custom premixed kit

Bio-Plex Pro Cell Signaling Assays

bio-rad.com/bio-plex

Available Assays

F	Phosphoprotein		Lysate Control*	Catalog #
Akt (Ser ⁴⁷³) Akt (Thr ³⁰⁸) Erk1/2 (Thr ²⁰² /Tyr ²⁰⁴ , Thr ¹⁸⁵ /T	MEK1 (Se	3 (Ser ²¹ /Ser ⁹) r ²¹⁷ /Ser ²²¹)	EGF-treated HEK-293	171-YZ0001
c-Jun (Ser ⁶³) JNK (Thr ¹⁸³ /Tyr ¹⁸⁵) p38 MAPK (Thr ¹⁸⁰ /Tyr ¹⁸²)	ATF-2 (Th CREB (Se p53 (Ser ¹	r ¹³³)	UV-treated HEK-293	171-YZ0009
EGFR (Tyr ¹⁰⁶⁸)	EGFR (Ty	r ¹¹⁷³)	EGF-treated HeLa	171-YZ0002
HER-2 (Tyr ¹²⁴⁸) HSP27 (Ser ⁷⁸)	p90 RSK S6 riboso	(Ser ³⁸⁰) mal protein (Ser ²³⁵ /Ser ²³⁶)	EGF-treated SK-BR-3	171-YZ0003
IGF-1R (Tyr ¹¹³¹)	IR-β (Tyr ¹	,	IGF-1-treated HEK-293	171-YZ0005
lκB-α (Ser ³² /Ser ³⁶) NF-κB p65 (Ser ⁵³⁶)	Smad2 (S IR-β (Tyr¹	ier ⁴⁶⁵ /Ser ⁴⁶⁷) ⁽⁴⁶)	TNF- α -treated HeLa	171-YZ0008
p70 S6 Kinase (Thr421/Ser424)	p70 S6 Ki	nase (Thr ³⁸⁹)	NGFβ-treated PC-12	171-YZ0006
PDGFR- α (Tyr ⁷⁵⁴) PDGFR- β (Tyr ⁷⁵¹) BAD (Ser ¹³⁶)	IRS-1 (Se mTOR (Se PTEN (Se		PDGF-treated NIH3T3	171-YZ0007
Stat1 (Tyr ⁷⁰¹) Stat3 (Ser ⁷²⁷)	Stat3 (Tyr	705)	IFN- α -treated HeLa	171-YZ0004
VEGFR-2 (Tyr ¹¹⁷⁵)			VEGF-treated HUVEC	171-YZ0010
ZAP-70 (Tyr ³¹⁹)			H ₂ O ₂ -treated Jurkat	171-YZ0012
Btk (Tyr ²²³) Lyn (Tyr ⁵⁰⁷)	PI3K p85 Syk (Tyr ³⁵		H ₂ O ₂ -treated Ramos	171-YZ0011
c-Abl (Tyr ²⁴⁵)			Untreated K-562	171-YZT003
Src (Tyr ⁴¹⁶)			Src-transfected NIH3T3	171-YZ0013
Negative control for all phosph	oprotein assays		Phosphatase-treated HeLa	171-YZB001
	Total Target		Lysate Control*	Catalog #
Total Akt Total Erk 1/2 Total GSK-3b Total ΙκΒ-α	Total JNK Total MEK1 Total mTOR Total p38 MAPK	Total p70 S6 Kinase Total PTEN Total Smad2 Total IGF-1R	Untreated HeLa	171-YZT002
Total c-Jun Total CREB			Untreated HEK-293	171-YZT001
Total Src			Src-transfected NIH3T3	171-YZ0013
Total Btk			H ₂ O ₂ -treated Ramos	171-YZ0011
Total ZAP-70			H ₂ O ₂ -treated Jurkat	171-YZ0012
Total HER-2			EFG-treated SK-BR-3	171-YZ0003
Negative control for all target a	,		Detection antibody diluent**	
Hous	sekeeping Protein		Lysate Control*	Catalog #
Human GAPDH			Untreated HeLa	171-YZT002
β-Actin			Untreated HeLa	171-YZT002
Negative control for all target a	assays		Detection antibody diluent**	

* All controls are shipped as one vial of lyophilized cell lysate.

 ** Included with the Bio-Plex Pro cell signaling reagent kit (#171304006M).

For More Information

Web: bio-rad.com/cellsignalingassays Request or download bulletins: 5405 and 5483

Ordering Information		
Catalog #	Description	
Premixed All-in-One	lits	
LQ00006JK0K0RR	Bio-Plex Pro Cell Signaling Akt Panel 8-Plex Assay, 1 × 96-well	
LQ00000S6KL81S	Bio-Plex Pro Cell Signaling MAPK Panel 9-Plex Assay, 1 x 96-well	
		continues

continues

bio-rad.com/bio-plex

Ordering Info	rmation		
Catalog #	Phosphoprotein	Catalog #	Phosphoprotein
Phosphoprote	ein Singleplex Sets*		
171V50001M	Akt (Ser ⁴⁷³)	171V50033M	mTOR (Ser ²⁴⁴⁸)
171V50002M	Akt (Thr ³⁰⁸)	171V50013M	NF-κB p65 (Ser ⁵³⁶)
171V50024M	ATF-2 (Thr ⁷¹)	171V50014M	p38 MAPK (Thr ¹⁸⁰ /Tyr ¹⁸²)
171V50025M	BAD (Tyr ²²³)	171V50034M	p53 (Ser ¹⁵)
171V50026M	Btk (Tyr ²²³)	171V50016M	p70 S6 kinase (Thr ³⁸⁹)
171V50027M	c-Abl (Tyr ²⁴⁵)	171V50015M	p70 S6 kinase (Thr ⁴²¹ /Ser ⁴²⁴)
171V50003M	c-Jun (Ser ⁶³)	171V50035M	p90 RSK (Ser ³⁸⁰)
171V50028M	CREB (Ser ¹³³)	171V50017M	PDGFR-α (Tyr ⁷⁵⁴)
171V50004M	EGFR (Tyr ¹⁰⁶⁸)	171V50018M	PDGFR-β (Tyr ⁷⁵¹)
171V50005M	EGFR (Tyr ¹¹⁷³)	171V50036M	PI3K p85 (Tyr ⁴⁵⁸)
171V50006M	Erk 1/2 (Thr ²⁰² /Tyr ²⁰⁴ ,Thr ¹⁸⁵ /Tyr ¹⁸⁷)	171V50037M	PTEN (Ser ³⁸⁰)
171V50007M	GSK-3α/β (Ser ²¹ /Ser ⁹)	171V50038M	S6 ribosomal protein (Ser ²³⁵ /Ser ²³⁶)
171V50008M	HER-2 (Tyr ¹²⁴⁸)	171V50019M	Smad2 (Ser ⁴⁶⁵ /Ser ⁴⁶⁷)
171V50029M	HSP27 (Ser ⁷⁸)	171V50039M	Src (Tyr ⁴¹⁶)
171V50009M	IGF-1R (Tyr ¹¹³¹)	171V50020M	Stat1 (Tyr ⁷⁰¹)
171V50031M	IR-β (Tyr ¹¹⁴⁶)	171V50021M	Stat3 (Ser ⁷²⁷)
171V50030M	IRS-1 (Ser ⁶³⁶ /Ser ⁶³⁹)	171V50022M	Stat3 (Tyr ⁷⁰⁵)
171V50010M	Ικ Β- α (Ser ³² /Ser ³⁶)	171V50040M	Syk (Tyr ³⁵²)
171V50011M	JNK (Thr ¹⁸³ /Tyr ¹⁸⁵)	171V50023M	VEGFR-2 (Tyr ¹¹⁷⁵)
171V50032M	Lyn (Tyr ⁵⁰⁷)	171V50041M	ZAP-70 (Tyr ³¹⁹)
171V50012M	MEK1 (Ser ²¹⁷ /Ser ²²¹)		
Total Target S	ingleplex Sets*		
171V60001M	Akt	171V60007M	JNK
171V60012M	Btk	171V60008M	MEK1
171V60002M	c-Jun	171V60015M	mTOR
171V60013M	CREB	171V60009M	p38 MAPK
171V60003M	Erk1/2	171V60010M	p70 S6 kinase
171V60004M	GSK-3 β	171V60016M	PTEN
171V60005M	HER-2	171V60011M	Smad2
171V60014M	IGF-1R	171V60017M	Src
171V60006M	ΙκΒ-α	171V60018M	ZAP-70
Housekeeping	g Protein Singleplex Sets*		
171V60019M	Human GAPDH	171V60020M	β-Actin
Bio-Plex Pro (Cell Signaling Reagents — cell signaling reage	ent kits are required to ru	n the singleplex sets
171304006M	Bio-Plex Pro Cell Signaling Reagent Kit, 1 × 9 cell wash buffer, bead resuspension buffer, dete flat bottom plate, sealing tape, instructions	6-well, includes assay cell ly	vsis buffer, cell lysis factor QG,
171304515	Bio-Plex Pro Cell Signaling Wash Buffer, 330 signaling assays only, compatible with both mag		

* Lysate controls are recommended for singleplex sets.

Bio-Plex Pro[™] RBM Apoptosis Assays

Apoptosis Assays

The Bio-Plex Pro RBM apoptosis assays, developed in partnership with Myriad RBM, comprise a highly relevant set of intracellular proteins involved in the commitment, onset, and induction of apoptosis by the intrinsic pathway. The assays are built on magnetic beads to enable robust quantification of multiple proteins in cell and tissue lysates, and are available as premixed all-in-one kits.



Bio-Plex Pro RBM Kidney Toxicity Assays

Key features include:

- Analytically validated to standards set forth by the Clinical Laboratory Standards Institute (CLSI)
- Manufactured in accordance with GMP guidelines
- Lot-to-lot correlation specification of R² ≥ 0.9 for consistently reproducible results
- 2-level quality controls with lot-specific ranges
- Assay quick guide to get you started right away

- Fastest available assay protocols and a convenient all-in-one kit format
- Magnetic beads for simplified plate processing

Available Bio-Plex Pro RBM Apoptosis Analytes

Panel 1	Panel 2	Panel 3
Bak	Bad	Active caspase-3
Bax	Bax / Bcl-2 dimer	Bcl-xL / Bak dimer
Lamin B	Bcl-xL	Mcl-1 / Bak dimer
Smac	Bim	Survivin
	Mcl-1	

Ordering Information

Catalog #	Description
Bio-Plex Pro I	RBM Apoptosis Assays
171WAR1CK	Bio-Plex Pro RBM Apoptosis Panel 1, 1 x 96-well all-in-one kit that includes premixed magnetic capture beads and detection antibodies, standards, 2-level controls, standard diluent, buffers (blocking, lysate dilution (LDB), cytosolic extraction (CEB), 10x assay), 10x streptavidin-PE, flat bottom plate, plate seals, and instructions, for the detection of the following analytes in cell and tissue lysates: Bak, Bax, Lamin B, and Smac
171WAR2CK	Bio-Plex Pro RBM Apoptosis Panel 2 , 1 x 96-well all-in-one kit that includes premixed magnetic capture beads and detection antibodies, standards, 2-level controls, standard diluent, buffers (blocking, lysate dilution (LDB), cytosolic extraction (CEB), 10x assay), 10x streptavidin-PE, flat bottom plate, plate seals, and instructions, for the detection of the following analytes in cell and tissue lysates: Bad, Bax / Bcl-2 dimer, Bcl-xL, Bim, and Mcl-1
171WAR3CK	Bio-Plex Pro RBM Apoptosis Panel 3 , 1 x 96-well all-in-one kit that includes premixed magnetic capture beads and detection antibodies, standards, 2-level controls, standard diluent, buffers (blocking, lysate dilution (LDB), cytosolic extraction (CEB), 10x assay), 10x streptavidin-PE, flat bottom plate, plate seals, and instructions, for the detection of the following analytes in cell and tissue lysates: active caspase-3, Bcl-xL / Bak dimer, Mcl-1 / Bak dimer, and survivin

Bio-Plex Pro[™] RBM Kidney Toxicity Assays

Kidney Toxicity Assays

The Bio-Plex Pro RBM kidney toxicity assays, developed in partnership with Myriad RBM, comprise a highly relevant set of biomarkers for early detection and characterization of kidney toxicity/injury.

The assays are built on magnetic beads to enable robust quantification of multiple proteins in human, canine, and rat urine samples.

Key features include:

- Analytically validated to standards set forth by the Clinical Laboratory Standards Institute (CLSI)
- Manufactured in accordance with GMP guidelines



- Lot-to-lot correlation specification of R² ≥ 0.9 for consistently reproducible results
- 2-level quality controls with lot-specific ranges
- Assay quick guide to get you started right away
- Fastest available assay protocols and a convenient all-in-one kit format
- Magnetic beads for simplified plate processing

Ordering Information		
Catalog #	Description	
Bio-Plex Pro	RBM Kidney Toxicity Assays	
171ATR1CK	Bio-Plex Pro RBM Human Kidney Toxicity Panel 1, 1 x 96-well, includes premixed magnetic capture beads, premixed detection antibodies, standards mix, 2-level controls, blocking buffer, standard diluent, sample dilution buffer, 10x assay buffer, 10x streptavidin-PE, 96-well flat bottom plate, plate seals, and instructions, for the detection of the following analytes: calbindin, clusterin, GST- π , IL-18, KIM-1, MCP-1	
		continues

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Catalog #	Description
171ATR2CK	Bio-Plex Pro RBM Human Kidney Toxicity Panel 2, 1 x 96-well, includes premixed magnetic capture beads, premixed detection antibodies, standards mix, 2-level controls, blocking buffer, standard diluent, sample dilution buffer, 10x assay buffer, 10x streptavidin-PE, 96-well flat bottom plate, plate seals, and instructions, for the detection of the following analytes: albumin, B2M, cystatin C, NGAL, osteopontin, TFF3
171QTR1CK	Bio-Plex Pro RBM Canine Kidney Toxicity Panel 1 , 1 x 96-well, includes premixed magnetic capture beads, premixed detection antibodies, standards mix, 2-level controls, blocking buffer, standard diluent, sample dilution buffer, 10x assay buffer, 10x streptavidin-PE, 96-well flat bottom plate, plate seals, and instructions, for the detection of the following analytes: clusterin, KIM-1, MCP-1, NGAL
171QTR2CK	Bio-Plex Pro RBM Canine Kidney Toxicity Albumin Kit , 1 x 96-well, includes premixed magnetic capture beads, premixed detection antibodies, standards mix, 2-level controls, blocking buffer, standard diluent, sample dilution buffer, 10x assay buffer, 10x streptavidin-PE, 96-well flat bottom plate, plate seals, and instructions, for the detection of albumin
171KTR1CK	Bio-Plex Pro RBM Rat Kidney Toxicity Panel 1, 1 x 96-well, includes premixed magnetic capture beads, premixed detection antibodies, standards mix, 2-level controls, blocking buffer, standard diluent, sample dilution buffer, 10x assay buffer, 10x streptavidin-PE, 96-well flat bottom plate, plate seals, and instructions, for the detection of the following analytes: clusterin, IL-18, KIM-1, MCP-1, osteopontin
171KTR2CK	Bio-Plex Pro RBM Rat Kidney Toxicity Panel 2, 1 x 96-well, includes premixed magnetic capture beads premixed detection antibodies, standards mix, 2-level controls, blocking buffer, standard diluent, sample dilution buffer, 10x assay buffer, 10x streptavidin-PE, 96-well flat bottom plate, plate seals, and instructions, for the detection of the following analytes: B2M, calbindin, cystatin C, NGAL
171KTR3CK	Bio-Plex Pro RBM Rat Kidney Toxicity Albumin Kit , 1 x 96-well, includes premixed magnetic capture beads, premixed detection antibodies, standards mix, 2-level controls, blocking buffer, standard diluent, sample dilution buffer, 10x assay buffer, 10x streptavidin-PE, 96-well flat bottom plate, plate seals, and instructions, for the detection of albumin

Bio-Plex Pro[™] Human Cancer Biomarker Panels

Human Cancer Biomarker Panels

Bio-Plex Pro human cancer biomarker panels are a unique blend of magnetic bead-based assays designed to meet the needs of the most discerning preclinical and clinical researchers. The multiplex format enables robust and reproducible measurement of 34 cancer biomarkers involved in disease processes such as angiogenesis, metastasis, cell proliferation, cell adhesion/migration, apoptosis, and inflammation. The assays incorporate several features to enhance both quality and ease of use:

- Magnetic beads simplified plate processing and improved reproducibility
- Flexible ordering options available in 16- and 18-plex premixed all-in-one kits, singleplex sets, or customized assays using the Bio-Plex assay builder (bio-rad.com/assaybuilder)
- Optimized protocols high precision and broad assay working ranges
- Assay quick guide to get you started right away
- 2-level quality controls included with premixed kits
- Robustness tested in serum, plasma, and other biological fluids



- Convenience all-in-one kit format
- Compatible with Bio-Plex[™] 200, Bio-Plex 3D, and Bio-Plex[®] MAGPIX[™] systems

For More Information Web: bio-rad.com/bio-plexprocancer Request or download bulletins: 6156 and 6159

Bio-Plex Pro Human Cancer Biomarker Panels

Available Human Cancer Biomarker Panel 1 Analytes

sEGFR	sIL-6Rα	Prolactin
FGF-basic	Leptin	SCF
Follistatin	Osteopontin	sTIE-2
G-CSF	PDGF-AB/BB	sVEGFR-1
sHER-2 / neu	PECAM-1	sVEGFR-2
HGF		

Available Human Cancer Biomarker Panel 2 Analytes

Angiopoietin-2	IGFBP-1	TGF-α
sCD40L	IL-6	TNF-α
EGF	IL-8	uPA
Endoglin	IL-18*	VEGF-A
sFASL	PAI-1	VEGF-C
HB-EGF	PLGF	VEGF-D

 * IL-18 is not available as a single plex.

Catalog #	Description			
Human Premi	xed All-in-One Kit			
171AC500M	Bio-Plex Pro Human Cancer Biomarker	Panel 1. 16-Plex. 1 x 96-well. inc	ludes premixed coupled magnetic	
	beads, detection antibodies, standard, 2-level controls, detection antibody diluent, standard diluent HB, sample			
	diluent HB. assav and wash buffers, streptavidin-PE. 96-well flat bottom plate, sealing tape, and instructions.			
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	for detection of sEGFR, FGF-basic, follistati		L-6Rα, leptin, osteopontin,	
	PDGF-AB/BB, PECAM-1, prolactin, SCF, s	FIE-2, sVEGFR-1, sVEGFR-2		
171AC600M	Bio-Plex Pro Human Cancer Biomarker	Panel 2, 18-Plex, 1 x 96-well, inc	ludes premixed coupled magnetic	
	beads, detection antibodies, standard, 2-le			
	diluent HB, assay and wash buffers, strepta			
	for detection of angiopoietin-2, sCD40L, E			
	0		IGFBP-1, IL-0, IL-0, IL-10, PAI-1,	
	PLGF, TGF- α , TNF- α , uPA, VEGF-A, VEG	àF-C, VEGF-D		
Catalog #	Description	Catalog #	Description	
	luman Cancer Biomarker Panel 1 Single			
• • • •	tokines, chemokines, growth factors, an			
171BC501M	sEGFR Set	171BC509M	Osteopontin Set	
171BC502M	FGF-basic Set	171BC511M	PDGF-AB/BB Set	
171BC503M	Follistatin Set	171BC510M	PECAM-1 Set	
171BC504M	G-CSF Set	171BC512M	Prolactin Set	
171BC505M	HGF Set	171BC513M	SCF Set	
171BC506M	sHER-2 / neu Set	171BC514M	sTIE-2 Set	
171BC507M	sIL-6Rα Set	171BC515M	sVEGFR-1 Set	
171BC508M	Leptin Set	171BC516M	sVEGFR-2 Set	
		1112001011		
Standards				
	· · · · · · · · · · · · · · · · · · ·		a of 1 vial. Ivophilized mixture of	
Standards	Bio-Plex Pro Human Cancer Biomarker		g of 1 vial, lyophilized mixture of	
Standards 171DC5000	Bio-Plex Pro Human Cancer Biomarker	Panel 1, 16-Plex Standards, pkg		
Standards	Bio-Plex Pro Human Cancer Biomarker 16 standard analytes Bio-Plex Pro Human Cancer Biomarker	Panel 1, 16-Plex Standards, pkg		
Standards 171DC5000 171DC5001	Bio-Plex Pro Human Cancer Biomarker 16 standard analytes Bio-Plex Pro Human Cancer Biomarker lyophilized mixture of 16 standard analytes	Panel 1, 16-Plex Standards, pk Panel 1, 16-Plex Standards, pk		
Standards 171DC5000 171DC5001 Bio-Plex Pro I	Bio-Plex Pro Human Cancer Biomarker 16 standard analytes Bio-Plex Pro Human Cancer Biomarker lyophilized mixture of 16 standard analytes Iuman Cancer Biomarker Panel 2 Single	Panel 1, 16-Plex Standards, pk Panel 1, 16-Plex Standards, pk		
Standards 171DC5000 171DC5001 Bio-Plex Pro I (ligands, cyto	Bio-Plex Pro Human Cancer Biomarker 16 standard analytes Bio-Plex Pro Human Cancer Biomarker lyophilized mixture of 16 standard analytes Human Cancer Biomarker Panel 2 Singleg kines, chemokines, and growth factors)	Panel 1, 16-Plex Standards, pk Panel 1, 16-Plex Standards, pk plex Sets*, 1 x 96-Well	g of 50 lot-matched vials,	
Standards 171DC5000 171DC5001 Bio-Plex Pro I (ligands, cyto 171BC601M	Bio-Plex Pro Human Cancer Biomarker 16 standard analytes Bio-Plex Pro Human Cancer Biomarker lyophilized mixture of 16 standard analytes Human Cancer Biomarker Panel 2 Singler kines, chemokines, and growth factors) Angiopoietin-2 Set	Panel 1, 16-Plex Standards, pkg Panel 1, 16-Plex Standards, pkg plex Sets*, 1 x 96-Well 171BC611M	g of 50 lot-matched vials, PAI-1 Set	
Standards 171DC5000 171DC5001 Bio-Plex Pro I (ligands, cyto	Bio-Plex Pro Human Cancer Biomarker 16 standard analytes Bio-Plex Pro Human Cancer Biomarker lyophilized mixture of 16 standard analytes Human Cancer Biomarker Panel 2 Singleg kines, chemokines, and growth factors)	Panel 1, 16-Plex Standards, pk Panel 1, 16-Plex Standards, pk plex Sets*, 1 x 96-Well	g of 50 lot-matched vials,	
Standards 171DC5000 171DC5001 Bio-Plex Pro I (ligands, cyto 171BC601M	Bio-Plex Pro Human Cancer Biomarker 16 standard analytes Bio-Plex Pro Human Cancer Biomarker lyophilized mixture of 16 standard analytes Human Cancer Biomarker Panel 2 Singler kines, chemokines, and growth factors) Angiopoietin-2 Set	Panel 1, 16-Plex Standards, pkg Panel 1, 16-Plex Standards, pkg plex Sets*, 1 x 96-Well 171BC611M	g of 50 lot-matched vials, PAI-1 Set	
Standards 171DC5000 171DC5001 Bio-Plex Pro I (ligands, cyto 171BC601M 171BC602M	Bio-Plex Pro Human Cancer Biomarker 16 standard analytes Bio-Plex Pro Human Cancer Biomarker lyophilized mixture of 16 standard analytes Human Cancer Biomarker Panel 2 Singler kines, chemokines, and growth factors) Angiopoietin-2 Set sCD40L Set EGF Set	Panel 1, 16-Plex Standards, pk Panel 1, 16-Plex Standards, pk plex Sets*, 1 x 96-Well 171BC611M 171BC612M	PAI-1 Set PLGF Set	
Standards 171DC5000 171DC5001 Bio-Plex Pro I (ligands, cyto 171BC601M 171BC602M 171BC603M	Bio-Plex Pro Human Cancer Biomarker 16 standard analytes Bio-Plex Pro Human Cancer Biomarker lyophilized mixture of 16 standard analytes Human Cancer Biomarker Panel 2 Singler kines, chemokines, and growth factors) Angiopoietin-2 Set sCD40L Set	Panel 1, 16-Plex Standards, pkg Panel 1, 16-Plex Standards, pkg plex Sets*, 1 x 96-Well 171BC611M 171BC612M 171BC613M	g of 50 lot-matched vials, PAI-1 Set PLGF Set TGF-α Set	
Standards 171DC5000 171DC5001 Bio-Plex Pro I (ligands, cyto 171BC601M 171BC602M 171BC603M 171BC603M 171BC605M	Bio-Plex Pro Human Cancer Biomarker 16 standard analytes Bio-Plex Pro Human Cancer Biomarker lyophilized mixture of 16 standard analytes tuman Cancer Biomarker Panel 2 Singleg kines, chemokines, and growth factors) Angiopoietin-2 Set sCD40L Set EGF Set Endoglin Set sFASL Set	Panel 1, 16-Plex Standards, pkg Panel 1, 16-Plex Standards, pkg plex Sets*, 1 x 96-Well 171BC611M 171BC612M 171BC613M 171BC614M 171BC615M	g of 50 lot-matched vials, PAI-1 Set PLGF Set TGF-α Set TNF-α Set uPA Set	
Standards 171DC5000 171DC5001 Bio-Plex Pro I (ligands, cyto 171BC601M 171BC602M 171BC603M 171BC604M 171BC605M 171BC606M	Bio-Plex Pro Human Cancer Biomarker 16 standard analytes Bio-Plex Pro Human Cancer Biomarker lyophilized mixture of 16 standard analytes Human Cancer Biomarker Panel 2 Singler kines, chemokines, and growth factors) Angiopoietin-2 Set sCD40L Set EGF Set Endoglin Set sFASL Set HB-EGF Set	Panel 1, 16-Plex Standards, pkg Panel 1, 16-Plex Standards, pkg blex Sets*, 1 x 96-Well 171BC611M 171BC612M 171BC613M 171BC614M 171BC615M 171BC615M 171BC616M	PAI-1 Set PLGF Set TGF- α Set uPA Set VEGF-A Set	
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Standards 171DC5000 171DC5001 Bio-Plex Pro I (ligands, cyto 171BC601M 171BC602M 171BC603M 171BC605M 171BC606M 171BC607M 171BC608M 171BC608M 171BC609M Standards 171DC6000 171DC6001 Reagent Kits	Bio-Plex Pro Human Cancer Biomarker 16 standard analytes Bio-Plex Pro Human Cancer Biomarker lyophilized mixture of 16 standard analytes 4uman Cancer Biomarker Panel 2 Singley kines, chemokines, and growth factors) Angiopoietin-2 Set sCD40L Set EGF Set Endoglin Set sFASL Set HB-EGF Set IGFBP-1 Set IL-6 Set IL-8 Set Bio-Plex Pro Human Cancer Biomarker 18 standard analytes Bio-Plex Pro Human Cancer Biomarker lyophilized mixture of 18 standard analytes Bio-Plex Pro Reagent Kit II with Flat Bot	Panel 1, 16-Plex Standards, pkg Panel 1, 16-Plex Standards, pkg plex Sets*, 1 x 96-Well 171BC611M 171BC612M 171BC613M 171BC613M 171BC614M 171BC615M 171BC616M 171BC618M Panel 2, 18-Plex Standards, pkg Panel 2, 18-Plex St	g of 50 lot-matched vials, PAI-1 Set PLGF Set TGF-α Set TNF-α Set VEGF-A Set VEGF-A Set VEGF-C Set VEGF-D Set g of 1 vial, lyophilized mixture of g of 50 lot-matched vials, letection antibody diluent,	
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Standards 171DC5000 171DC5001 Bio-Plex Pro I (ligands, cyto 171BC601M 171BC602M 171BC603M 171BC605M 171BC605M 171BC606M 171BC600M 171BC6000 Standards 171DC6000 171DC6001 Reagent Kits 171304055M * Includes coup	Bio-Plex Pro Human Cancer Biomarker 16 standard analytes Bio-Plex Pro Human Cancer Biomarker Iyophilized mixture of 16 standard analytes tuman Cancer Biomarker Panel 2 Singley Kines, chemokines, and growth factors) Angiopoietin-2 Set sCD40L Set EGF Set Endoglin Set sFASL Set HB-EGF Set IGFBP-1 Set IL-6 Set IL-8 Set Bio-Plex Pro Human Cancer Biomarker 18 standard analytes Bio-Plex Pro Human Cancer Biomarker Iyophilized mixture of 18 standard analytes Bio-Plex Pro Reagent Kit II with Flat Bott standard diluent HB, sample diluent HB, as	Panel 1, 16-Plex Standards, pkg Panel 1, 16-Plex Standards, pkg plex Sets*, 1 x 96-Well 171BC611M 171BC612M 171BC613M 171BC614M 171BC615M 171BC616M 171BC616M 171BC618M Panel 2, 18-Plex Standards, pkg Panel 2, 18-Plex Standards, pkg r panel 3, 18-Plex Standards, pkg r panel 3, 18-Plex Standards, pkg r panel 4, 1 x 96-well, includes c say and wash buffers, streptavidi aration methods	g of 50 lot-matched vials, PAI-1 Set PLGF Set TGF-α Set TNF-α Set VEGF-A Set VEGF-C Set VEGF-D Set g of 1 vial, lyophilized mixture of g of 50 lot-matched vials, letection antibody diluent, n-PE, flat bottom plate,	

Bio-Plex Pro[™] Diabetes Assays

Diabetes Assays

The Bio-Plex Pro diabetes assays are magnetic bead–based multiplex assays designed for enhanced assay sensitivity and assay working ranges. These assays detect human, non-human primate, mouse, and rat diabetes-related biomarkers using as little as 12.5 μ l of sample per well.

Key features include:

- Increased productivity measure up to 10 diabetes and obesity markers, plus adiponectin and adipsin, in only 3 hours
- Expanded multiplexability mix diabetes assays with a host of compatible assays from our cytokine menu
- Option to use a magnetic wash station simplify assay workflow and improve data consistency between experiments
- Flexible ordering options order either premixed all-in-one kits or singleplex sets, or customize your assay with the Bio-Plex assay builder (bio-rad.com/assaybuilder)



- Robustness performance tested in serum and plasma matrices
- Cross-platform compatibility can be used with all xMAP life science instruments supplied by any Luminex partner

For More Information Web: bio-rad.com/bio-plexprodiabetes Request or download bulletins: 6342 and 6119

Available Bio-Plex Pro Diabetes Assays

Human (compatible with non-human primate samples)*	Mouse	Rat	
Adiponectin	Adiponectin	Ghrelin	
Adipsin	Ghrelin	GLP-1	
C-Peptide	GIP	Glucagon	
Ghrelin	GLP-1	Leptin	
GIP	Glucagon	PAI-1	
GLP-1	Insulin		
Glucagon	Leptin		
Insulin	PAI-1		
Leptin	Resistin		
PAI-1			
Resistin			
Visfatin			

* See instruction manual for details.

Bio-Plex Pro Diabetes Assays

bio-rad.com/bio-plex

Catalog #	Description		
Human Prem	ixed All-in-One Kits (compatible with non-hum	an primate samples)	
171A7001M	Bio-Plex Pro Human Diabetes 10-Plex Panel, 1 x 96-well, includes premixed coupled magnetic beads, detection antibodies, standards, assay and wash buffers, detection antibody diluent, streptavidin-PE, flat bottom plate, sealing tape, standard and sample diluents for the detection of C-Peptide, ghrelin, GIP, GLP-1, glucagon, insulin, leptin, PAI-1, resistin, and visfatin		
171A7002M	Bio-Plex Pro Human Diabetes Adipsin and Adiponectin Assays, 1 x 96-well, includes coupled magnetic beads, detection antibodies, standards, assay and wash buffers, detection antibody diluent, streptavidin-PE, flat bottom plate, sealing tape, serum-based diluent for the detection of adipsin and adiponectin		
171A7003M	Bio-Plex Pro Human Diabetes Adiponectin Assay, 1 x 96-well, includes coupled magnetic beads, detection antibodies, standards, assay and wash buffers, detection antibody diluent, streptavidin-PE, flat bottom plate, sealing tape, serum-based diluent for the detection of adiponectin		
171A7004M	Bio-Plex Pro Human Diabetes Adipsin Assay, 1 x 96-well, includes coupled magnetic beads, detection antibodies, standards, assay and wash buffers, detection antibody diluent, streptavidin-PE, flat bottom plate, sealing tape, serum-based diluent for the detection of adipsin		
Catalog #	Description	Catalog #	Description
Bio-Plex Pro	Human Diabetes Singleplex Sets*, 1 x 96-Well		
171B7003M	C-Peptide Set	171B7008M	Insulin Set
171B7004M	Ghrelin Set	171B7009M	Leptin Set
171B7005M	GIP Set	171B7010M	PAI-1 Set
171B7006M	GLP-1 Set	171B7011M	Resistin Set
171B7007M	Glucagon Set	171B7012M	Visfatin Set
Standards			
171D70001	Bio-Plex Pro Human Diabetes Standards, pkg	g of 1 vial, lyophilized mixtu	re of 12 analytes
171D70050	Bio-Plex Pro Human Diabetes Standards, pkg of 50 lot-matched vials, lyophilized mixture of 12 analytes		
Mouse Premi	ixed All-in-One Kits		
171F7001M	Bio-Plex Pro Mouse Diabetes 8-Plex Panel, 1 x 96-well, includes coupled magnetic beads, detection antibodies, standards, assay and wash buffers, detection antibody diluent, streptavidin-PE, filter plate, flat bottom plate, sealing tape, standard and sample diluents for the detection of ghrelin, GIP, GLP-1, glucagon, insulin, leptin, PAI-1, and resistin		
			les coupled magnetic beads,

 Includes coupled magnetic beads and detection antibody. Requires the appropriate reagent kit and standards. Singleplex sets not be mixed with others from different panels or groups.

continues

Catalog #	Description	Catalog #	Description
			Description
	Nouse Diabetes Singleplex Sets*, 1 x		
171G7002M	Ghrelin Set	171G7006M	Insulin Set
171G7003M	GIP Set	171G7007M	Leptin Set
171G7004M	GLP-1 Set	171G7008M	PAI-1 Set
171G7005M	Glucagon Set	171G7009M	Resistin Set
Standards			
171170001		ndards, pkg of 1 vial, lyophilized mixture cagon, insulin, leptin, PAI-1, and resistin	e of 9 standard analytes, includes
171170050		ndards, pkg of 50 lot-matched vials, lyo n, GIP, GLP-1, glucagon, insulin, leptin, l	•
Bio-Plex Pro	Rat Diabetes Singleplex Sets*, 1 x 96	-Well	
171L7001M	Ghrelin Set	171L7006M	Leptin Set
171L7003M	GLP-1 Set	171L7007M	PAI-1 Set
171L7004M	Glucagon Set		
Standards			
171NZ0001	Bio-Plex Pro Rat Standards, pkg o cytokine and rat diabetes assays	f 1 vial, lyophilized mixture of 31 standar	d analytes. Compatible with rat
171NZ0501	Bio-Plex Pro Rat Standards, pkg o Compatible with rat cytokine and rat	f 50 lot-matched vials, lyophilized mixtu diabetes assays	re of 31 standard analytes.
Reagent Kit -	- for use with diabetes singleplex se	ets	
171304070M	0	Bottom Plate, 1 x 96-well, includes flat reptavidin-PE, sealing tape, standard an hods	
	led magnetic beads and detection antib	ody. Bequires the appropriate reagent l	kit and standards. Singlenlex sets should

* Includes coupled magnetic beads and detection antibody. Requires the appropriate reagent kit and standards. Singleplex sets should not be mixed with others from different panels or groups.

Bio-Plex Pro[™] Human Isotyping Assays

Human Isotyping Assays

Bio-Plex Pro human isotyping assays are magnetic bead–based multiplex immunoassays offering accurate and reproducible measurements of multiple analytes simultaneously. These assays have been developed to provide reliable performance with the flexibility required to meet your research needs. They incorporate several features to enhance both quality and ease of use.

- Magnetic beads simplified plate processing and improved reproducibility
- Convenience all-in-one kit format for both multiplex and singleplex assays

Available Assays

IgG ₁	IgA
IgG ₂ IgG ₃ IgG ₄	IgM
IgG ₃	IgE
IgG ₄	IgG Total

- 1-level quality control
- **Optimization** one diluent optimized for use with samples, standards, and controls
- Assay quick guide to get you started right away

For More Information Web: bio-rad.com/isotyping Request or download bulletin: 6344

Bio-Plex Pro Human Acute Phase Assay Panel

bio-rad.com/bio-plex

Catalog #	Description
Bio-Plex Pro	Human Isotyping Panel Premixed All-in-One Multiplex Kit
171A3100M	Bio-Plex Pro Human Isotyping Panel, 6-plex , 1 x 96-well, includes coupled magnetic beads, detection antibodies, standards, 1-level quality controls, detection antibody diluent, isotyping diluent (for use with samples, standards, and controls), assay buffer, wash buffer, streptavidin-PE, 96-well flat bottom plate, sealing tape, assay quick guide, and product data sheet, for detection of IgG ₁ , IgG ₂ , IgG ₃ , IgG ₄ , IgA, and IgM
Bio-Plex Pro	Human Isotyping All-in-One Singleplex Kits*
171A3101M	IgA Kit, 1 x 96-well
171A3104M	IgM Kit, 1 x 96-well
171A3102M	IgE Kit, 1 x 96-well
171A3103M	IGG Total Kit, 1 x 96-well

wash buffer, streptavidin-PE, 96-well flat bottom plate, sealing tape, assay quick guide, and product data sheet.

Bio-Plex Pro[™] Human Acute Phase Assay Panel

Human Acute Phase Assay Panel

Inflammation in response to tissue injury, infection, sepsis, cardiovascular disease, and diabetes typically involves the production and release of multiple acute phase proteins from the liver. The Bio-Plex Pro human acute phase assay panels deliver accurate and reproducible measurement of nine of the most commonly measured acute phase biomarkers in just 3 hours with as little as 13 µl of sample. Bio-Plex Pro human acute phase assay features include:

- Bio-Plex Pro human acute phase 5-plex assay panel includes ferritin, fibrinogen, procalcitonin, serum amyloid A, and tissue plasminogen activator
- Bio-Plex Pro human acute phase 4-plex assay panel includes α-2-macroglobulin, CRP, haptoglobin, and serum amyloid P
- Validated in serum, plasma, and culture supernatant

Available Bio-Plex Pro Human Acute Phase Assays

α-2-macroglobulin	Procalcitonin
CRP	SAA
Ferritin	SAP
Fibrinogen	Tissue plasminogen activator
Haptoglobin	

 Compatible with the Bio-Plex[®] 200 system and all Luminex 100- and 200-based readers (uses 25 bead map)

For optimal performance, the acute phase panel exists as separate 5-plex and 4-plex assays with distinct sample dilution requirements.

For More Information

Web: bio-rad.com/bio-plexproacutephase Request or download bulletin: 5650

Ordering Information	
Catalog #	Description
Complete Kits	S*
171A4S07M	Bio-Plex Pro Human Acute Phase 5- + 4-Plex Panel Complete Kit, 1 x 96-well
171A4C09M	Bio-Plex Pro Human Acute Phase 4-Plex Panel Complete Kit, 1 x 96-well
171A4C07M	Bio-Plex Pro Human Acute Phase 5-Plex Panel Complete Kit, 1 x 96-well
controls, dete	iic for each assay indicated and include coupled magnetic beads, detection antibodies, standards, 1-level quality ction antibody diluent, isotyping diluent (for use with samples, standards, and controls), assay buffer, wash buffer, E, 96-well flat bottom plate, sealing tape, assay quick guide, and product data sheet.

continues

bio-rad.com/bio-plex

Catalog #	Description
Assay Kits*	
171A4007M	Bio-Plex Pro Human Acute Phase 5-Plex Panel, 1 x 96-well, includes premixed coupled magnetic beads, detection antibodies, standards, and controls for the detection of ferritin, fibrinogen, procalcitonin, serum amyloid A, tissue plasminogen activator; requires acute phase reagent kit and acute phase diluent kit
171A4008M	Bio-Plex Pro Human Acute Phase 5-Plex Panel, 10 x 96-well, requires 10 acute phase reagent kits and 10 acute phase diluent kits
171A4009M	Bio-Plex Pro Human Acute Phase 4-Plex Panel, 1 x 96-well, includes premixed coupled magnetic beads, detection antibodies, standards, and controls for the detection of α -2-macroglobulin, CRP, haptoglobin, serum amyloid P; requires acute phase reagent kit and acute phase diluent kit
171A4010M	Bio-Plex Pro Human Acute Phase 4-Plex Panel , 10 x 96-well, requires 10 acute phase reagent kits and 10 acute phase diluent kits
Standards	
171D40002	Bio-Plex Pro Human Acute Phase Standards, pkg of 2 vials, lyophilized mixture of 9 standard antigens
171D40006	Bio-Plex Pro Human Acute Phase Standards, pkg of 50 lot-matched vials, lyophilized mixture of 9 standard antigens
Reagent Kit	
171304050	Bio-Plex Pro Human Acute Phase Reagent Kit, 1 x 96-well, includes assay buffer, wash buffer, detection antibody diluent, streptavidin-PE, filter plate, sealing tape
Diluent Kit**	
171305050	Bio-Plex Pro Human Acute Phase Diluent Kit, 1 x 96-well, includes 10 ml serum-based diluent and 300 ml serum-free diluent
* One acute pl	hase reagent kit is required for use with each assay kit.
** One acute pl	nase diluent kit is sufficient to perform one 5-plex and one 4-plex assay.

Bio-Plex® COOH Beads and Related Reagents

Bio-Plex Pro[™] Magnetic COOH Beads

Carboxylated beads that enable you to build your own magnetic assays for use with either magnetic- or vacuumbased separation protocols during assay preparation. The magnetic beads are available in 20 bead regions in 1 ml vials for immediate delivery (4 ml vials are available with a 30-day lead time). The Bio-Plex[®] amine coupling kit provides a complete set of reagents for coupling proteins to the beads. For nucleic acid coupling, refer to the instruction manual.

- Suitable for protein and nucleic acid multiplex assays
- Compatible with all Luminex xMAP readers, both Bio-Plex Pro and Bio-Plex Pro II wash stations, and Bio-Plex handheld magnetic washers



For More Information Web: bio-rad.com/COOH

Ordering Information

Catalog #	Description
MC100xx01*	Bio-Plex Pro Magnetic COOH Beads, 1 ml
MC100xx04*	Bio-Plex Pro Magnetic COOH Beads, 4 ml
* xx = bead regio	on. Bead regions available: 26–29, 34–37, 43–46, 52–55, and 62–65.

Bio-Plex COOH Beads and Related Reagents

bio-rad.com/bio-plex

Bio-Plex[®] Nonmagnetic COOH Beads

Develop your own Bio-Plex suspension array assays using these beads. The beads are internally labeled with two fluorescent dyes. Use the Bio-Plex amine coupling kit to attach nucleic acids, antibodies, or other proteins to polystyrene beads for multianalyte analysis of any sample in a 96-well format.

- Flexible assays quickly add or remove analytes from your menu
- Ready-to-use reagent kits optimized for Bio-Plex COOH beads
- Complete solution one-stop source for all your assay needs
- Compatibility works with 200 and 3D xMAP readers



For More Information Web: bio-rad.com/COOH

Ordering Information									
Catalog #	Description								
1715060xx*	Bio-Plex Nonmagnetic COOH Beads, 1.25 x 107 beads/ml, 1 ml								
1716060xx*	Bio-Plex Nonmagnetic COOH Beads, 16 ml								
*xx = bead reg	ion. Bead regions available, 11, 16, 18, 20, 24–28, 30, 31, 33, 35, 38, 42–46, 50–53, 56, and 66.								

Bio-Plex[®] Amine Coupling Kit

This kit was developed specifically for immobilizing antibodies or other proteins on Bio-Plex nonmagnetic COOH beads.

- Sufficient reagents for 30 coupling reactions using 100 μl of Bio-Plex COOH beads
- Each coupling reaction supports the analysis of 200 samples
- Tested on proteins from 6–150 kD
- For use with antibodies or other proteins

For More Information Web: bio-rad.com/COOH

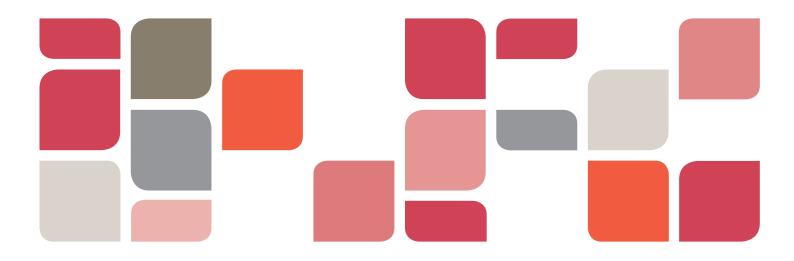


Catalog #	Description	
	ine Coupling Kit	
171406001*	Bio-Plex Amine Coupling Kit, 30 reactions, includes bead wash buffer, bead activation buffer, storage buffer, staining buffer, coupling reaction tubes	
Bio-Plex Stre	eptavidin-PE**	
171304501	Bio-Plex Streptavidin-PE, streptavidin-phycoerythrin for 10 x 96-well reactions	
* For protein o	coupling only.	
	n-PE is a component of all reagent kits and is available seperately.	

Bio-Plex Multiplex System Subject Index

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Microplate Systems

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Instruments and Software

Microplate Absorbance Readers and Accessories

Instruments and Software



Protein assays: page 20.

iMark[™] Microplate Absorbance Reader

This reader offers a preprogrammed validation protocol and a built-in printer. The instrument can be used as a stand-alone reader or controlled by a PC or Mac with Microplate Manager[®] 6 software, and comes with six standard absorbance filters: 415, 450, 490, 595, 655, and 750 nm. Five additional filters are available (405, 540, 550, 570, and 630 nm) as well custom filters at 5 nm intervals from 400–750 nm on request.

- Ability to read flat, U-, or V-bottom microplates or 8- or 12-well strip plates
- Automatic calibration before each reading
- Variable-speed plate-shaking capability



 Multilingual interface and LCD display (English, Japanese, Chinese, and Russian)

For More Information Web: bio-rad.com/iMark Request or download bulletin: 5670

Ordering Info	ormation	
Catalog #	Description	
1681130	iMark Microplate Absorbance Reader, 100/240 V, includes 6 filters (415, 450, 490, 595, 655, 750 nm), built-in plate shaker, onboard software and thermal printer, one roll printer paper, USB2 and power cables	
1681135	iMark Microplate Absorbance Reader with Microplate Manager 6 Software, for PC and MAC	
Accessories		
1660495	8-Channel Professional Adjustable-Volume 20–200 µl Digital Micropipet, pkg of 1, 8-channel	
	20–200 µl adjustable-volume micropipet, includes volume lock mechanism, curved tip ejector, rotating manifold, fully autoclavable	
1686940	Checkmark Reader Performance Verification Kit, includes absorbance calibration plate, Checkmark software	
1682230	IQ/OQ Kit for iMark Microplate Absorbance Reader, includes #1686940, IQ/OQ protocols	

xMark[™] Microplate Absorbance Spectrophotometer

With its monochromator design and spectral scanning feature (which eliminates the need for filters), this spectrophotometer can find the best wavelength within a broad range for any photometric application. The xMark spectrophotometer can read all standard microplates, from 6- to 1,536-well formats, and can perform a wide range of end-point and kinetic applications with spectral scanning within low UV to infrared wavelengths.

- Monochromator-based system for maximum optical efficiency and flexibility in photometry reading
- High-performance optics for low- or high-density formats
- Imaging capabilities for pixel intensity data in a single well or entire plate



- Includes Microplate Manager[®] software
- Built-in plate shaker with variable mixing direction and adjustable speed and incubator with programmable temperature control

For More Information Web: bio-rad.com/xMark

Ordering Info	rmation
Catalog #	Description
1681150	xMark Microplate Absorbance Spectrophotometer, PC or Mac, built-in incubator, plate shaker, Microplate Manager 6 software, USB2 and power cables
1682000	Plate Adaptor, for using Terasaki plate with xMark microplate absorbance spectrophotometer
Accessories	
1682250	IQ/OQ Kit for xMark Microplate Absorbance Spectrophotometer, includes #1686940, IQ/OQ protocols

Microplate Manager® 6 Software

Bio-Rad's iMark[™] microplate reader and xMark[™] microplate spectrophotometer can be utilized to their full potential with Microplate Manager 6 software. This comprehensive software package allows powerful, versatile colorimetric and turbidimetric analyses and report analysis for raw data, qualitative, and quantitative calculations based on absorbance limits, matrix of equations, normalization, and curve fit. Microplate Manager software expands your range

of data analysis options to include kinetics and screening, and adds the functionality of flexible template creation for any standard microplate format up to 1,536 wells and for 60- and 70-well Terasaki plates. The custom reporting function provides one-button screening for predefined assays such as those for TSE screening.

For More Information Web: bio-rad.com/microplatemanager

Ordering Information

Catalog #	Description
1689520	Microplate Manager 6 Software, PC and Mac, for end-point and kinetic data analysis with iMark microplate absorbance reader and xMark microplate spectrophotometer

ImmunoWash[™] 1575 Microplate Washer

The ImmunoWash 1575 microplate washer makes it easy to customize your plate-washing protocols. It offers complete control of needle position to perform special wash routines and maximize wash efficiency. This washer includes a wide choice of wash sequences to facilitate protocol creation and storage. It's compatible with strips and 96-well microplates that have flat, U-, or V-bottom wells.

- Programmable needle positions (horizontal and vertical) to an accuracy of 0.1 mm for bottom washing, crosswise aspiration, and overflow washing
- Dispensing speed control
- A plate-shaking option to help minimize bubbles and adherence of liquid to well sides



- Waste bottle sensor to detect high waste liquid levels
- Up to 75 programmable washing sequences

For More Information Web: bio-rad.com/immunowash Request or download bulletins: 2054 and 2135

Ordering Information

or acrining init		
Catalog #	Description	
1707009	ImmunoWash 1575 Microplate Washer, 110–240 V, includes bottle and tubing set, 8-port manifold, aerosol protection cover	
1707021	ImmunoWash 1575 12-Channel Manifold	
1707026	ImmunoWash 1575 Standard Maintenance Kit	

ELISA Reagents and Kits

ELISA Reagents and Kits

See Also

Blotting-grade conjugates: page 242.

Enzyme-Antibody Conjugates

Bio-Rad offers enzyme-antibody conjugates and ELISA soluble substrate systems suitable for use in all microtitration enzyme immunoassays. Antibodies are available conjugated to HRP or AP enzymes.

Substrate Systems

ELISA Reagents

The AP substrate kit contains *P*-nitrophenyl phosphate (pNPP) tablets and dilution buffer concentrate to prepare 500 ml of working solution. Benefits of the AP system include an extremely linear reaction rate and low background values for accurate quantitation by ELISA. There are two convenient substrate systems for detection of HRP-labeled antibodies. Both the 2,2'-azino-di(3ethylbenzothiazoline)-6-sulfonic acid (ABTS) peroxidase substrate kit and the 3,3',5,5'-tetramethylbenzidine (TMB) peroxidase substrate kit contain liquid reagents that are mixed just prior to use.

The single-component TMB peroxidase EIA substrate kit makes microplate assays convenient and fast.

For More Information Web: bio-rad.com/microplatereagents

Ordering Information Catalog # Description **Enzyme-Antibody Conjugates** 1721011 Goat Anti-Mouse IgG (H + L)-HRP Conjugate, 2 ml 1721033 Goat Anti-Human IgG (y)-HRP Conjugate, 1 ml 1721019 Goat Anti-Rabbit IgG (H + L)-HRP Conjugate, 1 ml 1721034 Rabbit Anti-Goat IgG (H + L)-HRP Conjugate, 1 ml 1721017 Rabbit Anti-Sheep IgG (H + L)-HRP Conjugate, 1 ml 1721037 Rabbit Anti-Goat IgG (H + L)-AP Conjugate, 1 ml Substrate Systems AP Substrate Kit, contains 100 pNPP tablets and 100 ml 5x concentrate diethanolamine buffer 1721063 HRP Substrate Kit, contains 180 ml ABTS, 20 ml hydrogen peroxide 1721064 1721066 TMB Peroxidase EIA Substrate Kit, contains 180 ml TMB solution, 20 ml hydrogen peroxide TMB Peroxidase EIA Substrate Kit, contains 900 ml TMB solution, 100 ml hydrogen peroxide 1721067 1721068 Single-Component TMB Peroxidase EIA Substrate Kit, contains 100 ml TMB solution 1721072 Single-Component TMB Peroxidase ELISA Substrate Kit, contains 1 L TMB solution

Mouse Antibody Isotyping Kit

This kit provides a convenient ELISA method for identifying the class, subclass, and light-chain type of mouse IgGs in tissue culture supernatant and ascites fluid. The kit allows screening of up to 12 different antibody samples per plate. Each sample

is reacted with eight subclass-specific antisera to determine the heavy- and light-chain types of the monoclonal antibody.

For More Information Web: bio-rad.com/microplatereagents

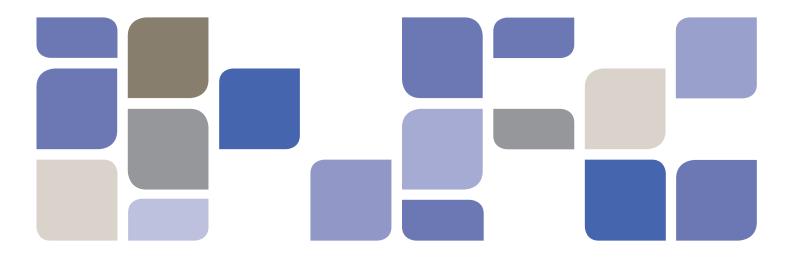
Ordering Info	rmation
Catalog #	Description
1722051 1722055	Mouse Typer Isotyping Kit, includes mouse isotyping panel, affinity purified goat anti-rabbit IgG (H + L) Mouse Typer Isotyping Panel, includes 10 ml each ultrapure rabbit anti-mouse subclass-specific antiserum to mouse IgG ₁ , IgG _{2a} , IgG _{2b} , IgG ₃ , IgM, IgA, κ -chain, and λ -chain

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Transfection Technologies

Introducing DNA and RNA into cells is a powerful tool for evaluating gene expression. Bio-Rad's transfection products offer choices for gene delivery to bacterial, fungal, plant, and animal cells. Use the guide below to select the most appropriate transfection technology for your application.

D Learn More about the Technology

	W	/et	: I	bi	0-	rac	l.c	0	m/	teo	ch,	/t	ra	ns	fec	ti	on	1
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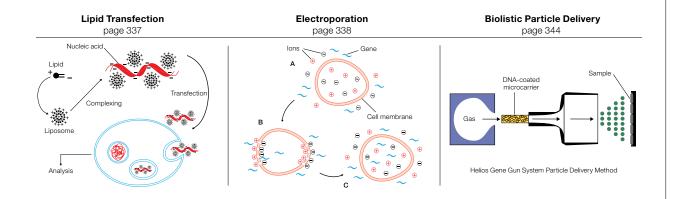
Web: bio-rad.com/tech/transfection		Plant Colling	Plant Coll & Cultures	Plant Cell Coll	Pollen		Detached 1	Meristems (in 2)	Detached Maria			'east Yeast		Skin or Orea	Organ Ciutti vivo)	EX Vivo Co."				Adherent Cells, Trypsinized	Organelles (chile)
Transfection Technologies	Page				Pla	ants				Bac	cteria	Fu	Ingi				Anir	nals			
Lipid Transfection																					
siLentFect [™] lipid reagent for RNAi	337													0	0	٠	•	•	•	•	
TransFectin [™] lipid reagent	338													0	0	•	٠	٠	٠	•	
Electroporation																					
Gene Pulser Xcell [™] total system	340	•*		•*			0		0	•	•	•	•			•	•	•	•		
Gene Pulser Xcell eukaryotic system	340	•*		•*			o		o	0	0	o	0			٠	•	•	•		
Gene Pulser Xcell microbial system	340								•	•	•	•									
MicroPulser [™] electroporator	342								٠	•	•	•									
Biolistic Particle Delivery																					
Helios [®] gene gun system	345	•	٠	٠	•	٠	•	٠	o	0	٠	•	•	٠	0	٠	٠		٠	•	•
PDS-1000/He [™] system	346	٠	•	٠	•		•		•	0	o	٠	٠		•	o	•		٠	٠	•
PDS-1000/He system with Hepta [™] adaptor	347	•	•	•	•		•		•	0	o	•	•		•	0	•		•	•	•

• First choice, highly recommended.

• Recommended, but other technologies may be better suited to that application.

• Possible, but little data to support its effectiveness.

* Protoplasts required.



Lipid Transfection Reagents

Lipid transfection is the process of using lipids to enable a cell to absorb DNA from outside itself. The liposome easily merges with the membrane of the cell since they are both composed of a phospholipid bilayer. Once the liposome and membrane are merged the genetic material can then be released inside the cell. Some familiar aliases for lipid transfection are lipid-mediated delivery, lipofection, and liposome-based gene transfection.

Lipid transfection has been shown to be successful in transfecting adherent and suspension cells and some primary cells (for example, mES and neuronal cells). Common applications employing lipid transfection include RNAi studies, protein production, viral production, gene function analysis, and cell-based assays.

Lipid Transfection Reagents Selection Guide

	siLentFect [™] Lipid Reagent	TransFectin [™] Lipid Reagent	
Description RNAi-specific lipid General-purpose lipid		General-purpose lipid	
Applications RNAi (siRNA delivery)* Gene expression RNAi (siRNA/sh		Gene expression RNAi (siRNA/shRNA delivery)	
Cell lines**Variety of adherent and suspension cell lines, including A549, BHK, HeLa, K562, primary fibroblasts, and VeroShelf life6 months		Variety of adherent and suspension cell lines, including A549, HeLa, HUVEC, MCF-7, and primary fibroblasts	
		6 months	

* siLentFect can successfully cotransfect an siRNA molecule with a plasmid DNA.

** For a more complete list of cell lines, see below (siLentFect lipid reagent) and page 338 (TransFectin lipid reagent), or go to bio-rad.com/lipids.

siLentFect[™] Lipid Reagent for RNAi

Effective Gene-Specific Silencing with Low Toxicity

siLentFect lipid reagent delivers siRNA to a broad variety of cultured mammalian cells for RNAi applications. RNAi is a powerful technique used for the specific inhibition of gene expression. An intrinsic cellular mechanism in most eukaryotes, RNAi helps regulate the expression of genes critical to cell fate determination, differentiation, survival, and defense from viral infection.

- Effective gene-specific silencing achieve 90–99% gene-specific knockdown of both high- and low-abundance genes using as little as 1 nM siRNA for certain gene targets
- Low amounts of siRNA and lipid required the high affinity of siLentFect lipid reagent for siRNA allows the use of less lipid and less siRNA per experiment, decreasing the likelihood of off-target effects, reducing cost, and minimizing the experimental bias caused by cell stress/death
- Simple, flexible protocol easily adaptable protocol for high-throughput applications; successfully transfect cells by adding siLentFect reagent and siRNA directly to the culture or by adding siLentFect-siRNA complexes to trypsinized cells still in suspension



- Cotransfection capabilities simultaneous delivery of siRNA and dsDNA vectors for optimization and dual expression analysis
- Works with many cell types 184htrt, 4T1, A549, Caco-2, CHO-K1, COS-7, HEK 293, HeLa, HepG2, HUVEC, LNCaP, MCF-7, murine EC, NIH 3T3, PC-3, primary fibroblast, primary keratinocyte, primary ovarian, SVEC4, VSMC

For More Information Web: bio-rad.com/silenfect Request or download bulletins: 3105, 5439, and 5894

Ordering Information		
Catalog #	Description	
1703360 1703361 1703362	siLentFect Lipid Reagent for RNAi, 0.5 ml siLentFect Lipid Reagent for RNAi, 1.0 ml siLentFect Lipid Reagent for RNAi, 5 x 1.0 ml	

See Also

TC20 automated cell counter: page 30.
Experion automated electrophoresis system: page 267.
Supermixes for PCR and real-time PCR: page 372.
Real-time PCR systems: page 361.

See Also

Supermixes for PCR and real-time PCR: page 372. Real-time PCR systems: page 361. Total RNA extraction kits: page 9. Plasmid purification

kits: pages 13–14.

TransFectin[™] Lipid Reagent

Efficient Delivery for High Gene Expression Levels TransFectin lipid reagent delivers nucleic acids to a broad range of cell lines with high efficiency. Advantages of this reagent include:

- Enables high-efficiency results effective transfection of both easy- and difficult-to-transfect cells
- Minimally affects cell viability less cytotoxicity than other high-efficiency products makes it appropriate for sensitive cell lines; lower toxicity leads to healthier cells for post-transfection analysis
- Simple to use part of an easy three-step protocol; dilute TransFectin reagent and nucleic acid in the appropriate medium, mix, incubate, and add to the cell culture. There is no need to change the medium for most cell types after addition of the complexes; just incubate and assay for expression
- Allows flexibility in experimental conditions efficient transfection in both the presence and absence of serum-containing media; exceptional results are obtained when cells are transfected at densities between 40 and 90%



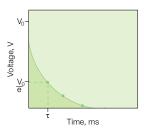
 Affordable — minimal amounts of TransFectin reagent are required for optimal transfection results compared to other reagents; using less lipid reduces the cost per transfection and reduces toxicity effects

For More Information Web: bio-rad.com/transfectin Request or download bulletins: 2873 and 3197

Ordering Information				
Catalog #	Description			
1703350	TransFectin Lipid Reagent, 0.5 ml			
1703351	TransFectin Lipid Reagent, 1.0 ml			
1703352	TransFectin Lipid Reagent, 5 x 1.0 ml			

Electroporation Systems and Reagents

Electroporation is a powerful, highly efficient technique for introducing molecules (nucleic acids, proteins, carbohydrates, dyes) and viral particles into a wide variety of prokaryotic and eukaryotic cells. A high-intensity electric field transiently permeabilizes the membrane, enabling uptake of molecules from the surrounding



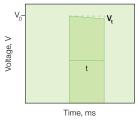
Exponential-decay pulse.

When a capacitor charged to a voltage V_0 is discharged into cells, the voltage applied to the cells decreases over time exponentially. The time required for the initial voltage to drop to V_0 /e is referred to as the time constant (τ) and is a convenient expression of the pulse length.

medium. Electroporation provides a valuable and effective alternative to chemical, biological, and other physical methods of transfection.

For More Information Web: bio-rad.com/electroporation

Web: bio-rad.com/electroporation Online protocols: bio-rad.com/transfectionprotocols



Square-wave pulse. Truncating the pulse from a capacitor after discharging it into the sample generates a square-wave pulse. The pulse length is the time the cells are subjected to the discharge. A slight drop in voltage occurs with all square-wave instruments. This drop in voltage is called the pulse droop and is measured as a percentage of the initial voltage.

A Choice of Exponential-Decay or Square-Wave Pulse

The Gene Pulser Xcell[™] electroporation system generates both exponential and square waveforms, allowing you to choose the waveform and protocol that work best for your cells. Both exponential-decay and square-wave pulses

have been used effectively for electroporation. Depending on cell type, the shape of the wave can have a significant effect on the transfection efficiency. Electrofusion is also possible with the Gene Pulser® system.

Electroporation Systems Selection Guide



		2.8	
	Gene Pulser Xcell System page 340	MicroPulser™ System page 342	
Plate-based system	No	No	
Cuvette-based system	Yes	Yes	
Eukaryotic or prokaryotic	Both	Prokaryotic	
Recommended cells	Mammalian, bacterial, and fungal cell lines	Bacterial, yeast, and other microorganisms	
Chamber	ShockPod [™] chamber	ShockPod chamber	
System options	Gene Pulser Xcell total system	_	
	Gene Pulser Xcell eukaryotic system		
	Gene Pulser Xcell microbial system		

Gene Pulser[®] Electroporation Buffer

The formulation of Gene Pulser electroporation buffer simulates the natural cell environment to minimize cell mortality while ensuring highly efficient delivery of nucleic acids. This electroporation buffer is a universal reagent for introducing siRNA, plasmid DNA, and other molecules into various mammalian cells, including difficult-totransfect and primary cells. The buffer is compatible with electroporation systems, including Gene Pulser Xcell, Gene Pulser II, and most other systems. It is compatible with both exponential and square waveforms.

Gene Pulser electroporation buffer:

- Allows you to optimize multiple electroporation parameters, including voltage and capacitance, for each cell type
- Improves transfection efficiency and cell viability
- Exhibits low conductivity compatible with cuvette or multiwell plate formats

For More Information Web: bio-rad.com/electroporationbuffer Request or download bulletin: 5582



Ordering Information		
Catalog #	Description	
1652676	Gene Pulser Electroporation Buffer, 10 x 1.8 ml	
1652677	Gene Pulser Electroporation Buffer, 30 ml	

Gene Pulser Xcell[™] Electroporation Systems

The Gene Pulser Xcell system is a modular electroporation system for transfecting every cell type. The system includes a main unit, a ShockPod[™] cuvette chamber, and your choice of accessory modules: the capacitance extender (CE module) or the pulse controller (PC module).

Features and Benefits

- Universal electroporation transfects all cell types, from primary and stem cells to bacteria and yeast
- **Preset protocols** include the most common mammalian and bacterial cell types
- Flexibility choice of programs for preset protocols, optimization protocols, manual operation, or user protocols
- Protocol library collection of electroporation protocols for every cell type including primary, immortal, and bacterial cells
- Data management enables storage and recall of parameters used in the previous 100 experiments for easy troubleshooting
- Reproducibility uses PulseTrac[™] circuitry and arc protection to ensure reproducibility and sample protection



System Comments Gene Pulser Xcell The complete electroporation system for transfection of both eukaryotic and prokaryotic cells; **Total System** includes both the CE and the PC modules. Gene Pulser Xcell For the electroporation of most eukaryotic cells, including mammalian cells and plant **Eukaryotic System** protoplasts; includes the CE module. Gene Pulser Xcell For the electroporation of bacteria and fungi as well as other applications where high-voltage Microbial System pulses are applied to samples of small volume; includes the PC module. For More Information Web: bio-rad.com/xcell

Gene Pulser Xcell System Selection Guide

Request or download bulletins: 5445 and 5542

340 | Transfection

bio-rad.com/electroporation

Ordering Information		
Catalog #	Description	
1652660	Gene Pulser Xcell Total System, for mammalian and microbial cells, 100/240 V, 50/60 Hz, exponential- decay and square-wave delivery, includes main unit, CE module, PC module, ShockPod cuvette chamber, 15 sterile cuvettes (5 each of 0.1, 0.2, and 0.4 cm gap), cuvette rack	
1652661	Gene Pulser Xcell Eukaryotic System, 100/240 V, 50/60 Hz, exponential-decay (25–3,275 µF range) and square-wave delivery, includes main unit, CE module, ShockPod cuvette chamber, 5 sterile cuvettes (0.4 cm gap), cuvette rack	
1652662	Gene Pulser Xcell Microbial System, 100/240 V, 50/60 Hz, exponential-decay delivery, includes main unit, PC module, ShockPod cuvette chamber, 10 sterile cuvettes (5 each of 0.1 and 0.2 cm gap), cuvette rack	
Components		
1652666	Gene Pulser Xcell Main Unit, 100/240 V, 50/60 Hz	
1652667	Gene Pulser Xcell CE Module, 25–3,275 μ F range controlled by main unit, includes integral leads	
1652668	Gene Pulser Xcell PC Module, 50–1,000 Ω range controlled by main unit, includes integral leads	
1652669	Gene Pulser Xcell ShockPod Cuvette Chamber, includes integral leads for connection to Gene Pulser Xcell, Gene Pulser II, or MicroPulser electroporators	
1652095	Gene Pulser Cuvette Rack	

Gene Pulser MXcell[™] Electroporation Plates

Electroporation Plates

Electroporation plates for use with the Gene Pulser MXcell electroporation system are available in three formats: 96-well for low-volume or screening experiments, and 24- or 12-well.

Benefits include:

- Streamlined optimization up to 24 different protocols can be delivered on a single 96- or 24-well plate
- High reproducibility well-to-well and plate-to-plate variability is less than 20%
- Scalability consistent transfection efficiency across 96-, 24-, and 12-well plate formats

For More Information Web: bio-rad.com/mxcellplates

Ordering Information

Catalog #	Description
Electroporat	ion Plates
1652681	96-Well Electroporation Plate
1652682	24-Well Electroporation Plate
1652683	12-Well Electroporation Plate



MicroPulser[™] Electroporator

The MicroPulser electroporator is a simple yet versatile instrument that enables safe and reproducible transformation of bacteria, yeast, and other microorganisms. Transformation efficiencies much higher than those obtained with chemical methods can be achieved. Unique features of the system include:

- One-button pulse delivery, attached cuvette chamber, and rapid charge time for fast sample handling
- Delivery of exponential waveform for prokaryotic cells
- Convenient preset optimized programs for commonly studied bacteria and fungi
- Arc quenching system that significantly reduces arcing, protecting against loss of valuable samples
- Broad range of parameters for manual optimization
- High-voltage (3,000 V) capability for improved efficiency in larger-volume cuvettes
- Compact, space-saving design
- Audible and visible pulse indicators
- Display of time constant and actual voltage delivered to monitor reproducibility

For More Information

Web: bio-rad.com/micropulser Request or download bulletins: 2751 and 5542



MicroPulser electroporator with cuvette chamber attached. Electroporator is shown connected to the cuvette chamber.

Ordering Information		
Catalog #	Description	
1652100	MicroPulser Electroporator, includes a cuvette chamber with leads, 10 sterile cuvettes (5 each of 0.1 cm and 0.2 cm gap)	

Gene Pulser[®]/MicroPulser[™] Electroporation Cuvettes

Bio-Rad offers high-quality electroporation cuvettes that deliver consistent pulses to your valuable samples, ensuring reproducible results. Cuvettes are available in three different gap widths: 0.4, 0.2, and 0.1 cm, for optimal field strength delivery to a wide range of cell types. Features of the cuvettes include:

- Guaranteed efficiency manufactured to precise gap tolerances to ensure maximum electroporation efficiency and reproducibility between experiments
- Universal compatibility can be used with Gene Pulser Xcell[™], Gene Pulser II, and most other electroporation systems
- Ensured sterility each cuvette is assembled in a cleanroom environment, washed, fitted with a snug cap, individually wrapped, and sterilized by gamma irradiation
- Sturdy construction durable polycarbonate withstands pulses of very high voltage
- Color-coded caps and bags easy identification of different cuvette sizes
- Consistent chamber shape seamless plastic molding eliminates leaking and keeps the aluminum plates parallel, which is essential for uniform sample treatment and safety
- Smooth electrode surface the aluminum plates are subjected to an 11-step etching and cleaning process for uniform pulse delivery to the entire sample

For More Information

Web: bio-rad.com/electroporationcuvettes Request or download bulletins: 1908 and 5542

Ordering Information

Catalog # Description

Catalog #	Description
Standard Pa	acks
1652088	Gene Pulser/MicroPulser Cuvettes, 0.4 cm gap, 50
1652086	Gene Pulser/MicroPulser Cuvettes, 0.2 cm gap, 50
1652089	Gene Pulser/MicroPulser Cuvettes, 0.1 cm gap, 50
Jumbo Pack	(S*
1652091	Gene Pulser/MicroPulser Cuvettes, 0.4 cm gap, 500
1652092	Gene Pulser/MicroPulser Cuvettes, 0.2 cm gap, 500
1652093	Gene Pulser/MicroPulser Cuvettes, 0.1 cm gap, 500
Mini Packs	
1652081	Gene Pulser/MicroPulser Cuvettes, 0.4 cm gap, 5
1652082	Gene Pulser/MicroPulser Cuvettes, 0.2 cm gap, 5
1652083	Gene Pulser/MicroPulser Cuvettes, 0.1 cm gap, 5
* Please inqui	ire about volume pricing.



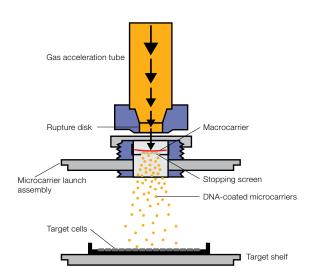
Biolistic Particle Delivery Systems

Biolistic technology, or particle bombardment, is a direct physical method of delivering nucleic acids into cells. The Helios[®] gene gun and PDS-1000/He[™] systems use advanced biolistic technology to transform cells in situ. This technology can be applied to the widest range of targets, including cell cultures, tissues, organs, plants, animals, and bacteria as well as organelles. The instruments use a helium pulse to accelerate high-density gold or tungsten particles coated with nucleic acids directly into target cells. Adjusting the pressure of the helium enables accurate penetration through the plant cell wall or cell membrane and into the cell.

Particle Delivery Application Notes and Protocols

Bio-Rad offers detailed application notes and protocols describing biological and bombardment conditions for many applications. Visit us on the Web at **bio-rad.com/biolistics** to download application notes and protocols.

For More Information Web: bio-rad.com/biolistics Request or download bulletin: 5443



PDS-1000/He system particle delivery method. High-pressure helium is used to propel a macrocarrier sheet loaded with DNA-coated gold or tungsten microcarriers toward target cells. The macrocarrier is halted after a short distance and the DNA coated microcarriers continue traveling toward the target to penetrate the cells.

Biolistic Systems Selection Guide by Application

Factors Affecting Transformation	Helios Gene Gun System	PDS-1000/He System	PDS-1000/He System with Hepta [™] Adaptor
Experimental conditions	In situ, in vitro, in vivo, ex vivo	In vitro, ex vivo, in vivo (plants)	In vitro, ex vivo, in vivo (plants)
Target area	Small (2 cm ²)	Large (40 cm ²)	Largest (~75 cm²)
Pressure range	100–600 psi	450–2,200 psi	450–2,200 psi, reduced by 7-way spread of helium
Target type	Animals: Any tissue exposed to barrel (skin, organs); cell, explant, and organ culture	Animals: Cell and organ culture Plants: Small intact plants, plant cell culture, explants	Animals: Cell and organ culture Plants: Cells with thin cell walls Yeast, bacteria, other microbes
	Plants: Field and greenhouse	Yeast, bacteria, other microbes	reast, bacteria, other microbes
	use, plant cell culture, explants Yeast, bacteria, other microbes	Organelles (chloroplasts, mitochondria, etc.)	

Helios[®] Gene Gun System

The Helios gene gun is a convenient handheld device that provides rapid and direct gene delivery to cells in situ. The unit uses an adjustable helium pulse to sweep DNA-, RNA-, or biomaterial-coated gold microcarriers from the inner wall of a small plastic cartridge directly into target cells. Cartridge "bullets" are simple to prepare using the tubing prep station.

- Provides easy-to-use, rapid, versatile gene delivery independent of target cell type
- Facilitates both transient and stable expression
- Requires only small amounts of DNA and cells; no carrier DNA needed
- Enables codelivery of more than one plasmid
- Allows transfer of large DNA fragments
- Targets intracellular gene delivery to many cells
- Works for both in vitro and in vivo transformation
- Delivers no extraneous genes or proteins
- Interactive CD-ROM (available separately; order the Particle Delivery Systems Training and Application Guide CD-ROM) guides all aspects of transfection using biolistic particle delivery technology

The Helios gene gun system includes one vial of each of the three sizes of gold microcarriers and a cartridge kit that



includes 15 m (50') of Tefzel tubing, five cartridge collection/ storage vials, five desiccant pellets, and 0.5 g of PVP for the sample tubing coating procedure. This is sufficient material (excluding nucleic acids, spermidine, CaCl₂, and absolute ethanol) for preparing approximately 1,000 gene gun samples.

For More Information Web: bio-rad.com/helios Request or download bulletins: 5443 and 5446

Ordering Information

Catalog #	Description
1652431*	Helios Gene Gun System, 100/120 V, includes Helios gene gun kit, helium hose assembly, helium regulator, tubing prep station, syringe kit, Tefzel tubing, tubing cutter, Helios gene gun optimization kit
1652432	Helios Gene Gun System, 220/240 V
1652451	Helios Gene Gun Low-Pressure System, 100/120 V, same as #1652431 with low-pressure regulator (maximum 400 psi)
1652452	Helios Gene Gun Low-Pressure System, 220/240 V
* Additional iter	ms required for operation of the Helios gene gun system; helium tank, grade 4.5 (00.005% pure) or higher

* Additional items required for operation of the Helios gene gun system: helium tank, grade 4.5 (99.995% pure) or higher, pressurized to the desired output pressure. Required items for tubing preparation: nitrogen tank, grade 4.8 (99.998% pure) or higher; nitrogen regulator (#1652425 recommended for U.S. standard connections); 100% ethanol (fresh for each microcarrier precipitation); spermidine; plasmid.

Accessories for Helios® Gene Gun

GeneShot[™] Control Cartridges

GeneShot control cartridges are ready-to-use "bullets" for the Helios gene gun. Each cartridge contains the *lacZ* (β -galactosidase) and *luc* (firefly luciferase) reporter genes on 1.6 µm gold particles. Driven by a strong mammalian promoter, the human cytomegalovirus (CMV) immediate early promoter, these positive controls yield reporter gene activity useful for optimizing Helios gene gun settings. The cartridges can be stored desiccated at room temperature or at 4°C for one year.

For More Information Web: bio-rad.com/helios

Sample Preparation Accessories for Helios Gene Gun

Gold microcarriers, Tefzel tubing, cartridge collection/ storage vials, and desiccant pellets are needed for Helios gene gun sample preparation. The gold microcarriers are available in 0.6, 1.0, and 1.6 µm diameters. Lengths of Tefzel tubing (up to 76 cm or 30") are coated with the DNA- or

Ordening Information

RNA-microcarrier complexes using the tubing prep station. Coated tubing is cut into 1.25 cm (0.5") cartridges using the tubing cutter. Sample cartridges can be stored for later use at 4°C in cartridge collection/storage vials with a desiccant pellet. Additional barrel liners, cartridge holders, and other accessories are also available.

Ordering In	formation
Catalog #	Description
1652244	GeneShot Control Cartridges, positive control bullets, 12
1652412	Helium Hose Assembly, with Swagelok quick-connect fittings
1652413	Helium Regulator, CGA 580 female fitting (U.S. standard), with pressure relief valve;
1652414	maximum pressure 2,600 psi
	Low-Pressure Helium Regulator for Helios Gene Gun, maximum pressure 400 psi
1652418	Tubing Prep Station , 100/120 V, includes tubing support cylinder, power cord, O-rings, tubing prep unit, 12' Nalgene nitrogen regulator hose, two 3/16" barb-to-male Luer-Lok fittings, nitrogen flowmeter fitting, two 1/8" barb-to-male Luer-Lok fittings, 5/64" hex wrench, 10 ml syringe holder
1652420	Tubing Prep Station, 220/240 V
1652421	Syringe Kit, includes syringe adaptor tubing (silicone, 5', 0.104" ID x 0.192" OD), five 10 ml syringes, syringe adaptor fitting, five 1/8" barb-to-female Luer-Lok fittings
1652422	Tubing Cutter, includes tubing cutter unit, 10 razor blades
1652424	Helios Gene Gun Optimization Kit, includes 0.25 g 0.6 µm gold microcarriers, 0.25 g 1.0 µm gold
	microcarriers, 0.25 g 1.6 µm gold microcarriers, cartridge kit
1652440	Cartridge Kit, contains 0.5 g PVP (MW 360,000), 5 cartridge collection/storage vials, 5 desiccant pellets, 50' Tefzel tubing
1652262	0.6 μm Gold Microcarriers , 0.25 g
1652263	1.0 μm Gold Microcarriers, 0.25 g
1652264	1.6 μm Gold Microcarriers, 0.25 g
1652425	Nitrogen Regulator for U.S. Standard Connections
1652416	O-Rings, 5
1652417	Barrel Liner, 5
1652426	Cartridge Holder, white, 5
1652435	Cartridge Extractor Tool, for removal of discharged cartridge
1652436	Battery, 9 V
1652441	Tefzel Tubing, 15 m (50')
1652475	Helios Diffusion Screens, 5
1652411	Helios Gene Gun Kit, 100/120 V, includes Helios gene gun, 5 O-rings, 5 barrel liners, 5 white cartridge holders, cartridge extractor tool, 9 V battery

PDS-1000/He[™] and Hepta[™] Systems

PDS-1000/He System

The PDS-1000/He system accelerates nucleic acid-coated gold or tungsten microparticles ($0.6-1.6 \mu m$) to velocities necessary to transfect cells, tissues, or organelles. The system uses a burst of high-pressure helium gas to accelerate a plastic macrocarrier disk carrying microparticles toward target cells. A stopping screen retains the macrocarrier while allowing the microparticles to penetrate the target cells. The PDS-1000/He system provides:

- A reproducible method for transfecting intact cells in culture, requiring little manipulation of cells
- Transfection of cells with unique growth requirements that are not amenable to other methods of gene transfer
- Interactive training and application guide (CD-ROM, available separately)



Hepta Adaptor

PDS-1000/He System

PDS-1000/He System with Hepta Adaptor

The Hepta adaptor, which fits into the shocking chamber of the PDS-1000/He system, splits the helium shock wave over seven macrocarriers. By spreading the DNAcoated particles over a larger area, the system maximizes the number of cells transformed, increasing transfection efficiency by a factor of seven to ten. Pressure and particle velocity are reduced, making the system ideal for plants and cell cultures that require less forceful penetration.

Accessories for the PDS-1000/He and Hepta Systems

Accessories for the PDS-1000/He and Hepta systems include:

• Rupture disks of various strengths to contol the force of the helium shock wave

- Gold and tungsten particles (microcarriers) of various diameters
- Macrocarriers
- Stopping screens
- Optimization kit to help fine-tune the bombardment conditions for your cells of interest. The kit contains samples of the gold microcarriers and the 9 rupture disks, stopping screens, and macrocarriers for 500 bombardments
- Not provided: helium tank, grade 4.5 (99.995% pure) or higher, pressurized to 2,600 psi; vacuum source

For More Information Web: bio-rad.com/pds1000 Request or download bulletins: 5443 and 5447

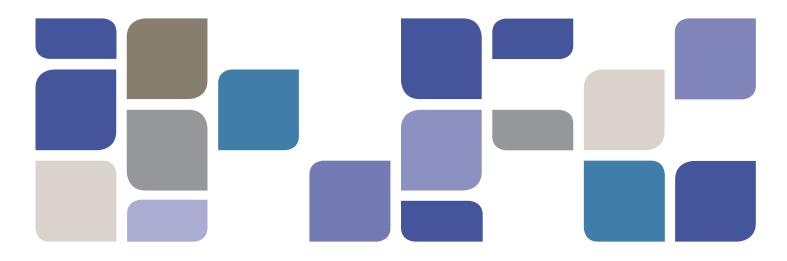
Ordering Information

Catalog #	Description
1652257*	PDS-1000/He System, includes helium pressure regulator, solenoid, spacer rods, microcarrier launch
	assembly, target shelf, 5 macrocarrier holders, tubing
1652258*	PDS-1000/He Hepta System, includes PDS-1000/He system, Hepta adaptor
1652225	Hepta Adaptor for PDS-1000/He System, includes 5 stopping screens
1652259	Voltage Converter, for 220/240 V line voltage
Accessories	
1652278	500 Optimization Kit , includes 0.25 g each of 0.6, 1.0, and 1.6 μm gold microcarriers, 100 each of 9 rupture disks, 500 macrocarriers, 500 stopping screens
1652335	Macrocarriers, 500
1652322	Macrocarrier Holders, 5
1652326	450 psi Rupture Disks, 100
1652327	650 psi Rupture Disks, 100
1652328	900 psi Rupture Disks, 100
1652329	1,100 psi Rupture Disks, 100
1652330	1,350 psi Rupture Disks, 100
1652331	1,550 psi Rupture Disks, 100
1652332	1,800 psi Rupture Disks, 100
1652333	2,000 psi Rupture Disks, 100
1652334	2,200 psi Rupture Disks, 100
1652336	Stopping Screens, 500
1652226	Hepta Stopping Screens, 50
1652262	0.6 μm Gold Microcarriers , 0.25 g
1652263	1.0 µm Gold Microcarriers , 0.25 g
1652264	1.6 µm Gold Microcarriers , 0.25 g
1652266	Tungsten M-10 Microcarriers , ~0.7 μm, 6 g
1652267	Tungsten M-17 Microcarriers , ~1.1 μm, 6 g
1652268	Tungsten M-20 Microcarriers , ~1.3 μm, 6 g
1652269	Tungsten M-25 Microcarriers, ~1.7 µm, 6 g

pressurized to 2,600 psi; vacuum source.

Subject Index

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Digital PCR

Droplet Digital[™] PCR Instrument

Several areas of research depend on the ability to study target DNA sequence variations. Digital PCR technology offers the ability to quantify molecular genetic changes. It is employed by researchers using numerous applications such as copy number variation, rare mutation detection, gene expression analysis, cell-free DNA quantification, gene-editing validation, microRNA (miRNA) detection, genetically modified organism (GMO) quantification, biomarker discovery, and viral load quantification. Bio-Rad's QX200[™] AutoDG[™] Droplet Digital[™] PCR and QX200 Droplet Digital PCR systems, combined with our ddPCR[™] supermixes, ddPCR assays and kits, and reliable thermal cyclers, offer researchers an easy-to-use, highly precise, and reproducible digital PCR package.

Learn More about the Technology Web: bio-rad.com/tech/ddPCR

QX200[™] Droplet Digital[™] PCR System

The QX200 Droplet Digital PCR (ddPCR[™]) system provides an absolute quantification of target DNA or RNA molecules with unmatched precision and sensitivity for digital PCR applications.

Benefits

See Also

page 357. PX1 PCR

plate sealer:

page 386.

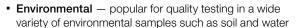
C1000 Touch thermal cycler:

- Most precise and sensitive digital PCR solution for a wide variety of applications
- Flexible digital PCR chemistry optimized for TaqMan hydrolysis probes and EvaGreen dye assays
- Flexible assay setup scalable for high sensitivity or high throughput
- Simple and easy-to-use workflow with 96-sample throughput
- Droplet partitioning by the QX200 Droplet Digital technology reduces bias from amplification efficiency and PCR inhibitors
- Convenient assay design standard curves are not required

Applications

- Cancer biomarker studies superior sensitivity and resolution for measuring varying degrees of mutagenesis for detection of rare DNA target copies, copy number variation states, and allelic discrimination in tissue and liquid biopsy samples
- Pathogen detection extremely high precision while measuring circulating DNA from biological samples (proven for HIV studies)
- Gene expression analysis reliably measure low levels of mRNA and miRNA without using a standard curve
- Next-generation sequencing (NGS) quantify NGS library preparations without the use of standard curves; validate NGS results

2 Generate



- Food testing validated method for routine evaluation of GMOs
- Genome editing detection of rare genome editing events and distinction between homology-directed repair and nonhomologous end-joining DNA repair mechanisms

The QX200 droplet generator partitions samples containing genomic DNA, cDNA, or RNA template into ~20,000 nanoliter-sized droplets (8 samples/run). After PCR using a Bio-Rad thermal cycler, droplets from each sample are streamed in single file through the QX200 droplet reader. The PCR-positive and PCR-negative droplets are counted to provide absolute quantification of target DNA in digital form (96 samples/run).

Accessories

Droplet generation and reader oils, ddPCR reagents, droplet generator cartridges, and gaskets are used with the system.

Automated Droplet Generator

The automated droplet generator allows hands-free droplet generation for up to 96 samples quickly and reproducibly.

- Provides a high-throughput solution for digital PCR with the QX200 ddPCR system
- Minimizes setup time for a 96-sample plate
- Requires no hands-on activity during droplet generation
- Eliminates user-to-user variability
- Reduces contamination risk during droplet generation

For More Information Web: bio-rad.com/digitalpcr



reaction mix

Prepare ddPCR

Catalog #	Description	
QX200 Drop	let Digital PCR System	
1864001	QX200 Droplet Digital PCR System, includes droplet generator, droplet reader, laptop computer,	
	software, associated component consumables	
1864100	QX200 AutoDG Droplet Digital PCR System, includes automated droplet generator,	
	droplet reader, laptop computer	
1864002	QX200 Droplet Generator, includes droplet generator, 1 box of 24 cartridges, 1 pkg of 24 gaskets,	
	2 cartridge holders, 1 power cord	
1864101	Automated Droplet Generator, includes automated droplet generator, 1 power cord	
1864003	QX200 Droplet Reader, includes droplet reader, 2 plate holders, 1 USB cable, 1 power cord	
Consumable	es and Accessories for both QX100 and QX200 ddPCR Systems	
1863004	ddPCR Droplet Reader Oil, 2 x 1 L bottles	
1863005	Droplet Generation Oil for Probes, 10 x 7 ml bottles	
1864008	DG8 Cartridges for QX100/QX200 Droplet Generator, 1 pkg of 24 cartridges	
1863009	DG8 Gaskets for QX100/QX200 Droplet Generator, 1 pkg of 24 gaskets	
1864007	Droplet Generator Cartridges and Gaskets, 5 pkg of 24 DG8 cartridges, 5 pkg of 24 DG8 gaskets	
1863051	DG8 Cartridge Holder	
Consumable	es and Accessories for QX200 ddPCR System Only	
1864005	Droplet Generation Oil for EvaGreen, 2 x 7 ml bottles	
1864006	Droplet Generation Oil for EvaGreen, 10 x 7 ml bottles	
Consumable	es and Accessories for Automated Droplet Generator Only	
1864108	DG32 Automated Droplet Generator Cartridges, 1 pkg of 30, enough for 10 x 96-well ddPCR plates	
1864109	DG32 Automated Droplet Generator Cartridges, 1 pkg of 60, enough for 20 x 96-well ddPCR plates	
1864110	Automated Droplet Generation Oil for Probes, 140 ml, enough for 20 x 96-well ddPCR plates	
1864112	Automated Droplet Generation Oil for EvaGreen, 140 ml, enough for 20 x 96-well ddPCR plates	
1864120	Pipet Tips for AutoDG System, 1 pkg of 20, enough for 10 x 96-well ddPCR plates	
1864121	Pipet Tips for AutoDG System, 1 pkg of 40, enough for 20 x 96-well ddPCR plates	
1864125	Pipet Tip Waste Bins for AutoDG System, 1 pkg of 10, enough for 10 x 96-well ddPCR plates	

Droplet Digital[™] PCR System Reagents

Bio-Rad offers PCR reagents for exclusive use with the ddPCR[™] system. These reagents include supermixes for probe-based target detection, supermix for double-stranded DNA detection, NGS library quantification kits, and PrimePCR[™] assays for Droplet Digital PCR.

ddPCR Supermix Selection Guide

Application	ddPCR Supermix for Probes	ddPCR Supermix for Probes (No dUTP)	QX200 ddPCR EvaGreen Supermix	ddPCR Supermix for Residual DNA Quantification	One-Step RT-ddPCR Advanced Kit for Probes
Suitable for UNG decontamination protocols	•		•	•	•
PrimePCR ddPCR Mutation Detection Assays		•			
PrimePCR ddPCR Copy Number Assays		•			
PrimePCR Gene Expression Assays			•		
ddPCR Library Quantification Kit for Illumina TruSeq		•			
ddPCR Library Quantification Kit for Ion Torrent		•			
Double-stranded DNA detection			•		
Residual host cell DNA detection				•	
Absolute quantification of target RNA molecules					•

ddPCR, Droplet Digital PCR; dUTP, 2'-deoxyuridine 5'-triphosphate; UNG, uracil N-glycosylase.

bio-rad.com/digitalpcr

ddPCR[™] Supermix for Probes (No dUTP)

ddPCR supermix for probes (no dUTP) is a ready-touse cocktail 2x supermix containing all components except primers and template. It is used for DNA sample preparation for applications such as NGS library preparation and PCR cloning.

- Limits nonspecific PCR amplification
- Allows for DNA recovery after amplification

For More Information

Web: bio-rad.com/digitalpcr Request or download bulletin: 6338



Ordering Information		
Catalog #	Description	
1863023	ddPCR Supermix for Probes (No dUTP), 2 x 1 ml vials, 2x supermix, for use in nucleic acid sample preparation with the QX100 or QX200 droplet generator	
1863024	ddPCR Supermix for Probes (No dUTP) , 5 x 1 ml vials, 2x supermix, for use in nucleic acid sample preparation with the QX100 or QX200 droplet generator	
1863025	ddPCR Supermix for Probes (No dUTP), 5×5 ml vials, $2x$ supermix, for use in nucleic acid sample preparation with the QX100 or QX200 droplet generator	

See Also C1000 Touch thermal cycler:

page 357.

PX1 PCR

plate sealer:

page 386.

New ddPCR[™] Residual DNA Quantification Supermix and Kits

ddPCR residual DNA quantification supermix and kits enable precise quantification of low levels of Chinese hamster ovary (CHO), *Escherichia coli*, yeast, human, and mouse DNA for residual host cell DNA monitoring.

- Enables direct quantification of residual host cell DNA without the need for DNA extraction
- Minimizes nonspecific PCR amplification

For More Information Web: bio-rad.com/digitalpcr

Ordering Information



Catalog #	Description	
1864037	ddPCR Supermix for Residual DNA Quantification, 2 x 1 ml vials, 2x supermix, for use in residual DNA detection with the QX100 or QX200 droplet generator	
1864038	ddPCR Supermix for Residual DNA Quantification, 5 x 1 ml vials, 2x supermix, for use in residual DNA detection with the QX100 or QX200 droplet generator	
1864039	ddPCR Supermix for Residual DNA Quantification, 5 x 5 ml vials, 2x supermix, for use in residual DNA detection with the QX100 or QX200 droplet generator	
1864040	ddPCR Supermix for Residual DNA Quantification, 10 x 5 ml vials, 2x supermix, for use in residual DNA detection with the QX100 or QX200 droplet generator	
17000031	ddPCR Residual CHO Host Cell DNA Quantification Kit, includes assay and supermix, for use in residual DNA detection with the QX100 or QX200 droplet generator	Inquire
17000032	ddPCR Residual <i>E. coli</i> Host Cell DNA Quantification Kit, includes assay and supermix, for use in residual DNA detection with the QX100 or QX200 droplet generator	Inquire

ddPCR[™] Supermix for Probes

ddPCR supermix for probes is a ready-to-use 2x supermix used to partition and amplify DNA for digital PCR. It is suitable for use with UNG decontamination protocols, which prevent the reamplification of carryover PCR products between experiments.

- Ensures precise target quantification
- Uses standard cycling protocols for probe-based simplex or duplex Droplet Digital PCR
- Enables partitioning of sample into droplets to eliminate performance variations



For More Information Web: bio-rad.com/digitalpcr Request or download bulletin: 6338

Ordering Information

Catalog #	Description
1863026	ddPCR Supermix for Probes, 2 x 1 ml vials, 2x supermix, for use in sample preparation for QX100 or QX200 droplet generator
1863010	ddPCR Supermix for Probes, 5 x 1 ml vials, 2x supermix, for use in sample preparation for QX100 or QX200 droplet generator
1863027	ddPCR Supermix for Probes , 5 x 5 ml vials, 2x supermix, for use in sample preparation for QX100 or QX200 droplet generator
1863028	ddPCR Supermix for Probes, 10 x 5 ml vials, 2x supermix, for use in sample preparation for QX100 or QX200 droplet generator

New One-Step RT-ddPCR Advanced Kit for Probes

One-step RT-ddPCR advanced kit for probes is a reverse transcription digital PCR supermix delivering improved efficiency, specificity, and sensitivity for precise RNA target quantification. It contains thermostable enzymes that allow for RNA templates to be reverse transcribed and subsequently amplified in the same reaction tube.

- Optimized enzyme blend enables partitioning of RNA samples into droplets while keeping enzymes inactive until reverse transcription at 50°C
- Contains RNase inhibitor that protects the RNA throughout the workflow

For More Information Web: bio-rad.com/digitalpcr Request or download bulletin: 6250



Ordering Information	
Catalog #	Description
1864021	One-Step RT-ddPCR Advanced Kit for Probes , 2 x 1 ml, 200 x 20 µl reactions
1864022	One-Step RT-ddPCR Advanced Kit for Probes, 5 x 1 ml, 500 x 20 µl reactions

QX200[™] ddPCR[™] EvaGreen Supermix

The QX200 ddPCR EvaGreen supermix is a ready-to-use 2x supermix containing a dsDNA binding dye used to partition and amplify DNA for digital PCR. It is the only dye chemistry optimized for digital PCR.

- Enables double-stranded DNA detection following PCR amplification
- Allows for the amplification and detection of DNA targets using commercially available EvaGreen assays

For More Information Web: bio-rad.com/digitalpcr Request or download bulletin: 6473



bio-rad.com/digitalpcr

Catalog #	Description
1864033	QX200 ddPCR EvaGreen Supermix , 2 x 1 ml vials, for use in nucleic acid sample preparation with the QX200 droplet generator
1864034	QX200 ddPCR EvaGreen Supermix , 5 x 1 ml vials, for use in nucleic acid sample preparation with the QX200 droplet generator
1864035	QX200 ddPCR EvaGreen Supermix , 5 x 5 ml vials, for use in nucleic acid sample preparation with the QX200 droplet generator
1864036	QX200 ddPCR EvaGreen Supermix, 10 x 5 ml vials, for use in nucleic acid sample preparation with the QX200 droplet generator

ddPCR[™] Library Quantification Kits

The ddPCR library quantification kits are the optimal solution for quality control of NGS libraries. These kits have been experimentally validated to ensure optimal performance. The assays generate data plots that are rich with qualitative library information, a feature not available with other methodologies such as quantitative PCR. With absolute quantification, standard curves and size adjustment calculations are not necessary to obtain precise library quantitation. When paired with the QX200[™] ddPCR system, these kits allow accurate quantification and provide a qualitative measure of the DNA library prior to sequencing on Illumina (1863040) or Ion Torrent (1863041) platforms.

- Contain all the necessary components to create droplets and quantify NGS libraries
- Provide both quantitative and qualitative data (including adapter dimers and insert sizes)
- Enable more efficient and consistent loading and balancing of libraries for sequencing runs



For More Information Web: bio-rad.com/digitalpcr Request or download bulletins: 6402 and 6490

Ordering Information	
Catalog #	Description
1863040	ddPCR Library Quantification Kit for Illumina TruSeq, includes 1 vial of primers and probes at 20x concentration, 2x ddPCR supermix for probes (no dUTP)
1863041	ddPCR Library Quantification Kit for Ion Torrent, includes 1 vial of primers and probes at 20x concentration, 2x ddPCR supermix for probes (no dUTP)

PrimePCR[™] ddPCR[™] Assays

PrimePCR probe assays for the ddPCR system allow detection of small fold changes without a standard curve. PrimePCR ddPCR assays are predesigned, fully wet-lab validated assays. They are available in multiple formats.

Mutation Detection Assays

- Predesigned mutation detection probe assays are available in 200, 1,000, and 2,500 reaction sizes
- 1:2,000 detection of mutant:wild type in a single well
- Works on both QX100[™] and QX200[™] ddPCR platforms
- Uniform cycling conditions and primer/probe strategy
- Biologically relevant targets (for example, COSMIC v57)

Copy Number Assays

- Predesigned copy number probe assays are available in 200, 1,000 and 2,500 reaction sizes
- Universal/single restriction enzyme strategy used for assay design

Ordering Information

Visit bio-rad.com/PrimePCR to place an order.

Works on both QX100 and QX200 ddPCR platforms

- Uniform cycling conditions and primer/probe strategy
- Primer specificity confirmed by next-generation sequencing

Gene Expression EvaGreen and Probe Assays

- Over 60,000 optimized assays available for human, mouse, and rat genomes
- Option of hydrolysis probe-based detection assays or unlabeled primer assays for use with EvaGreen dye
- Available with either FAM or HEX fluorophores
- Compatible with both the QX100 and QX200 ddPCR platforms

For More Information Web: bio-rad.com/digitalpcr Request or download bulletin: 6512

ddPCR[™] SMN1 Copy Number Determination Kit

The ddPCR *SMN1* copy number determination kit can be used for copy number determination of the survival motor neuron 1 (*SMN1*) gene. It contains a duplex assay, ddPCR supermix for probes (no dUTP) and positive controls for 0, 1, and 2 copies of *SMN1*.

- Predesigned and wet-lab validated copy number assay
- Uniform cycling conditions
- Contains all the necessary components to create droplets and determine copy number of the SMN1 target

For More Information Web: bio-rad.com/digitalpcr Request or download bulletin: 6630



Ordering Infor	mation
Catalog #	Description
1863500	ddPCR SMN1 Copy Number Determination Kit, includes assay at 20x concentration, 2x ddPCR supermix for probes (no dUTP), and positive controls

ddPCR[™] SMN2 Copy Number Determination Kit

The ddPCR *SMN2* copy number determination kit can be used for copy number determination of the survival motor neuron 2 (*SMN2*) gene. It contains a duplex assay, ddPCR supermix for probes (no dUTP) and positive controls for 2, 3, and 4 copies of *SMN2*.

- Predesigned and wet-lab validated copy number assay
- Uniform cycling conditions
- Contains all the necessary components to create droplets and determine copy number of the SMN2 target

For More Information Web: bio-rad.com/digitalpcr Request or download bulletin: 6631



Ordering Information Catalog # Description

Catalog # 1863503

ddPCR SMN2 Copy Number Determination Kit, includes assay at 20x concentration, 2x ddPCR supermix for probes (no dUTP), and positive controls

New ddPCR[™] Mutation Screening Kits

ddPCR mutation screening kits are designed for rapid screening of several key cancer mutations in a single reaction with a limit of detection of 0.5% or better. These kits are ideal for use with DNA extracted from formalinfixed, paraffin-embedded (FFPE) samples, liquid biopsy, fresh/frozen tissue, and samples with low yield or inhibitory substances. Assays for each of the mutations detected by the kit can also be ordered individually. The kits are recommended for use with fragmented samples such as FFPE tissue, cell-free DNA, and blood spots.

For More Information

Web: bio-rad.com/digitalpcr Request or download bulletin: 6632

Kit	Mutations Detected		
KRAS G12/13	G12A, G12C, G12D, G12R, G12S, G12V, G13D		
BRAF V600	V600E, V600K, V600R		
NRAS Q61	Q61K, Q61L, Q61R , Q61H (183A>C), Q61H (183A>T)		
NRAS G12	G12A, G12C, G12D, G12R, G12S, G12V		
NRAS G12/13	G12A, G12C, G12D, G12S, G12V, G13D, G13R, G13V		
KRAS Q61	Q61K, Q61L, Q61R, Q61H (183A>C), Q61H (183A>T)		



Ordering Inf	formation
Catalog #	Description
1863506	ddPCR KRAS G12/G13 Screening Kit, includes 20x multiplex assay and 2x ddPCR supermix for probes (no dUTP)
12001626	ddPCR KRAS Q61 Screening Kit, includes 20x multiplex assay and 2x ddPCR supermix for probes (no dUTP)
12001037	ddPCR BRAF V600 Screening Kit, includes 20x multiplex assay and 2x ddPCR supermix for probes (no dUTP)
12001006	ddPCR NRAS Q61 Screening Kit, includes 20x multiplex assay and 2x ddPCR supermix for probes (no dUTP)
12001094	ddPCR NRAS G12 Screening Kit, includes 20x multiplex assay and 2x ddPCR supermix for probes (no dUTP)
12001627	ddPCR NRAS G12/G13 Screening Kit, includes 20x multiplex assay and 2x ddPCR supermix for probes (no dUTP)

Thermal Cyclers for PCR

Instruments range from a personal thermal cycler to the flexible 1000-series. Multiple modules and chassis provide options for low- to high-throughput capabilities.

D Learn More about the Technology

Web: bio-rad.com/tech/PCR

Thermal Cycler Selection Guide

Feature	C1000 Touch [™] page 357	S1000 [™] page 358	T100 [™] page 360
Peltier-effect technology	•	•	•
Upgradable to real-time PCR	•		
Interchangeable sample blocks	•	•	
Number of wells	96, 96 deep, dual 48, or 384	96, 96 deep, dual 48, or 384	96
Gradient capability	•	•	•
Graphical user interface	•		•
Full-color display	•		•
Fast PCR protocol templates	•	•	•
Programmable ramp rates	•	•	•
Networking capability	•	•	
Heated lid	Adjustable	Adjustable	Fixed
USB flash drive compatibility	•		•

1000-Series Thermal Cyclers

Bio-Rad 1000-series thermal cyclers offer a fully modular platform. Choose the full-featured C1000 Touch[™] cycler, the basic S1000[™] cycler, or a combination of both. The cyclers can accommodate different throughput needs with easily interchangeable reaction blocks.

C1000 Touch[™] Thermal Cycler

The C1000 Touch cycler is the flagship of the 1000-series thermal cycling platform, offering unmatched performance for fast, reliable results. The state-of-the-art interface allows new ways to optimize protocols and monitor runs.

Benefits include:

- Easily upgrade to real-time PCR using the CFX96[™], CFX96 Touch[™] Deep Well, or CFX384[™] optical reaction module
- Save time creating and viewing protocols using the large color touch-screen display and intuitive graphical programming
- · Email notification of run completion capability
- Back up your data and manage and transfer files using a USB flash drive
- Optional log-in, restricted user privileges, and secure mode for controlled environments and file protection



 Increase throughput simply and easily by connecting up to three additional S1000[™] cyclers

For More Information Web: bio-rad.com/C1000Touch Request or download bulletins: 6085 and 6094

See Also

CFX96 Touch real-time PCR detection system: page 363. CFX384 Touch real-time PCR detection system: page 365.

bio-rad.com/1000_series

Catalog #	Description	
1841100	C1000 Touch Thermal Cycler Chassis, includes USB flash drive, power cord; does not include reaction module	
1851148	C1000 Touch Thermal Cycler with Dual 48/48 Fast Reaction Module, includes C1000 Touch thermal cycler chassis, dual 48/48 fast reaction module, USB flash drive	
1851196	C1000 Touch Thermal Cycler with 96-Well Fast Reaction Module, includes C1000 Touch thermal cycler chassis, 96-well fast reaction module, USB flash drive	
1851197	C1000 Touch Thermal Cycler with 96–Deep Well Reaction Module, includes C1000 Touch thermal cycler chassis, 96–deep well reaction module, USB flash drive	
1851138	C1000 Touch Thermal Cycler with 384-Well Reaction Module, includes C1000 Touch thermal cycler chassis, 384-well reaction module, USB flash drive	

S1000[™] Thermal Cycler

The S1000 thermal cycler can be used as a stand-alone, dependable instrument for PCR. Up to three S1000 cyclers can be connected to a C1000 Touch[™] thermal cycler to form a high-throughput multi-bay instrument. The S1000 cycler offers the same thermal performance as the C1000 Touch cycler and lets you:

- Choose a reaction module that suits your needs dual 48/48-well fast, 96-well fast, 96-deep well, or 384-well format
- Get optimal sealing using your favorite vessels and sealers with the redesigned, fully adjustable heated lid



For More Information Web: bio-rad.com/S1000 Request or download bulletins: 6082 and 6094

Ordering Inf	ormation
Catalog #	Description
1842000	S1000 Thermal Cycler Chassis, includes power cord; does not include reaction module
1852148	S1000 Thermal Cycler with Dual 48/48 Fast Reaction Module, includes S1000 thermal cycler chassis, dual 48/48 fast reaction module
1852196	S1000 Thermal Cycler with 96-Well Fast Reaction Module, includes S1000 thermal cycler chassis, 96-well fast reaction module
1852197	S1000 Thermal Cycler with 96–Deep Well Reaction Module, includes S1000 thermal cycler chassis, 96–deep well reaction module
1852138	S1000 Thermal Cycler with 384-Well Reaction Module, includes S1000 thermal cycler chassis, 384-well reaction module
Accessories	
1848000	USB Cable, for use with C1000, C1000 Touch, and S1000 thermal cyclers
1849000	Tube Frame, supports individual 0.2 ml tubes in the C1000, C1000 Touch, and S1000 dual 48- and 96-well reaction modules
1849001	Tube Frame, supports individual 0.2 ml tubes in the C1000 Touch and S1000 96–deep well reaction module
1849010	Touch-Screen Protector, for use with C1000 Touch thermal cycler, 2
1841001	1000-Series Connectivity Kit, includes mouse, mouse pad, USB key

Reaction Modules

Postion	Modulo	Specifications
Reaction	woaule	Specifications

Reaction Module	96-Well Fast	96-Deep Well	Dual 48/48-Well Fast	384-Well
Sample capacity	96 x 0.2 ml tubes or 1 x 96-well plate	96 x 0.2 ml tubes, 48 x 0.5 ml tubes, or 1 x 96-well plate	2 x 48 x 0.2 ml tubes or 2 x 48-well plates	1 x 384-well plate
Maximum ramp rate	5°C/sec	2.5°C/sec	4°C/sec	2.5°C/sec
Temperature range	0–100°C	0-100°C	0–100°C	0–100°C
Temperature accuracy	±0.2°C of programmed target at 90°C	±0.2°C of programmed target at 90°C	±0.2°C of programmed target at 90°C	±0.2°C of programmed target at 90°C
Temperature uniformity	±0.4°C well-to-well within 10 sec of arrival at 90°C	±0.4°C well-to-well within 10 sec of arrival at 90°C	±0.4°C well-to-well within 10 sec of arrival at 90°C	±0.4°C well-to-well within 10 sec of arrival at 90°C
Thermal Gradient (avail	able on all reaction module	es)		
Gradient range Temperature differential ra	30–100°C ange 1–24°C			

Ordering Information

•	
Catalog #	Description
1840148	Dual 48/48 Fast Reaction Module, independent dual 48-well reaction module, fits C1000, C1000 Touch, and S1000 thermal cyclers, gradient enabled
1840196	96-Well Fast Reaction Module, fits C1000, C1000 Touch, and S1000 thermal cyclers, gradient enabled
1840197	96-Deep Well Reaction Module, fits C1000, C1000 Touch, and S1000 thermal cyclers, gradient enabled
1840138	384-Well Reaction Module, fits C1000, C1000 Touch, and S1000 thermal cyclers, gradient enabled

bio-rad.com/cyclers

Personal Thermal Cycler

See Also

PCR plastic consumables: page 387. PCR reagents: page 372. Nucleic acid sample preparation: page 9.

T100[™] Thermal Cycler

The T100 thermal cycler is a compact, 96-well thermal cycler that offers a comprehensive package of features, including an easy-to-use touch screen, thermal gradient, and reliable performance.

With the T100 thermal cycler, you can:

- Save time programming with the intuitive touch screen
- Get superior results faster by optimizing your PCR assays in a single run using a thermal gradient
- Save valuable benchspace with the compact design
- Keep your protocols organized using personalized folders or a USB flash drive

For More Information Web: bio-rad.com/T100 Request or download bulletin: 6065



Ordering Inf	formation
Catalog #	Description
1861096	T100 Thermal Cycler, includes 96-well thermal cycler, power cord, tube support ring
1862000	Tube Support Ring, extra tube support ring for use with individual tubes in the T100 thermal cycler, 2
1863000	Touch-Screen Protector, for use with T100 thermal cycler, 2
Recommend	led Consumables
1708890	iScript cDNA Synthesis Kit, 25×20 µl reactions, includes 5x iScript reaction mix,
	iScript reverse transcriptase, nuclease-free water
1708896	iScript Select cDNA Synthesis Kit, 25 x 20 µl reactions, includes 5x iScript reaction mix, iScript reverse
	transcriptase, oligo(dT), random primer mix, gene specific primer enhancer solution, nuclease-free water
1708870	iTaq DNA Polymerase, 250 U (5 U/µl), includes 10x PCR buffer, 50 mM MgCl ₂ solution
1725301	iProof High-Fidelity DNA Polymerase, 100 U (2 U/µl), includes 5x HF buffer, 5x GC buffer,
	50 mM MgCl ₂ solution, DMSO
HSS9601	Hard-Shell High-Profile 96-Well Semi-Skirted PCR Plates, clear shell, clear well, 25
MLP9601	Multiplate High-Profile 96-Well Unskirted PCR Plates, clear, 25
MSB1001	Microseal 'B' Adhesive Seals, optically clear, 100
TBS1201	0.2 ml 12-Tube Strips without Caps, clear, 100
TCS1201	Domed 12-Cap Strips, for 0.2 ml PCR tubes and plates, clear, 200
TWI0201	0.2 ml PCR Tubes with Domed Caps, clear, 1,000

Real-Time PCR Systems

Bio-Rad's real-time PCR detection systems are available as individual systems or as upgrades to Bio-Rad's C1000 Touch[™] thermal cyclers. The detection systems' optical modules allow up to five-target sequence detection via fluorescence detection chemistry in a 96- or 384-well plate format.

All systems support integrated data analysis for PrimePCR[™] disease and biological pathway panels as well as automated multiplate gene expression analysis, absolute quantification, copy number variation, and high resolution melt genotyping applications. See the selection guide below for comparative specifications.

Learn More about the Technology Web: bio-rad.com/tech/qpcr

Real-Time PCR System Selection Guide



Feature	CFX Connect [™]	CFX96 Touch [™]	CFX96 Touch [™] Deep Well	CFX384 Touch [™]
Base thermal cycler	CFX Connect	C1000 Touch	C1000 Touch	C1000 Touch
Sample capacity	96 wells	96 wells	96 wells	384 wells
Sample volume	Up to 50 µl	Up to 50 µl	Up to 125 µl	Up to 30 µl
Light source	3 filtered LEDs in optics shuttle	6 filtered LEDs in optics shuttle	6 filtered LEDs in optics shuttle	5 filtered LEDs in optics shuttle
Optical detection	3 photodiodes in optics shuttle	6 photodiodes in optics shuttle	6 photodiodes in optics shuttle	5 photodiodes in optics shuttle
Excitation range	450–535 nm	450–684 nm	450–684 nm	450–650 nm
Detection range*	515–580 nm	515–730 nm	515–730 nm	515–690 nm
Multiplex capability	Up to 2 targets	Up to 5 targets	Up to 5 targets	Up to 4 targets
FRET capability	•	•	•	•
Maximum ramp rate	5°C/sec	5°C/sec	2.5°C/sec	2.5°C/sec
Gradient capability	•	•	•	•
Gradient range	30-100°C	30-100°C	30-100°C	30-100°C
Maximum gradient span	24°C	24°C	24°C	24°C
CFX qualification plate	•	•	•	•

* Refer to system instruction manuals or bulletins 6093, 6096, and 6105 for information about useful detection ranges for specific dyes.

See Also

Total RNA extraction kits: page 9. Experion system: page 267. PCR reagents: page 372. PrimePCR assays and panels: page 370. PX1 PCR plate sealer: page 386. PCR plastic consumables: page 387.

bio-rad.com/qpcr

CFX Connect[™] Real-Time PCR Detection System

The CFX Connect real-time PCR detection system offers two-target analysis in a 96-well format. The system incorporates innovative optical technologies with longlasting LEDs and solid-state components to provide maximum reliability and flexibility. Included with the system is the powerful, easy-to-use CFX Manager[™] software for system operation and data analysis.

- Save time and reduce costs by optimizing assays in a single run using the thermal gradient
- Quickly and accurately validate and analyze data with the advanced analysis modules of CFX Manager software
- Analyze data when and where you want by receiving email notification with an attached data file when a run is complete
- Increase throughput and flexibility by running up to 4 instruments from 1 computer

For More Information

Web: bio-rad.com/cfxconnect Request or download bulletins: 6102, 6103, and 6105



ormation
Description
CFX Connect Real-Time PCR Detection System, includes CFX Connect thermal cycler chassis,
CFX Connect optical reaction module, CFX Manager software, license for qbase+ software,
communication cable, reagents, consumables
CFX Connect Real-Time PCR Detection System, includes CFX Connect thermal cycler chassis,
CFX Connect optical reaction module, CFX Manager software, license for qbase+ software,
communication cable
CFX Qualification Plate, 96-well format, for use with CFX96, CFX96 Touch, CFX96 Touch Deep Well, or
CFX Connect system, includes 1 predispensed plate containing supermix, primer mix, nuclease-free water
Hard-Shell Low-Profile 96-Well Skirted PCR Plates, white shell, clear well, 50
Microseal 'B' Adhesive Seals, optically clear, package of 100
Real-Time PCR Applications Guide
PX1 PCR Plate Sealer, includes heat sealing instrument, 96-well/384-well plate support block, sealing frame, power cord
Optically Clear Heat Seal, package of 100

CFX96 Touch[™] Real-Time PCR Detection System

The CFX96 Touch real-time PCR detection system meets all your real-time PCR needs — whether you are running your first experiment or analyzing complex gene expression studies. With five-target detection, industry-leading standalone functionality, superior thermal cycler performance, and easy-to-use software, the CFX96 Touch system has been designed to advance your quantitative PCR (qPCR).

The CFX96 Touch real-time PCR detection system makes it easy to:

- Rapidly screen expression from a few to hundreds of genes with PrimePCR[™] assay panels. Just drag and drop the run file to start runs with a single click
- Monitor amplification traces on the touch screen in real time. At run completion, automatically receive the data file for remote monitoring and data analysis
- Conserve your samples and reagents with true five-target multiplexing
- Expand your qPCR throughput with a simple upgrade to the CFX384[™] optical reaction module
- Save time and reduce costs by optimizing assays in a single run using the thermal gradient

For More Information

Web: bio-rad.com/cfx96-pcr Request or download bulletins: 6075, 6076, and 6093



Ordering Information

Catalog #	Description	
1845096*	CFX96 Optical Reaction Module for Real-Time PCR Systems with Starter Package, for use with C1000	
	Touch thermal cycler chassis, includes CFX Manager software, license for qbase+ software, communication cable, reagents, consumables	
1845097*	CFX96 Optical Reaction Module for Real-Time PCR Systems, for use with C1000 Touch thermal cycler chassis, includes CFX Manager software, license for gbase+ software, communication cable	
1855196	CFX96 Touch Real-Time PCR Detection System with Starter Package, includes C1000 Touch thermal cycler chassis, CFX96 optical reaction module, CFX Manager software, license for qbase+ software, communication cable, reagents, consumables	
1855195	CFX96 Touch Real-Time PCR Detection System, includes C1000 Touch thermal cycler chassis, CFX96 optical reaction module, CFX Manager software, license for qbase+ software, communication cable	
Accessories		
1845098	CFX Qualification Plate, 96-well format, for use with CFX96, CFX96 Touch, CFX96 Touch deep well, or	
	CFX Connect system, includes 1 predispensed plate containing supermix, primer mix, nuclease-free water	
TLS0801	Low-Profile 8-Tube Strips without Caps (0.2 ml), clear, 120 strips (960 tubes)	
TCS0803	Optical Flat 8-Cap Strips, for 0.2 ml PCR tubes and plates, ultraclear, 120	
HSP9601	Hard-Shell Low-Profile 96-Well Skirted PCR Plates, white shell, clear well, 50	
MSB1001	Microseal 'B' Adhesive Seals, optically clear, package of 100	
1709799	Real-Time PCR Applications Guide	
1814000	PX1 PCR Plate Sealer, includes heat sealing instrument, 96-well/384-well plate support block, sealing frame, power cord	
1814030		
* Order to up	grade an existing C1000 or C1000 Touch thermal cycler	

bio-rad.com/qpcr

CFX96 Touch[™] Deep Well Real-Time PCR Detection System

The CFX96 Touch deep well real-time PCR detection system offers precise quantification and target discrimination for up to five targets in large reaction volumes. The system incorporates industry-leading technology to provide robust and reliable results.

The CFX96 Touch deep well real-time PCR detection system makes it easy to:

- Use reaction volumes up to 125 µl
- Rapidly screen expression from a few to hundreds of genes with PrimePCR[™] assay panels. Just drag and drop the run file to start runs with a single click
- Monitor amplification traces on the touch screen in real time. At run completion, automatically receive the data file for remote monitoring and data analysis
- Conserve your samples and reagents with true five-target multiplexing
- Save time and reduce costs by optimizing assays in a single run using the thermal gradient

For More Information

. . .

Web: bio-rad.com/CFX96DeepWell Request or download bulletins: 6238 and 6243



•	Drdering Information	
Catalog #	Description	
1844096*	CFX96 Deep Well Optical Reaction Module for Real-Time PCR Systems with Starter Package,	
	for use with C1000 Touch thermal cycler chassis, includes CFX Manager software, license for qbase+	
	software, communication cable, reagents, consumables	
1844095*	CFX96 Deep Well Optical Reaction Module for Real-Time PCR Systems, for use with C1000 Touch	
	thermal cycler chassis, includes CFX Manager software, license for qbase+ software, communication cable	
1854096	CFX96 Touch Deep Well Real-Time PCR Detection System with Starter Package, includes C1000	
	Touch thermal cycler chassis, CFX96 deep well optical module, CFX Manager software, license for qbase+	
105 1005	software, communication cable, reagents, consumables	
1854095	CFX96 Touch Deep Well Real-Time PCR Detection System, includes C1000 Touch thermal cycler chassis, CFX96 deep well optical module, CFX Manager software, license for gbase+ software, communication cable	
Accessories		
1845098	CFX Qualification Plate, 96-well format, for use with CFX96, CFX96 Touch, CFX96 Touch deep well, or	
	CFX Connect system, includes 1 predispensed plate containing supermix, primer mix, nuclease-free water	
TLS0801	Low-Profile 8-Tube Strips without Caps (0.2 ml), clear, 120 strips (960 tubes)	
TCS0803	Optical Flat 8-Cap Strips, for 0.2 ml PCR tubes and plates, ultraclear, 120	
HSP9601	Hard-Shell Low-Profile 96-Well Skirted PCR Plates, white shell, clear well, 50	
MSB1001	Microseal 'B' Adhesive Seals, optically clear, package of 100	
1709799	Real-Time PCR Applications Guide	
1814000	PX1 PCR Plate Sealer, includes heat sealing instrument, 96-well/384-well plate support block,	
	sealing frame, power cord	
1814030	Optically Clear Heat Seal, package of 100	
* Order to upo	grade an existing C1000 or C1000 Touch thermal cycler.	

CFX384 Touch[™] Real-Time PCR Detection System

The CFX384 Touch real-time PCR detection system brings flexibility and ease of use to researchers performing highthroughput real-time PCR in a 384-well format. With the ability to run without a computer, superior performance, and powerful yet easy-to-use software, the CFX384 Touch system has been designed to advance your qPCR.

The CFX384 Touch real-time PCR detection system makes it easy to:

- Rapidly screen expression of hundreds of genes with PrimePCR[™] assay panels. Just drag and drop the run file to start runs with a single click
- Verify the performance of your CFX real-time PCR detection system using the CFX qualification plate, system test software, IQ/OQ, and automated data quality control
- Integrate a laboratory information management system (LIMS) using built-in LIMS file management
- Combine the CFX384 Touch system with good laboratory practice standards by using CFX Manager[™] software, Security Edition, which complies with U.S. FDA 21 CFR Part 11 regulations, for data collection and analysis



For More Information Web: bio-rad.com/cfx384-pcr Request or download bulletins: 6072, 6077, and 6096

Ordering Information

Catalog #	Description	
1845384*	CFX384 Optical Reaction Module for Real-Time PCR Systems with Starter Package, for use with C1000	
	Touch thermal cycler chassis, includes CFX Manager software, license for qbase+ software, communication	
	cable, reagents, consumables	
1845385*	CFX384 Optical Reaction Module for Real-Time PCR Systems, for use with C1000 Touch thermal cycler	
	chassis, includes CFX Manager software, license for qbase+ software, communication cable	
1855484	CFX384 Touch Real-Time PCR Detection System with Starter Package, includes C1000 Touch	
	thermal cycler chassis, CFX384 optical reaction module, CFX Manager software, license for qbase+	
	software, communication cable, reagents, consumables	
1855485	CFX384 Touch Real-Time PCR Detection System, includes C1000 Touch thermal cycler	
	chassis, CFX384 optical reaction module, CFX Manager software, license for qbase+ software,	
	communication cable	
Accessories	5	
1845099	CFX Qualification Plate, 384-well format, for use with CFX384 or CFX384 Touch system,	
	includes 1 predispensed plate containing supermix, primer mix, nuclease-free water	
HSP3805	Hard-Shell 384-Well Standard PCR Plates, clear shell, white well, 50	
MSB1001	Microseal 'B' Adhesive Seals, optically clear, package of 100	
1709799	Real-Time PCR Applications Guide	
1814000	PX1 PCR Plate Sealer, includes heat sealing instrument, 96-well/384-well plate support block,	
	sealing frame, power cord	
1814030	Optically Clear Heat Seal, package of 100	
* Order to upo	grade an existing C1000 or C1000 Touch thermal cycler.	

See Also

PrimePCR assays and panels: page 370. CFX qualification plate: page 367.

CFX Automation System II

The CFX automation system II is ideally suited to meet the high-throughput PCR requirements of today's drug discovery and screening workflows. It works with up to two CFX real-time PCR detection systems to enable walk-away, high-throughput quantitative PCR (gPCR) operation. Each rack can hold up to forty-eight 384-well PCR plates or thirty-two 96-well plates, facilitating the generation of large volumes of data and rapid data analysis. The software is designed to work seamlessly with CFX systems, eliminating the need for automation system expertise. Powerful software features enable the pairing of cycling information with specific barcoded plates and the direct importing of barcode information from laboratory information management systems (LIMS). The intuitive calibration wizard makes it simple to add CFX systems at any point or recalibrate the automation system when required.

The CFX automation system II makes it easy to:

- Save valuable laboratory space a single plate handler can service 2 CFX systems in a compact footprint
- Meet changing throughput demands scalable design enables beginning with 1 CFX system and adding another CFX system when required
- Stay organized track samples using the barcode reader and integrate with LIMS
- Save time seamless software integration with PrimePCR[™] assays minimizes time-consuming setup and analysis
- Analyze data when and where you want receive email notification with an attached data file at the completion of each run

Ordering Information	
Catalog #	Description
1845075	CFX Automation System II for Real-Time PCR Systems, includes plate handler and barcode scanner, mounting plate, automation software; does not include CFX real-time PCR detection system



For More Information Web: bio-rad.com/automation Request or download bulletins: 6626 and 6629

CFX384 Touch[™]

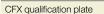
•

PCR Instrument Validation Tool

Bio-Rad's PCR instrument validation tool allows you to easily test the performance of your real-time PCR system.

Instrument Validation Tool





CFX Qualification Plate

The CFX qualification plate is an easy-to-use tool for validating the performance of your CFX system. The plate is predispensed with an optimized assay, supermix, and nuclease-free water. The CFX qualification plate can be incorporated into an instrument qualification procedure for easy tracking of your instrument's performance. Features include:



- 2-fold discrimination with 99.7% confidence level
- Predefined thermal cycling protocol and plate templates for a streamlined workflow
- Ability to generate a full PDF report with CFX Manager[™] software

For More Information

Web: bio-rad.com/cfxqualification Request or download bulletin: 6323

Ordering Information

Catalog #	Description
1845098	CFX Qualification Plate, 96-well format, for use with CFX96, CFX96 Touch, CFX96 Touch deep well, or CFX Connect system, includes 1 predispensed plate containing supermix, primer mix, nuclease-free water
1845099	CFX Qualification Plate, 384-well format, for use with CFX384 or CFX384 Touch system, includes 1 predispensed plate containing supermix, primer mix, nuclease-free water

PCR and Real-Time PCR Software

Bio-Rad PCR and real-time software supports multi-instrument control and collection and analysis of real-time PCR data. Probe and primer design software enables rapid design of robust real-time PCR assays.

Amplification Software System Requirements

	Minimum	Recommended
Operating system	Windows XP Professional SP2, Windows 7	Windows XP Professional SP3, Windows 7, Windows 8
Processor	1 GHz	2 GHz
RAM	1 GB (2 GB for Windows 7)	2 GB
Hard drive space	10 GB	20 GB
Screen resolution	1,024 x 768 with true-color mode	1,280 x 1,024 with true-color mode
Drive	CD-ROM	CD-RW
USB port	2.0 Hi-Speed	2.0 Hi-Speed

CFX Manager[™] Software

CFX Manager software sets the standard for real-time data acquisition and analysis. This version supports the CFX96 Touch[™], CFX96 Touch[™] Deep Well, CFX Connect[™], and CFX384 Touch[™] real-time PCR detection systems. Bio-Rad[®] PrimePCR[™] assay users will benefit from full software integration, from one-click run start to automated data analysis. The software enables you to:

- Get started quickly using the Startup Wizard
- Analyze your results when and where you want following email notification with an attached data file when a run is complete
- Run a wide range of applications such as relative gene expression, genotyping, absolute quantification, and more

- Make faster data-driven decisions by easily visualizing all your important run data in a single window using Custom Data View
- Extract more meaningful information from each run using analyses such as volcano plots, which emphasize statistically significant targets, and clustergrams, which arrange samples and targets into groups of similar expression
- Export only the data you want in your preferred format with Custom Data Export

For More Information Web: bio-rad.com/cfx-manager-software

0	Ordering Information	
Ca	atalog #	Description
18	345000	CFX Manager Software, includes installation CD, quick guides, instruction manual

CFX Manager[™] Software, Security Edition

CFX Manager software, Security Edition provides important tools for compliance with U.S. FDA 21 CFR Part 11 regulations. The Security Edition requires a valid Windows XP, Windows 7, or Windows 8 username and password for login. The software requires a hardware protection key to be attached to a USB port on the computer, uses file encryption to ensure files cannot be opened or edited using other programs, and allows multiple electronic signatures. The software ensures that integrity and validity are checked each time a file is opened with automatic file checking and allows read-only information displayed in the time- and date-stamped audit trail to be viewed only while the data file of interest is open.

For More Information

Web: bio-rad.com/cfx-manager-software-security-edition Request or download bulletin: 5690

bio-rad.com/pcrsoftware

Ordering Information		
Catalog # Description		
1845001	CFX Manager Software, Security Edition, includes 1 user license, installation CD, HASP HL key	
1845005	CFX Manager Software, Security Edition, includes 5 user licenses, 5 installation CDs, 5 HASP HL keys	
1845010	CFX Manager Software, Security Edition, includes 10 user licenses, 10 installation CDs, 10 HASP HL keys	

CFX Manager[™] Software, Chinese and Russian Editions

CFX Manager software Chinese and Russian Editions work with the regional settings of the Windows XP, Windows 7, and Windows 8 operating systems to provide localized, language-specific environments. The Chinese and Russian Editions also provide hardware protection to CFX Manager software: a HASP hardware license (HL)-based key must be attached to a USB port on the computer to use the software in regional language mode.

For More Information

Web: bio-rad.com/cfx-manager-software-chinese-edition; bio-rad.com/cfx-manager-software-russian-edition

Ordering Inform	Ordering Information	
Catalog # Description		
1845008 (CFX Manager Software, Chinese Edition, includes 3 user licenses, installation CD, 3 HASP HL keys	
1845028 (CFX Manager Software, Russian Edition, includes 3 user licenses, installation CD, 3 HASP HL keys	

Precision Melt Analysis[™] Software

Precision Melt Analysis software imports and analyzes data files generated from the CFX96 Touch[™], CFX96 Touch[™] Deep Well, CFX384 Touch[™], or CFX Connect[™] real-time PCR detection systems to genotype samples based on the thermal denaturation properties of doublestranded DNA. The software can be used for a variety of genotyping applications, including scanning for new gene variants, screening DNA samples for SNPs, identifying insertions/deletions or other unknown mutations, and determining the percentage of methylated DNA in unknown samples. The software enables you to:

- Assign sample genotypes automatically based on cluster analysis or manually using multiple data view options to tailor the software to the appropriate analysis
- Generate a basic representation of the different clusters based on curve shifting (homozygotes) and curve shape change (heterozygotes) using the normalized melt curves plot feature

- Compare data between multiple file runs by combining them into a single melt study — develop a standard library of melt curve runs to analyze an unlimited number of melt experiments without having to export data
- View multiple displays of the data, including a simultaneous display of the original melt curves and the normalized plot
- Export data to multiple formats, including spreadsheet, image, XML, and HTML files
- Analyze multiple experiments from a single plate using the Well Groups feature
- Arrange melt data or melt study data into a customizable report

For More Information Web: bio-rad.com/precision-melt-analysis-software Request or download bulletin: 5798

Ordering Information	
Catalog # Description	
1845025	Precision Melt Analysis Software, includes 2 user licenses, installation CD, 2 HASP HL keys, melt calibration kit
1845015	Precision Melt Analysis Software Only, includes 2 user licenses, installation CD, 2 HASP HL keys
1845020	Melt Calibration Kit, includes melt calibration DNA standard, melt primers, precision melt supermix

Gene Expression Assays and PCR Arrays

PrimePCR[™] assays and arrays for real-time PCR are wet-lab validated or expertly designed to ensure optimal assay performance and compliance with the minimum information for publication of quantitative real-time PCR experiments (MIQE) guidelines (Bustin et al. 2009).

PrimePCR[™] Assays and Panels

Wet-Lab Validated or Expertly Designed for Guaranteed Performance

Every gene expression assay for human, mouse, and rat has been wet-lab validated to meet stringent performance standards, providing confidence in results while eliminating time-consuming assay design and optimization. The assay design algorithm that was optimized during the wet-lab validation process has been used to expertly design assays for nine additional genomes that are guaranteed to perform.



Expert Design for All Assays

Design Parameter	Why It Matters
Maximum transcript coverage	Not detecting the maximum number of transcripts underrepresents expression of target
Intron-spanning assay design when possible	Genomic DNA amplification can lead to false-positive results, which is problematic when checking for small changes in gene expression
Secondary structure avoided	Secondary structure can impede polymerase activity and reduce PCR efficiency
Single nucleotide polymorphisms (SNPs) avoided	SNPs destabilize binding; mismatching results in reduced PCR efficiency, delayed shift in quantification cycle (Cq), and underestimation of gene expression
Specific sequences identified (specificity)	Coamplification of off-target sequences can cause high PCR efficiency and/or false-positive signals
Universal assay conditions tested	Assays work on any instrument with any protocol
Latest genome information used	Assays designed with old bioinformatics will not reflect the latest information on SNP location, transcripts, and pseudogenes, resulting in assays that can provide incorrect gene expression

Wet-Lab Validation for Human, Mouse, and Rat Assays

Design Parameter	Why It Matters
Specificity	Validation with next-generation sequencing and melt curve analysis prevents coamplification of off-target sequences that could cause high PCR efficiency and/or false-positive signals
Sensitivity/dynamic range	Not understanding the detection limits of the assay could lead to high PCR efficiency and/or false-positive signals
R ² value	Without a good R ² value, the Cq value will not be a reliable way to calculate the expression
Efficiency	High or low efficiency could cause misrepresentation of gene expression data

See Also

iScript advanced cDNA synthesis kit for RT-qPCR: page 383. SsoAdvancedTM universal SYBR[®] Green supermix: page 373. SsoAdvanced universal probes supermix: page 374.

PrimePCR Genome and Product Summary

	Expertly Designed, Wet-Lab Validated	Expertly Designed Genomes		
	Human, Mouse, and Rat	Rhesus Monkey, Yeast, Zebrafish, Cow, Pig, Rabbit, Dog, Chicken, and <i>Arabidopsis</i>		
SYBR [®] Green and probe assays	•	•		
PreAmp assays	•	•		
Pathway, collection, disease, and SABiosciences PCR arrays	•			
Custom plates	•	•		
Control assays	•	•		
Reference gene assays	•	•		
Reference gene panels	•			



Wide Range of Pathway and Collection PCR Arrays

Predesigned plates are available for signaling and disease pathways to help identify and investigate key targets in a biological pathway of interest. Predesigned plates can be modified to include user-selected assays.

Customizable 96- and 384-Well Plate Formats

Easy-to-use custom plate configurator allows users to lay out assays on a plate exactly as they choose.

Fully Integrated with CFX Manager[™] Software

Full integration with CFX real-time PCR systems and data analysis software streamlines data collection and analysis.

The PrimePCR qPCR product family includes:

 Predesigned primer assays — genome-wide assays for SYBR[®] Green gene expression analysis available in 200, 1,000, and 2,500 reactions

- Predesigned probe assays genome-wide 5' nuclease probe assays for gene expression analysis available in 500, 1,000, and 2,500 reactions
- Custom assays order your primer and probe sequences of interest, available in 200, 500, 1,000, and 2,500 reactions
- Custom PCR plates custom-configured 96- and 384-well PCR plates
- Pathway and collection PCR arrays predesigned 96- and 384-well PCR pathway and collection panels
- DNA templates synthetic DNA templates can be used as a positive control for the corresponding gene-specific assay
- Experimental controls control assays are available for reverse transcription, RNA quality, genomic DNA contamination, and PCR performance
- Reference gene assays commonly used reference gene assays are available to normalize for variation in the amount of input mRNA among samples
- PreAmp assays assays for the unbiased, targetspecific preamplification of up to 100 gene targets in a single reaction

PrimePCR assays are also available for Droplet Digital[™] PCR. Please see page 355 for more information.

For More Information Web: bio-rad.com/PrimePCR Download bulletins: 6262, 6263, and 6290

PCR and Real-Time PCR Reagents

PCR reagents, such as ready-to-use 2x supermixes and cDNA synthesis kits, are optimized for PCR, reverse transcription (RT), or quantitative PCR (qPCR) applications, including high resolution melt (HRM) analysis and long, proofreading, and fast PCR.

Real-Time PCR Supermixes and Kits

Ready-to-use 2x supermixes are suitable for use in real-time PCR and are tested for reliable amplification over a wide dynamic range of input template: genomic DNA (gDNA), complementary DNA (cDNA), and plasmid DNA (pDNA).

For More Information

Web: bio-rad.com/supermixes

Reagent Compatibility with Instruments

	S	SYBR [®] Gree	n Supermixes		1	Probes Supermixes			One-Step Kits for RT-qPCR	
Real-Time qPCR Instrument	SsoAdvanced [™] Universal SYBR [®] Green Supermix	iTaq [™] Universal SYBR [®] Green Supermix	SsoAdvanced [™] Universal Inhibitor Tolerant SYBR [®] Green Supermix	iQ™ SYBR® Green Supermix	SsoAdvanced Universal Probes Supermix	iTaq Universal Probes Supermix	iQ Supermix	iQ Multiplex Powermix	iTaq [™] Universal SYBR® Green One-Step Kit	iTaq Universal Probes One-Step Kit
Bio-Rad										
CFX96 [™] , CFX96 Touch [™] , CFX384 [™] , CFX384 Touch [™] , CFX Connect [™]	•	•	•	•	•	•	•	•	•	•
iQ [™] , iQ [™] 5, MyiQ [™] , MyiQ [™] 2	•	•	•	•	•	•	•	•	•	•
MiniOpticon [™] , DNA Engine Opticon [®] 1 and 2	•	•	•	•	•	•	•	•	•	•
Applied Biosystems										
StepOne/StepOne Plus	•	•	•	•	•	•	•	•	•	•
7000, 7300, 7500, 7700, 7900HT, ViiA 7, QuantStudio (all systems)	•	•	•	_	•	•	_	_	•	•
Stratagene										
Mx3000P, 3005P, 4000	•	•	•	•	•	•	•	•	•	•
Eppendorf										
Mastercycler ep <i>realplex</i> 2 or 4	•	•	•	•	•	•	•	•	•	•
QIAGEN/Corbett										
Rotor-Gene 3000, 6000, Q	•	•	•	•	•	•	•	•	•	•
Roche										
LightCycler 480	•	•	•	•	•	•	•	•	•	•
LightCycler 96	•	•	•	•	•	•	•	•	•	•
LightCycler 1.0, 1.5, 2.0	A	A	A	A	A		A	A	A	A
Illumina										
Eco	•	•	•	•	•	•	•	•	•	•
Thermo Scientific										
PikoReal	•	•	•	•	•	•	•	•	•	•
Idaho Technology										
LightScanner HR-1	•	•	•	•	•	•	•	•	•	•
LightScanner 32	A	A		A	A	A	A	A	A	A

• Recommended for use as is; \blacklozenge ROX reference setting must be turned "off"; \blacktriangle BSA must be added according to instrument specifications

Use this selection guide to choose an appropriate reagent for your application.

Feature	SsoAdvanced [™] Universal Supermixes	iTaq [™] Universal Supermixes	iQ [™] Supermixes
Sensitive detection of low-level target genes	•••	•••	••
Efficiency with difficult target sequences	•••	••	••
Priming specificity	•••	••	•
Tolerance to PCR inhibitors	•••	_	_
Broad range of reaction conditions	•••	••	•
Fast cycling	•••	•••	•
Instrument compatibility	Any instrument	Any instrument	Select instruments

••• Excellent •• Good • Fair

SsoAdvanced[™] Universal SYBR[®] Green Supermix

SsoAdvanced[™] universal SYBR[®] Green supermix is a highperformance real-time PCR supermix based on Bio-Rad's patented* Sso7d fusion protein technology. This supermix is formulated for a wide range of real-time PCR applications and for use with all ROX dependent or independent realtime PCR systems. The dsDNA binding protein, Sso7d, stabilizes the polymerase-template complex, providing superior inhibitor tolerance, increased processivity, specificity, and greater speed while enhancing PCR sensitivity, efficiency, or reproducibility.

SsoAdvanced[™] universal SYBR[®] Green supermix lets you:

- Increase your qPCR sensitivity and efficiency of detection from compromised samples — Sso7d fusion polymerase has increased resistance to a wide variety of PCR inhibitors, providing better sensitivity and overall performance
- Achieve superior real-time PCR results under any condition — robust formulation delivers consistent performance in fast cycling across a broad range of reaction conditions, primer concentrations, and temperature ranges
- Decrease time to results without compromising qPCR data quality — Sso7d fusion polymerase and optimized buffer together provide rapid polymerization kinetics and instant polymerase activation
- Use any real-time PCR system the universal reference dye in this supermix enables ROX normalization of qPCR data regardless of the ROX level requirements of the qPCR system
- Obtain better results with PrimePCR[™] assays real-time PCR assays are expertly designed and wet-lab validated to ensure optimal assay performance

* U.S. patents 6,627,424; 7,541,170; and 7,560,260.



The dsDNA binding protein, Sso7d, stabilizes the polymerasetemplate complex, increases processivity, and provides greater speed and reduced reaction times compared to traditional DNA polymerases. Sso7d fusion polymerases are significantly more resistant to PCR inhibitors, making the SsoAdvanced supermixes ideal choices for challenging applications, such as direct qPCR, without the need for sample preparation.

Applications and Uses of SsoAdvanced[™] Universal SYBR[®] Green Supermix

- Real-time PCR
- Gene expression analysis
- Pathway analysis
- Absolute quantification
- Mutation detection
- Pathogen detection
- Characterization of genetically modified organisms (GMO)
- Genetic profiling

Instrument Compatibility

The SsoAdvanced universal SYBR[®] Green supermix is compatible with all commercially available and all Bio-Rad real-time gPCR systems.

For More Information

Web: bio-rad.com/supermixes View the Universal Real-Time PCR Reagents Web App: bio-rad.com/App/UniversalSupermixes

View the Understanding Real-Time PCR Supermixes Tutorial: bio-rad.com/supermixes_tutorial

Ordering Inf	Ordering Information			
Catalog #	Description			
1725270	SsoAdvanced Universal SYBR Green Supermix, 2 ml (2 x 1 ml vials), 200 x 20 µl reactions			
1725271	SsoAdvanced Universal SYBR Green Supermix, 5 ml (5 x 1 ml vials), 500 x 20 µl reactions			
1725272	SsoAdvanced Universal SYBR Green Supermix, 10 ml (10 x 1 ml vials), 1,000 x 20 µl reactions			
1725274	SsoAdvanced Universal SYBR Green Supermix, 25 ml (5 x 5 ml vials), 2,500 x 20 µl reactions			
1725275	SsoAdvanced Universal SYBR Green Supermix, 50 ml (10 x 5 ml vials), 5,000 x 20 μ l reactions			

SsoAdvanced[™] Universal Probes Supermix

SsoAdvanced universal probes supermix is a highperformance real-time PCR supermix based on Bio-Rad's patented* Sso7d fusion protein technology. This supermix is formulated for a wide range of real-time PCR applications and for use with all ROX dependent or independent realtime PCR systems. The dsDNA binding protein, Sso7d, stabilizes the polymerase-template complex, providing superior inhibitor tolerance, increased processivity, better specificity, and greater speed while enhancing PCR sensitivity, efficiency, or reproducibility.

SsoAdvanced universal probes supermix lets you:

- Increase your qPCR sensitivity and efficiency of detection from compromised samples — Sso7d fusion polymerase has increased resistance to a wide variety of PCR inhibitors, providing better sensitivity and overall performance
- Achieve superior real-time PCR results under any condition — robust formulation delivers consistent performance in fast cycling across a broad range of reaction conditions, primer concentrations, and temperature ranges
- Carry out high-performance singleplex and multiplex reactions — Sso7d fusion polymerase and advanced formulation enable robust performance in singleplex or multiplex real-time PCR reactions, providing the highest data precision and allowing cost and time savings when combining 2 assays in a single well
- Decrease time to results without compromising qPCR data quality — Sso7d fusion polymerase and optimized buffer together provide rapid polymerization kinetics and instant polymerase activation
- Use any real-time PCR system the universal reference dye in this supermix enables ROX normalization of qPCR data regardless of the ROX level requirements of the qPCR system
- * U.S. patents 6,627,424; 7,541,170; and 7,560,260.



Robust formulation containing advanced components delivers superior and consistent performance in standard and fast cycling conditions across a broad range of reaction conditions, primer concentrations, and temperature ranges.

Applications and Uses of SsoAdvanced Universal Probes Supermix

- Real-time PCR
- Gene expression analysis
- Absolute quantification
- Multiplexing
- Genotyping (allelic discrimination)
- Mutation detection
- Pathogen detection
- Characterization of GMOs
- Genetic profiling

Instrument Compatibility

The SsoAdvanced universal probes supermix is compatible with all commercially available and all Bio-Rad real-time qPCR systems.

For More Information

Web: bio-rad.com/supermixes View the Universal Real-Time PCR Reagents Web App: bio-rad.com/App/UniversalSupermixes

View the Understanding Real-Time PCR Supermixes Tutorial: bio-rad.com/supermixes_tutorial

Ordering Inf	Ordering Information		
Catalog #	Description		
1725280	SsoAdvanced Universal Probes Supermix, 2 ml (2 x 1 ml vials), 200 x 20 µl reactions		
1725281	SsoAdvanced Universal Probes Supermix, 5 ml (5 x 1 ml vials), 500 x 20 μ l reactions		
1725282	SsoAdvanced Universal Probes Supermix, 10 ml (10 x 1 ml vials), 1,000 x 20 µl reactions		
1725284	SsoAdvanced Universal Probes Supermix, 25 ml (5 x 5 ml vials), 2,500 x 20 μ l reactions		
1725285	SsoAdvanced Universal Probes Supermix, 50 ml (10 x 5 ml vials), 5,000 x 20 μ l reactions		

iTaq[™] Universal Supermixes

iTaq universal supermix is a 2x concentrated, ready-touse supermix formulated to deliver robust qPCR results with superior sensitivity, efficiency, and specificity. This supermix is available with SYBR® Green or probe-based chemistries.

Features and benefits include:

- Advanced buffer formulation developed for optimal qPCR results with SYBR[®] Green or fluorogenic probe (simplex and duplex)
- Antibody-mediated hot-start iTaq DNA polymerase for fast activation and superior specificity
- Optimized for consistent results using both standard and fast cycling protocols
- Blend of reference dyes for universal real-time PCR instrument compatibility



Instrument Compatibility

The iTaq[™] universal SYBR[®] Green supermix and probes supermix are compatible with all commercially available and all Bio-Rad real-time qPCR systems.

For More Information

Web: bio-rad.com/supermixes View the Universal Real-Time PCR Reagents Web App: bio-rad.com/App/UniversalSupermixes

View the Understanding Real-Time PCR Supermixes Tutorial: bio-rad.com/supermixes_tutorial

Ordering Information

Catalog #	Description	
1725120	iTaq Universal SYBR Green Supermix, 2 ml (2 x 1 ml vials), 200 x 20 µl reactions	
1725121	iTaq Universal SYBR Green Supermix, 5 ml (5 x 1 ml vials), 500 x 20 μ l reactions	
1725122	iTaq Universal SYBR Green Supermix , 10 ml (10 x 1 ml vials), 1,000 x 20 μl reactions	
1725124	iTaq Universal SYBR Green Supermix, 25 ml (5 x 5 ml vials), 2,500 x 20 μ l reactions	
1725125	iTaq Universal SYBR Green Supermix, 50 ml (10 x 5 ml vials), 5,000 x 20 μ l reactions	
1725130	iTaq Universal Probes Supermix, 2 ml (2 x 1 ml vials), 200 x 20 μ l reactions	
1725131	iTaq Universal Probes Supermix , 5 ml (5 x 1 ml vials), 500 x 20 μ l reactions	
1725132	iTaq Universal Probes Supermix, 10 ml (10 x 1 ml vials), 1,000 x 20 µl reactions	
1725134	iTaq Universal Probes Supermix, 25 ml (5 x 5 ml vials), 2,500 x 20 μ l reactions	
1725135	iTaq Universal Probes Supermix, 50 ml (10 x 5 ml vials), 5,000 x 20 µl reactions	

SsoAdvanced[™] Universal Inhibitor-Tolerant SYBR[®] Green Supermix

SsoAdvanced[™] universal inhibitor-tolerant SYBR[®] Green supermix is a high-performance real-time PCR supermix based on Bio-Rad's patented* Sso7d fusion protein technology. This supermix is specifically formulated for use with difficult target sequences in a wide range of challenging sample types including crude lysates. The dsDNA binding protein, Sso7d, stabilizes the polymerase-template complex, providing superior PCR inhibitor tolerance, increased processivity and specificity, and greater speed while enhancing PCR sensitivity, efficiency, or reproducibility.

- Skip RNA and DNA extraction by using crude samples — superior data using crude lysates from plants, seeds, cells, bacteria, or FFPE samples
- Power through PCR inhibitors unrivaled performance with common PCR inhibitors, such as heparin, polysaccharides, and culture media
- Obtain high-quality data with fast cycling across a broad range of conditions — optimal results over wide variations in reaction conditions, primer concentrations, and temperatures
- * U.S. patents 6,627,424; 7,541,170; and 7,560,260.



- Rapid polymerization kinetics and instant polymerase activation — decrease time to results without compromising real-time quantitative PCR (RT-qPCR) data quality
- Obtain better results with Bio-Rad's PrimePCR[™] assays — real-time PCR assays are expertly designed and wet-lab validated to ensure optimal assay performance
- Increase cDNA loading add up to 20% cDNA from our iScript[™] advanced cDNA synthesis kit for RT-qPCR or iScript reverse transcription supermix for RT-qPCR
- Use with any real-time PCR system

For More Information Web: bio-rad.com/SUIT

<u> </u>	
Catalog #	Description
1725016	SsoAdvanced Universal Inhibitor-Tolerant SYBR Green Supermix, 2 ml (2 x 1 ml vials),
	200 x 20 μl reactions
1725017	SsoAdvanced Universal Inhibitor-Tolerant SYBR Green Supermix, 5 ml (1 x 5 ml vial),
	500 x 20 μl reactions
1725018	SsoAdvanced Universal Inhibitor-Tolerant SYBR Green Supermix, 10 ml (2 x 5 ml vials),
	1.000 x 20 µl reactions

iQ[™] Supermixes

iQ[™] SYBR[®] Green Supermix

- Analysis of low-, medium-, and high-abundance target genes with superior sensitivity and efficiency
- Formulated for maximum SYBR[®] Green I stability and performance in a wide variety of real-time PCR instruments
- Antibody-mediated hot-start polymerase for quick activation and increased specificity

iQ Supermix

- Maximum efficiency and sensitivity for qPCR using fluorogenic probes
- Reliable quantification of up to 2 targets over a wide dynamic range of human gDNA and pDNA concentrations
- Contains antibody-mediated hot-start iTaq[™] DNA polymerase for quick activation and increased specificity

iQ Multiplex Powermix

- Robust supermix formulated for sensitive and efficient multiplex gPCR
- Reliable quantification of up to 4 targets (when there is up to 10⁶-fold difference in expession levels between target genes) or up to 5 targets
- Linearity over 6 orders of magnitude of input cDNA and 4 orders of magnitude of input gDNA
- Suitable for a wide variety of applications, including gene expression analysis, single nucleotide polymorphism (SNP) genotyping, SNP analysis, GMO detection, and viral load detection

For More Information Request or download bulletin: 6090

Request or download bulletin: 6090

Ordering Information

Catalog #	Description
1708880	iQ SYBR Green Supermix, 2.5 ml (2 x 1.25 ml vials), 100 x 50 µl reactions
1708882	iQ SYBR Green Supermix, 12.5 ml (10 x 1.25 ml vials), 500 x 50 μ l reactions
1708884	iQ SYBR Green Supermix, 25 ml (20 x 1.25 ml vials), 1,000 x 50 µl reactions
1708885	iQ SYBR Green Supermix, 50 ml (50 ml bottle), 2,000 x 50 µl reactions
1708886	iQ SYBR Green Supermix, 25 ml (5 x 5 ml vials), 1,000 x 50 µl reactions
1708887	iQ SYBR Green Supermix, 50 ml (10 x 5 ml vials), 2,000 x 50 µl reactions
1708860	iQ Supermix, 2.5 ml (2 x 1.25 ml vials), 100 x 50 µl reactions
1708862	iQ Supermix, 12.5 ml (10 x 1.25 ml vials), 500 x 50 µl reactions
1708864	iQ Supermix, 25 ml (20 x 1.25 ml vials), 1,000 x 50 µl reactions
1725848	iQ Multiplex Powermix, 1.25 ml (1 x 1.25 ml vial), 50 x 50 µl reactions
1725849	iQ Multiplex Powermix, 5 ml (4 x 1.25 ml vials), 200 x 50 µl reactions

See Also

PCR plastic consumables: page 387.

iTaq[™] Universal SYBR[®] Green One-Step Kit

The iTaq[™] Universal SYBR[®] Green One-Step Kit is a fast and convenient solution for real-time PCR using the powerful combination of RNase H+ MMLV reverse transcriptase, specificity enhancer, and hot-start iTaq DNA polymerase in one fast reaction. It provides improved PCR efficiency, wider dynamic range, superior sensitivity and better specificity, and inhibitor tolerance without affecting performance, even with cell lysates.

- Increase sensitivity, specificity, and efficiency advanced formulation enables robust performance with a wide variety of sample types and target sequences
- Use any real-time PCR system the universal reference dye in this reaction mix enables ROX normalization of qPCR data regardless of the ROX level requirements of the qPCR system
- Achieve superior real-time PCR results under most conditions — robust formulation delivers consistent performance in fast cycling across a broad range of reaction conditions, primer concentrations, and temperature ranges
- Obtain better results with PrimePCR[™] assays real-time PCR assays are expertly designed and wet-lab validated to ensure optimal assay performance

Applications and Uses of iTaq[™] Universal SYBR[®] Green One-Step Kit

- Real-time PCR
- Gene expression analysis
- Absolute quantification
- Pathogen/virus detection

Instrument Compatibility

The iTaq[™] universal SYBR[®] Green one-step kit is compatible with Bio-Rad's and all other commercially available real-time qPCR systems.

For More Information

Web: bio-rad.com/supermixes View the Universal Real-Time PCR Reagents Web App: bio-rad.com/App/UniversalSupermixes

Ordering In	Ordering Information			
Catalog #	Description			
iTaq Univers	iTaq Universal SYBR Green One-Step Kit			
1725150	iTaq Universal SYBR Green One-Step Kit, 100 reactions, 1 ml (1 x 1 ml vial), includes 25 µl RT (1 vial), nuclease-free water (1 vial)			
1725151	iTaq Universal SYBR Green One-Step Kit, 500 reactions, 5 ml (5 x 1 ml vials), includes 125 μl RT (1 vial), nuclease-free water (1 vial)			

bio-rad.com/pcrreagents



iTaq[™] Universal Probes One-Step Kit

The iTaq universal probes one-step kit is a fast and convenient solution for real-time PCR using the powerful combination of RNase H+ MMLV reverse transcriptase and hot-start iTaq DNA polymerase in one fast reaction. It provides improved PCR efficiency, wider dynamic range, superior sensitivity and specificity, and inhibitor tolerance without affecting performance, even with cell lysates.

- Increase sensitivity, specificity, and efficiency advanced formulation enables robust performance with a wide variety of sample types and target sequences
- Obtain superior results with multiplex reactions enhanced chemistry enables up to 3 target amplifications at the same time, resulting in higher data precision with fewer pipetting steps and reduced sample usage
- Carry out high-throughput real-time PCR screening and validation simplified workflow and reduced cycling times enable screening and validation of a great number of samples and targets in a short period of time
- Use any real-time PCR system the universal reference dye in this reaction mix enables ROX normalization of qPCR data regardless of the ROX level requirements of the qPCR system
- Achieve superior real-time PCR results under most conditions — robust formulation delivers consistent performance in fast cycling across a broad range of reaction conditions, primer concentrations, and temperature ranges



Applications and Uses of iTaq Universal Probes

- One-Step Kit
- Real-time PCR
- Gene expression analysis
- Multiplexing
- Absolute quantification
- Pathogen/virus detection

Instrument Compatibility

The iTaq universal probes one-step kit is compatible with Bio-Rad's and all other commercially available realtime qPCR systems.

For More Information

Web: bio-rad.com/supermixes View the Universal Real-Time PCR Reagents Web App: bio-rad.com/App/UniversalSupermixes

Ordering Information		
Catalog #	Description	
iTaq Univers	al Probes One-Step Kit	
1725140	i Taq Universal Probes One-Step Kit , 100 reactions, 1 ml (1 x 1 ml vial), includes 50 μl RT (1 x 50 μl vial), nuclease-free water (1 vial)	
1725141	i Taq Universal Probes One-Step Kit , 500 reactions, 5 ml (5 x 1 ml vials), includes 250 μl RT (2 x 125 μl vials), nuclease-free water (1 vial)	

See Also

PCR plastic consumables: page 387.

bio-rad.com/pcrreagents

SsoAdvanced[™] PreAmp Supermix

SsoAdvanced PreAmp Supermix is a 2x concentrated, ready-to-use reaction master mix optimized for unbiased, target-specific preamplification of cDNA and genomic DNA (gDNA). This supermix preamplifies DNA templates using up to 400 PrimePCR[™] PreAmp Assays (for use downstream with PrimePCR Gene Expression Assays), custom designed SYBR[®] Green or hydrolysis probe assays, and TaqMan Assays.

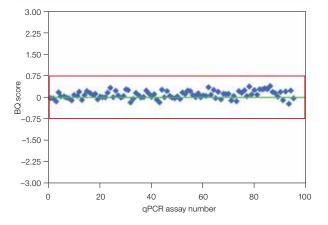
Sso7d Fusion Polymerase Technology Enables Unbiased Preamplification

The SsoAdvanced PreAmp Supermix utilizes our highly processive Sso7d fusion polymerase to enable preamplification of up to 400 targets with minimal bias. The increased processivity of the Sso7d fusion polymerase ensures that all targets — even difficult targets — are amplified efficiently. This reduction of preamplification bias is critical for ensuring accuracy of the results from downstream quantitative real-time PCR analysis.

- Analyze up to 400 targets when the number of genes that can be analyzed in an experiment is limited by the amount of sample, preamplification will extend the amount of sample available for analysis
- Requires as little as 100 pg DNA enables analysis of any precious or limited sample, such as stem cells, laser capture microdissections, and formalin-fixed paraffinembedded tissues
- Optimized for use with PrimePCR use PrimePCR PreAmp Assays before downstream analysis with PrimePCR Gene Expression Assay

For More Information Web: bio-rad.com/PreAmp Request or download bulletin: 6576





Minimal bias observed during preamplification of 100 targets. Preamplification was performed on a cDNA sample for ten cycles using SsoAdvanced PreAmp Supermix and 100 PrimePCR PreAmp Assays. The preamplified cDNA was diluted and used in qPCR analysis alongside cDNA that was not subject to preamplification. The bias quantification (BQ) score shows the difference in the results (quantification cycle [Cq] value) for the samples with and without preamplification. BQ scores close to zero indicate a lack of preamplification bias.

Ordering Information			
Catalog #	Description		
1725160	SsoAdvanced PreAmp Supermix, 1.25 ml (1 x 1.25 ml vial), 50 x 50 µl reactions		

SingleShot[™] Cell Lysis Kits

SingleShot Cell Lysis Kits rapidly generate cell lysates that are optimized for reverse transcription quantitative PCR (RT-gPCR) analysis without RNA purification.

Features include:

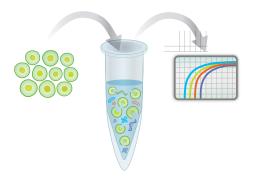
- Compatibility with 10–100,000 adherent or suspension cells
- Lysates prepared in 20 minutes
- Complete removal of genomic DNA
- Preservation of RNA integrity by an RNase inhibitor
- Simple, short protocol suitable for automation and high-throughput experiments
- No loss of rare transcripts from column purification
- Produces accurate and sensitive qPCR data
- Validated with PrimePCR[™] assays and panels
- Results comparable to those produced using purified RNA

SingleShot Cell Lysis Kit

The SingleShot Cell Lysis Kit provides the reagents necessary for producing RT-qPCR-ready cell lysates in approximately 20 minutes. Reagents for RT-gPCR are not included.

SingleShot Two-Step Kits

SingleShot Two-Step Kits include reagents to perform RT-qPCR using a two-step workflow with separate cDNA



synthesis and qPCR steps. These kits provide RT-qPCR data from cultured cells in just a little over 2 hours. The SingleShot RNA control is included to help optimize cell number input and the amount of lysate used in the RT-qPCR.

SingleShot One-Step Kits

SingleShot One-Step Kits include reagents to perform one-step RT-gPCR utilizing integrated cDNA synthesis and qPCR steps. These kits provide RT-qPCR data from cultured cells in approximately 1.5 hours. The SingleShot RNA control is included to help optimize cell number input and the amount of lysate used in the RT-gPCR.

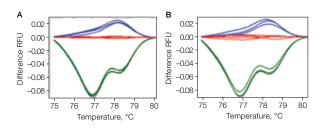
For More Information Web: bio-rad.com/singleshot

Ordering Infor	Ordering Information		
Catalog #	Description		
1725080	SingleShot Cell Lysis Kit, 100 x 50 µl reactions		
1725081	SingleShot Cell Lysis Kit, 500 x 50 µl reactions		
One-Step Kits			
1725070	SingleShot Probes One-Step Kit, 100 x 50 µl reactions		
1725095	SingleShot SYBR Green One-Step Kit, 100 x 50 µl reactions		
Two-Step Kits	Two-Step Kits		
1725090	SingleShot Probes Kit, 100 x 50 µl reactions		
1725085	SingleShot SYBR Green Kit, 100 x 50 µl reactions		

Precision Melt Supermix (HRM)

- Sensitive and specific discrimination of class I–IV SNPs across a broad range of amplicons
- Ideal solution for insertions or deletions >6 base pairs
- De novo SNP discovery
- Accurate quantification of CpG methylation status for epigenetic studies
- Ideal for mutation screening of small mutations or when using a primer walking approach for larger regions
- Exceptional room temperature stability for highthroughput HRM studies
- Optimized formulation containing EvaGreen dye delivers robust PCR and HRM performance

For More Information Web: bio-rad.com/supermixes Request or download bulletins: 5798 and 6137



Exceptional stability enables high-throughput genotyping analysis with precision melt supermix. Specific amplification and accurate discrimination of a class IV SNP (84 bp amplicon) from mouse genomic DNA was performed on a CFX384[™] real-time PCR detection system either 0 hr (A) or 48 hr (B) after reaction setup. Wild type (■), heterozygote (■), and homozygous mutant (■) are shown in the difference plots normalized to wild-type samples. Total run time including melt curve = 150 min. RFU, relative fluorescence units.

Ordering Information

Catalog #	Description
1725110	Precision Melt Supermix, 2 ml (2 x 1 ml vials), 200 x 20 µl reactions
1725112	Precision Melt Supermix, 10 ml (10 x 1 ml vials), 1,000 x 20 µl reactions

Reverse Transcription Reagents

Bio-Rad's reverse transcription reagents are formulated for efficient reverse transcription across a broad linear dynamic range. A potent RNase A inhibitor protects RNA during setup and reverse transcription. Reagents have flexible input RNA capacity to suit different experimental needs and are optimized for gene expression analysis using real-time PCR.

For More Information Web: bio-rad.com/RTreagents bio-rad.com/iscript bio-rad.com/rt_tutorial

Feature	RECOMMENDED Minimum Reaction Setup Time	NEW! Effective Genomic DNA Removal before RT	Maximum Input RNA for High cDNA Yields	Flexible Priming Options	Reliable Value Solution
Product	iScript Reverse Transcription Supermix for RT-qPCR	iScript gDNA Clear cDNA Synthesis Kit	iScript Advanced cDNA Synthesis Kit for RT-qPCR	iScript Select cDNA Synthesis Kit	iScript cDNA Synthesis Kit
Applications	Gene expressionRNA quantification	Gene expressionRNA quantification	Gene expressionRNA quantification	Gene expressionCloningRNA quantification	Gene expressionRNA quantification
Total input RNA	1 µg–1 pg	1 µg–1 pg	7.5 μg–100 fg	1 µg–1 pg	1 µg–100 fg
Format	1 tubes	3 tube	2 tubes	5 tubes	2 tubes
Kit contents	 5x iScript RT Supermix No-RT control supermix 	 5x iScript RT Supermix No-RT control supermix DNase DNase buffer 	 iScript Reverse Transcriptase 5x iScript Advanced Reaction Mix 	 iScript Reverse Transcriptase 5x iScript Reaction Mix 3 priming options 	 iScript Reverse Transcriptase 5x iScript Reaction Mix
Time to produce cDNA	26 min	36 min	21 min	40–90 min	26 min
RNase H+ activity	High	High	High	High	High

iScript[™] Reverse Transcription Kits

iScript Advanced cDNA Synthesis Kit for RT-qPCR

- Increased qPCR data throughput and cost effectiveness from a single 20 µl RT reaction
- Superior sensitivity and broad linear dynamic range for RT (7.5 μ g–100 fg)
- 2-tube kit (5x iScript reaction mix and iScript reverse transcriptase) for ease of use and reduced reaction setup time
- Optimized blend of oligo(dT) and random primers ensures complete and unbiased RNA sequence representation
- RNase H+ MMLV reverse transcriptase (preblended with RNase inhibitor) delivers high sensitivity for RT-qPCR and eliminates additional RNase H+ step
- Potent blend of RNase A inhibitor protects RNA during setup and RT
- Short 21 min protocol allows fast qPCR data generation

iScript Reverse Transcription Supermix for RT-qPCR

- 1-tube format for simple and fast setup and reduced pipetting variability
- 5x formulation enables RNA volumes up to 16 µl, avoiding the need to concentrate your sample
- Liquid format at -20°C offers superior stability and eliminates freeze/thaw cycle
- Superior sensitivity and broad linear dynamic range for RT (1 μ g–1 pg)
- Optimized blend of oligo(dT) and random primers ensures complete and unbiased RNA sequence representation
- RNase H+ MMLV reverse transcriptase (preblended with RNase inhibitor) delivers high sensitivity for RT-qPCR and eliminates additional RNase H+ step
- Potent blend of RNase A inhibitor protects RNA during setup and RT
- Short 26 min protocol allows fast qPCR data generation

iScript cDNA Synthesis Kit

- 2-tube kit (5x iScript reaction mix and iScript reverse transcriptase) for ease of use and reduced reaction setup time
- Superior sensitivity and broad linear dynamic range for RT (1 µg–100 fg)



- Optimized blend of oligo(dT) and random primers ensures complete and unbiased RNA sequence representation
- RNase H+ MMLV reverse transcriptase (preblended with RNase inhibitor) delivers high sensitivity for RT-qPCR and eliminates additional RNase H+ step
- Potent blend of RNase A inhibitor protects RNA during setup and RT
- Short 26 min protocol allows fast qPCR data generation

iScript Select cDNA Synthesis Kit

- 5-tube kit (random primers, oligo(dT), 5x iScript Select reaction mix, iScript reverse transcriptase, and genespecific primer-enhancer solution)
- Choice of priming strategy
- Reliable synthesis of long cDNA >6 kb in length
- Superior sensitivity and broad linear dynamic range for RT (1 µg–1 pg)

NEW iScript gDNA Clear cDNA Synthesis Kit

iScript gDNA Clear cDNA Synthesis Kit generates qPCRready cDNA free of gDNA for accurate gene expression analysis in as little as 36 minutes. The kit consists of the iScript Reverse Transcription Supermix and a specially formulated DNase. Features and benefits include:

- Effective gDNA clearance in 10 min with a specially formulated DNase
- Convenient all-in-one RT supermix for simple and fast setup and reduced pipetting variability
- Simple workflow and short 36 min protocol for fast generation of gDNA-free cDNA
- Ready-to-use no RT control included in the kit to monitor gDNA contamination

For More Information Request or download bulletin: 6090

Standard PCR Reagents

Catalog #	Description	
iScript Adva	nced cDNA Synthesis Kit for RT-qPCR	
1725037	iScript Advanced cDNA Synthesis Kit for RT-gPCR, 25 x 20 µl reactions, includes 100 µl 5x iScript	
	advanced reaction mix, 25 µl iScript advanced reverse transcriptase, and nuclease-free water	
1725038	iScript Advanced cDNA Synthesis Kit for RT-qPCR, 100 x 20 μl reactions, includes 400 μl 5x iScript	
	advanced reaction mix, 100 µl iScript advanced reverse transcriptase, and nuclease-free water	
iScript Reve	rse Transcription Supermix for RT-qPCR	
1708840	iScript Reverse Transcription Supermix for RT-qPCR, 25 x 20 µl reactions, includes 100 µl 5x iScript RT	
	supermix, 200 µl 5x iScript RT supermix no-RT control (50 reactions), and nuclease-free water	
1708841	iScript Reverse Transcription Supermix for RT-qPCR, 100 x 20 µl reactions, includes 400 µl 5x iScript RT	
	supermix, 200 µl 5x iScript RT supermix no-RT control (50 reactions), and nuclease-free water	
iScript cDN/	A Synthesis Kit	
1708890	iScript cDNA Synthesis Kit, 25 x 20 µl reactions, includes 100 µl 5x iScript reaction mix,	
	25 μl iScript reverse transcriptase, and nuclease-free water	
1708891	iScript DNA Synthesis Kit, 100 x 20 µl reactions, includes 400 µl 5x iScript reaction mix,	
	100 μ l iScript reverse transcriptase, and nuclease-free water	
iScript Selec	ct cDNA Synthesis Kit	
1708896	iScript Select cDNA Synthesis Kit, 25 x 20 μl reactions, includes 400 μl iScript select reaction mix,	
	25 μl iScript reverse transcriptase, 200 μl oligo(dT) mix, 200 μl random primer mix, 200 μl gene-specific primer	
	enhancer solution, and nuclease-free water	
1708897	iScript Select cDNA Synthesis Kit, 100 x 20 μ l reactions, includes 400 μ l iScript Select reaction mix,	
	100 μl iScript reverse transcriptase, 200 μl oligo(dT) mix, 200 μl random primer mix, 200 μl gene-specific primer	
	enhancer, and nuclease-free water	
iScript gDN/	A Clear cDNA Synthesis Kit	
1725034	iScript gDNA Clear cDNA Synthesis Kit, 25 x 20 µl reactions, includes 100 µl 5x iScript RT supermix, 200 µl	
	5x iScript no-RT control supermix, 12.5 μl iScript DNase, 150 μl iScript DNase buffer, 1.5 ml nuclease free water	
1725035	iScript gDNA Clear cDNA Synthesis Kit, 100 x 20 μl reactions, includes 400 μl 5x iScript RT supermix, 400 μl	
	5x iScript no-RT control supermix, 50 μl iScript DNase, 150 μl iScript DNase buffer, 1.5 ml nuclease free water	

Standard PCR Reagents

iProof[™] High-Fidelity DNA Polymerase

- A high-fidelity DNA polymerase with 52-fold more accuracy than Taq DNA polymerase
- Unique *Pyrococcus*-like proofreading enzyme is fused to a dsDNA binding protein, Sso7d
- Long and fast PCR applications fragments up to 37 kb are amplified in less time (15–30 sec/kb) and with less enzyme (0.25–1 U/reaction)
- Convenient 2x supermix formats available with GC or HF high-fidelity buffers

For More Information Request or download bulletin: 5211 Web: bio-rad.com/standardpcrreagents

dNTP Mix

- Formulated for consistency and higher efficiency in PCR and qPCR
- Robust dNTP solution withstands multiple rounds of freeze-thawing and temperature cycling

iTaq DNA Polymerase

- Antibody-mediated hot-start DNA polymerase for quick 3 min activation at 95°C
- The hot-start polymerase prevents nonspecific amplification and primer-dimers in both PCR and real-time PCR applications

For More Information Request or download bulletin: 2779

bio-rad.com/pcrreagents

Catalog #	Description
iProof High-	Fidelity DNA Polymerase, Master Mixes, and Buffers
1725300	iProof High-Fidelity DNA Polymerase, 2 U/µl, 20 U, includes 5x reaction buffers, MgCl, solution, DMSO
1725301	iProof High-Fidelity DNA Polymerase, 2 U/µl, 100 U
1725302	iProof High-Fidelity DNA Polymerase, 2 U/µl, 500 U
1725330	iProof High-Fidelity PCR Kit, 2 U/µl, 50 U, includes 5x reaction buffers, MgCl ₂ solution, DMSO, dNTPs, λ DNA, 1.3 and 10 kb primers, DNA standard
1725331	iProof High-Fidelity PCR Kit, 2 U/µl, 200 U, includes 5x reaction buffers, MgCl ₂ solution, DMSO, dNTPs, λ DNA, 1.3 and 10 kb primers, DNA standard
1725310	iProof HF Master Mix, 2.5 ml, 100 x 50 µl reactions (for highest fidelity with most templates)
1725320	iProof GC Master Mix, 2.5 ml, 100 x 50 µl reactions (for GC-rich templates)
1725391	5x iProof HF Buffer, 1.5 ml (for highest fidelity with most templates)
1725392	5x iProof GC Buffer, 1.5 ml (for GC-rich templates)
1725393	5x iProof HPLC HF Buffer, 1.5 ml
1725394	5x iProof HPLC GC Buffer, 1.5 ml
dNTP Mix	
1708874	dNTP Mix, 200 µl premixed solution, contains 10 mM each dNTP (dATP, dCTP, dGTP, dTTP)
iTaq DNA Po	lymerase
1708870	iTaq DNA Polymerase, 5 U/µl, includes 250 U polymerase, 1.25 ml 10x PCR buffer
1708875	i Taq DNA Polymerase , 5 U/µl, includes 5,000 U polymerase, 25 ml 10x PCR buffer, 25 ml 50 mM MgCl,, solution
MgCl,	
1708872	MgCl ₂ Solution, 50 mM, 1.25 ml

PCR and Real-Time PCR Accessories

ROX Passive Reference Dye

- Formulated as a 50x concentrated stock solution for use on ABI 7000, 7300, 7700, and 7900 qPCR instruments
- For instruments that use 580–585 nm excitation for passive reference, such as Stratagene Mx3000P, Mx3005P, and Mx4000, and ABI 7500 real-time PCR instruments, treat as a 750x concentrated solution
- An internal reference is not required for any Bio-Rad real-time detection system

Precision Blue[™] Real-Time PCR Dye

- Concentrated, ready-to-use dye to increase visibility of real-time PCR reaction mixtures
- Optimized for use with all Bio-Rad universal real-time supermixes and one-step kits

For More Information Request or download bulletin: 6090

Catalog #	Description
ROX Passive	e Reference Dye
1725858	ROX Passive Reference Dye, 0.5 ml
Precision Bl	ue Real-Time PCR Dye
1725555	Precision Blue Real-Time PCR Dye , 55 µl, 200x concentrated blue visualization dye for use with real-time PCR systems

PCR Plate Sealer

PX1[™] PCR Plate Sealer

evaporation.

Heat sealing films and foils: page 399. SsoAdvanced[™] universal SYBR[®] Green supermix: page 373. iTaq[™] universal SYBR[®] Green supermix: page 375.

See Also

The PX1 PCR plate sealer consistently seals PCR plates by providing uniform heat and pressure across an entire microplate when sealing. This semiautomated heat sealer helps deliver reliable results by removing human variability from plate sealing and minimizing sample

The PX1 sealer features an easy-to-use, intuitive touchscreen interface. The thermal sealing process is simplified by allowing sealing temperature and time to be modified with the touch of a button.

- Fast startup time avoid delaying an experiment while the sealer warms up
- Extremely intuitive save time programming the instrument
- Quickly access sealing protocols save programming time by using stored protocols



- Compact footprint accommodate crowded laboratory benches
- Fully validated have confidence in your results

For More Information Web: bio-rad.com/pcrplatesealer Request or download bulletin: 6257

Ordering In	formation
Catalog #	Description
PX1 PCR Pla	ite Sealer
1814000	PX1 PCR Plate Sealer, includes heat sealing instrument, 96-well/384-well plate support block, sealing frame, power cord
Accessories	5 · · · · · · · · · · · · · · · · · · ·
1814080	Sealing Frame, extra sealing frame for use with PX1 PCR plate sealer, 1
1814085	Plate Support Block, extra plate support block for use with PX1 PCR plate sealer, 1
Heat Seals f	or PX1 PCR Plate Sealer
1814030	Optically Clear Heat Seal, package of 100
1814035	Permanent Clear Heat Seal, package of 100
1814040	Pierceable Foil Heat Seal, package of 100
1814045	Peelable Foil Heat Seal, package of 100
For more info	rmation about the heat seals that are compatible with the PX1 PCR plate sealer, see page 397.

PCR Plastic Consumables

Bio-Rad thin-wall PCR tubes, PCR plates, seals, and accessories are manufactured for optimal fit and cycling performance in a variety of thermal cyclers and real-time PCR instruments, including all Bio-Rad platforms. These high-quality consumables are suitable for a wide variety of applications. Bio-Rad tubes, tube caps, and PCR plates are molded, inspected, and packaged in a Class 100,000 or 10,000 cleanroom environment to prevent possible nucleic acid or nuclease contamination, then process-sampled and tested to be negative for DNase, RNase, and human DNA.

For More Information

Web: bio-rad.com/pcrplastics Request or download bulletin: 6090

Instrument Compatibility of PCR Plastic Consumables

	Indiv	idual and Strip	Tubes	384-We	II Plates	96-Wel	Plates
	Individual High-Profile	Strips High-Profile	Strips Low-Profile	Hard-Shell [®] Standard	Hard-Shell 480	Microseal [®] Semi-Skirted High-Profile	Microseal Skirted Low-Profile
Product TF	TBI-0201, I-0201, TWI-0201 page 389	TBC-xxxx*, TBS-xxxx* page 389	TLS-08xx* page 389	HSP-3xxx* page 395	HSR-48xx* page 396	MSS-xxxx* page 394	MSP-9xxx* page 394
Thermal Cycler							
Bio-Rad [®] C1000 [™] , C1000 Touch [™] , S1000 [™]	•	•	•	•	•		•
Bio-Rad [®] DNA Engine [®] , Tetrad [®] , Tetrad 2, Dyad [®] , Dyad Disciple [™] , PTC-100 [®]	•	•	•	•	•		•
Bio-Rad [®] T100 [™] , MyCycler [™] , iCyc	ler [®] •	•					
Bio-Rad [®] MJ Mini [™]	•	•	•				
Applied Biosystems 0.2 ml tube cyclers (2720, 9700, Veriti)	•	•				•	
Applied Biosystems 0.1 ml tube cyclers (9800 fast, Veriti fast)			•				
Applied Biosystems 384-well cyclers (9700, Veriti)				•	•		
Eppendorf Mastercycler series	•	•	•	•	•		•
Real-Time PCR Instrument							
Bio-Rad [®] CFX Connect [™] , CFX96 [™] CFX96 Touch [™] , CFX384 [™] **, CFX384 Touch [™] **	1 3		•	•	•		•
Bio-Rad [®] iCycler iQ [®] , iQ [™] 5, MyiQ [™] , MyiQ [™] 2		•					
Bio-Rad [®] Chromo4 [™]		•	•				•
Bio-Rad [®] DNA Engine Opticon [®] , Op	ticon™2		•				•
Bio-Rad [®] MiniOpticon [™] **			•				
Applied Biosystems standard systems (7300, 7500, 7900HT, ViiA	A 7)	•		•	•	•	
Applied Biosystems fast systems (7500 fast, 7900HT fast, StepOne, StepOnePlus, ViiA 7)			•	•	•		
Eppendorf Mastercycler ep realple	x	•	•				•
Stratagene (Agilent) Mx series		•					
Corbett (QIAGEN) Rotor-Gene	•						
Roche LightCycler 480					•		
Other Instruments							
Applied Biosystems DNA sequencers (3100, 3700, 3730)				•		•	
Idaho Technology LightScanner				•			•

bio-rad.com/pcrplastics

Instrument Compatibility of PCR Plastic Consumables (cont.)

			96	- and 48-Well Plat	es		
	Hard-Shell Semi-Skirted High-Profile	Hard-Shell Skirted Low-Profile	Hard-Shell Semi-Skirted Low-Profile	Hard-Shell 480	Multiplate [™] Unskirted High-Profile	Multiplate Unskirted Low-Profile	iQ [™] Semi-Skirted High-Profile
Product	HSS-9xxx* page 392	HSP-9xxx* page 392	HSL-9xxx page 392	HSR-9xxx page 392	MLP-xxxx* page 393	MLL-xxxx* page 393	223-9441 page 394
Thermal Cycler							
Bio-Rad C1000, C1000 Touch, S1000	•	•	•		•	•	•
Bio-Rad DNA Engine, DNA Engine Tetrad®, DNA Engine Tetrad 2, DNA Engine Dyad®, Dyad Disciple, PTC-100	•	•			•	•	•
Bio-Rad MyCycler					•		•
Bio-Rad T100, iCycler	•				•		•
Bio-Rad MJ Mini					•	•	
Applied Biosystems 0.2 ml tube cyclers (2720, 9700, Veriti)	•				•		•
Applied Biosystems).1 ml tube cyclers 9800 fast, Veriti fast)			•			•	
Eppendorf Mastercycler series	•	•	•		•	•	•
Real-Time PCR Instrumer	nt						
Bio-Rad CFX Connect, CFX96, CFX96 Touch		•	•			•	
Bio-Rad iCycler iQ, Q 5, MyiQ, MyiQ2	•				•		•
Bio-Rad Chromo4	•	•			•	•	•
Bio-Rad DNA Engine, DNA Engine Opticon, Opticon	2	•				•	
Bio-Rad MiniOpticon**						•	
Applied Biosystems standard systems (7500, 7900HT, ViiA 7)	•				Except 7900HT		• Except 7900HT
Applied Biosystems StepOnePlus)						•	
Applied Biosystems 7500 fast, ViiA 7 fast)			•			•	
Applied Biosystems QuantStudio 96 Standard)	•						
Eppendorf Mastercycler ep <i>realplex</i>	•	•	•		•	•	•
Stratagene (Agilent) Mx series	•				•		•
Roche LightCycler 480/96				•			
Other Instruments Applied Biosystems DNA sequencers (3100, 3700, 3730)	•				•		
daho Technology							
ightScanner		•			•	•	

 $^{\ast}\,$ Go to the page numbers shown for the list of catalog numbers containing this prefix.

** CFX384, CFX384 Touch, and MiniOpticon real-time PCR detection systems are factory calibrated for white tubes and white-well plates.

White plastics are recommended due to their superior signal-to-noise ratio. Using clear tubes or clear-well plates on these instruments will require user calibration.

Thin-Wall PCR Tubes

PCR Tubes and Strips

Individual PCR Tubes, 0.2 and 0.5 ml

These high-profile PCR tubes have double-locking caps that won't pop open during cycling. PCR volume ranges are 5–125 μ l for 0.2 ml tubes and 10–200 μ l for 0.5 ml tubes. Tubes with flat, frosted caps for easy labeling are available in both 0.2 and 0.5 ml sizes (not suitable for real-time PCR). The 0.5 ml individual tubes with attached caps are available in resealable plastic bags of 100 tubes.

PCR Tube and Cap Strips

Both tubes and caps are available in strips of 8 or 12 for use in 48- and 96-well sample blocks.

- Tight sealing and convenient handling for multiple samples
- Choice of domed or flat optical cap strips

High-Profile PCR Tube Strips

Recommended reaction volumes are 5–125 µl. Tube strips and domed cap strips are also available packaged together in convenient bags sufficient for 96 samples. The resealable bags protect unused tubes and caps from accidental contamination.

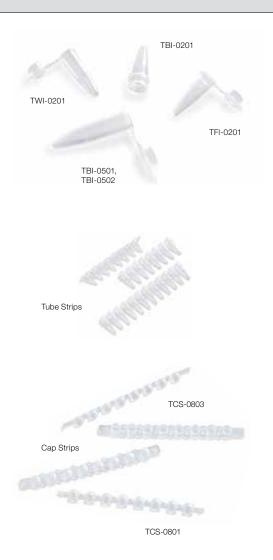
Low-Profile PCR Tube Strips

These tubes reduce the potential for condensation and also allow greater light capture in fluorescence assays such as those performed in real-time PCR. Low-profile tubes are ideal for use in fast and low-volume PCR reactions. Overall height, including flat optical caps and 96-place rack, is 18.3 mm. Tube height is 15.5 mm. Low-profile tubes are available in opaque white for optical applications.

Flat and Domed Cap Strips for PCR Tubes and PCR Plates

These cap strips provide extremely tight sealing of all Bio-Rad PCR tubes and plates during thermal cycling and cold storage. Flat cap strips feature ultraclear upper surfaces, which are ideal for fluorescence applications. Average light transmittance is 1.7-fold higher than with standard-clarity domed cap strips. Flat caps are available in strips of 8 and domed caps are available in strips of 8 or 12. Use of a capping tool is recommended for proper sealing of caps on tubes or plates.

For More Information Web: bio-rad.com/pcrplastics



Thin-Wall PCR Tubes

bio-rad.com/pcrplastics

Attached Caps (0.2 ml) s with Flat Caps (0.2 ml), clear, 1,000 s with Domed Caps (0.2 ml), clear, 1,000 nout Caps (0.2 ml), clear, 1,000 s without Caps (0.2 ml), clear, 1,000 Attached Caps (0.5 ml) s with Flat Caps (0.5 ml), clear, 1,000 (2 bags of 500) s with Flat Caps (0.5 ml), clear, 800 (8 bags of 100) rithout Caps (0.2 ml)
s with Flat Caps (0.2 ml), clear, 1,000 s with Domed Caps (0.2 ml), clear, 1,000 nout Caps (0.2 ml), clear, 1,000 s without Caps (0.2 ml), clear, 1,000 Attached Caps (0.5 ml) s with Flat Caps (0.5 ml), clear, 1,000 (2 bags of 500) s with Flat Caps (0.5 ml), clear, 800 (8 bags of 100)
s with Domed Caps (0.2 ml), clear, 1,000 nout Caps (0.2 ml) s without Caps (0.2 ml), clear, 1,000 Attached Caps (0.5 ml) s with Flat Caps (0.5 ml), clear, 1,000 (2 bags of 500) s with Flat Caps (0.5 ml), clear, 800 (8 bags of 100)
out Caps (0.2 ml) s without Caps (0.2 ml), clear, 1,000 Attached Caps (0.5 ml) s with Flat Caps (0.5 ml), clear, 1,000 (2 bags of 500) s with Flat Caps (0.5 ml), clear, 800 (8 bags of 100)
s without Caps (0.2 ml), clear, 1,000 Attached Caps (0.5 ml) s with Flat Caps (0.5 ml), clear, 1,000 (2 bags of 500) s with Flat Caps (0.5 ml), clear, 800 (8 bags of 100)
Attached Caps (0.5 ml) s with Flat Caps (0.5 ml), clear, 1,000 (2 bags of 500) s with Flat Caps (0.5 ml), clear, 800 (8 bags of 100)
s with Flat Caps (0.5 ml), clear, 1,000 (2 bags of 500) s with Flat Caps (0.5 ml), clear, 800 (8 bags of 100)
s with Flat Caps (0.5 ml), clear, 800 (8 bags of 100)
ithout Caps (0.2 ml)
rips without Caps, clear, 125 strips (1,000 PCR tubes)
trips without Caps, clear, 100 strips (1,200 PCR tubes)
without Caps (0.2 ml)
le 8-Tube Strips without Caps, clear, 120 strips (960 PCR tubes)
le 8-Tube Strips without Caps, white, 120 strips (960 PCR tubes)
Cap Strips, for PCR tubes and plates, clear, 130
-Cap Strips, for PCR tubes and plates, clear, 200
at 8-Cap Strips, for PCR tubes and plates, ultraclear, 120
e Tube Strips with Domed Cap Strips (0.2 ml)
rips and Domed Cap Strips , clear, 20 bags of 12 x 8-tube strips and 12 x 8-cap strips R tubes and caps)
trips and Domed Cap Strips, clear, 20 bags of 8 x 12-tube strips and 8 x 12-cap strips

Capping Tools and Racks

96-Place PCR Tube Rack and Cover

These stackable storage units for tubes and unskirted and semi-skirted PCR plates provide a stable platform for preparing or centrifuging reactions.

PCR Tube Rack

The PCR tube rack conforms to ANSI/SBS standards and provides a stable platform for PCR tubes and 96-well plates.

Easy Cap[™] Tool

The Easy Cap tool provides the pressure necessary to achieve a tight seal, one tube at a time, when capping individual or strip tubes. The narrow end securely fastens domed caps to tubes or 96-well PCR plates. The wide end firmly holds thin-wall 0.5 ml tubes to prevent accidental crushing when opening or closing. The side slot allows easy opening of tight-fitting caps without generating aerosols.

Strip Cap Tool

This tool quickly and easily seals 8- and 12-cap strips on PCR plates or tubes. A grooved channel on one side is designed to seal domed caps, while the flat edge on the opposite side seals flat caps. For best results, seal tube strips while they are in a thermal cycler block or in a 96-place rack.



PCR Plates

Ordering Information			
Catalog #	Description		
TRC9601	PCR Tube Racks, ANSI/SBS standard, white, 10		
TRC0501	96-Place Racks, with covers, for PCR tubes and unskirted and semi-skirted microplates, assorted colors, 5		
ECT1000	Easy Cap Tool, ensures tight seal for 0.2 ml PCR tubes or 96-well microplates		
ECT2000	Strip Cap Tool, for sealing 8- and 12-cap strips on PCR plates or tubes		

PCR Plates

Multiplate[™] 48-Well PCR Plates

The versatile, unskirted design and 48-well format make these Multiplate unskirted PCR plates ideal for laboratories using 48-well blocks on Bio-Rad instruments. The plates are suitable for reaction volumes of 5–125 µl. The polypropylene construction of Multiplate PCR plates confers very low protein binding and excellent preservation of sample volume. When less than a full plate is needed, these plates can be easily cut with scissors to the required size. Two plate styles are available:

- High-profile (20.7 mm) wells, clear color designed to fit in most thermal cyclers
- Low-profile (15.5 mm) wells, clear color or white optimized for fast PCR and low-volume reactions

For More Information Web: bio-rad.com/48wellpcrplates

Ordering Information

Catalog #	Description
MLP4801	Multiplate High-Profile 48-Well Unskirted PCR Plates, clear, 50 plates
MLL4801	Multiplate Low-Profile 48-Well Unskirted PCR Plates, clear, 50 plates
MLL4851	Multiplate Low-Profile 48-Well Unskirted PCR Plates, white, 50 plates



Multiplate High-Profile 48-Well Unskirted PCR Plate



Multiplate Low-Profile 48-Well Unskirted PCR Plate

PCR Plastic Consumables PCR Plates

bio-rad.com/pcrplastics

See Also

PX1 PCR plate sealer: page 386. Heat sealing films and foils: page 399. PCR plate seals: page 397.

Hard-Shell[®] 96-Well PCR Plates

Hard-Shell PCR plates are specifically designed to withstand the stresses of heat sealing, thermal cycling, and robotic handling. The patented* two-component design features a skirt and deck molded from a rigid, thermostable polymer. The thin-wall wells are molded of virgin polypropylene selected for low DNA binding. These plates can withstand –80°C storage and high centrifugation forces, making them convenient for alcohol precipitations. Uniform wells reduce well-to-well variability in optical assays.

- White-well option allows increased fluorescent signal strength
- Black alphanumeric labeling for easy well identification
- Color-coded skirts with clear or white wells
- Low-cost, user-readable barcode option

Hard-Shell Low-Profile 96-Well Skirted PCR Plates

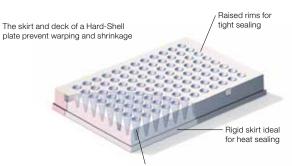
- Reaction volumes of 5–125 µl (200 µl maximum)
- Low-profile (16.06 mm) wells optimized for low-volume reactions and fast PCR
- · Full skirt for robotic handling and labeling surface
- Footprint and well spacing that match ANSI/SBS standard dimensions
- Barcoded plates are available

Hard-Shell High-Profile 96-Well Semi-Skirted PCR Plates

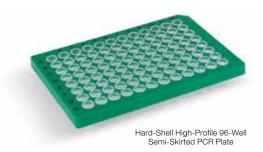
- Reaction volumes of 5–125 µl (350 µl maximum)
- High-profile (20.75 mm) wells that fit most thermal cyclers, real-time PCR detection systems, and DNA sequencers
- Warp-free half-height skirt for improved robotic handling
- Barcoded plates are available

Hard-Shell Low-Profile 96-Well Semi-Skirted PCR Plates

- Reaction volumes of 5–125 µl (200 µl maximum)
- Low-profile (15.51 mm) wells optimized for low-volume reactions and fast PCR
- Semi-skirted design enables compatibility with Applied Biosystems 7500 fast and ViiA 7 fast instruments
- Footprint and well spacing that match ANSI/SBS standard dimensions
- Barcoded plates are available



Thin-wall polypropylene V-shaped wells for optimal thermal transfer and recovery of low-volume samples



Hard-Shell 96-Well 480 PCR Plates

Hard-Shell 96-well 480 PCR plates are optimized to work on the Roche LightCycler 480 and 96 systems with a 96-well block. They are designed to withstand the stresses of thermal cycling. Superior stability and flatness is provided via a two-component design. Features include:

- Designed specifically for the Roche LightCycler 480
 and 96
- Extremely uniform wells that reduce well-to-well variability in real-time PCR
- Warp-free skirt and deck
- Black alphanumeric labeling for easy well identification
- Footprint and well spacing that match ANSI/SBS standard dimensions
- Barcoded along row A
- 200 µl maximum volume

For More Information Web: bio-rad.com/96wellpcrplates Request or download bulletin: 5496

* U.S. patents 6,340,589, 6,528,302, and 7,347,977.

bio-rad.com/pcrplastics

Ordering Inf	ormation			
Description		Clear Wells	White Wells	Black Wells
Hard-Shell L	ow-Profile 96-Well Skirted P	CR Plates		
White shell, 50) plates	HSP9601	HSP9655	_
Red shell, 50 p	olates	HSP9611	_	_
Yellow shell, 5	0 plates	HSP9621	_	_
Blue shell, 50	plates	HSP9631	HSP9635	_
Green shell, 50	0 plates	HSP9641	HSP9645	_
Black shell, 50) plates	HSP9661	HSP9665	HSP9666
White shell, ba	arcoded, 50 plates	HSP9901	HSP9955	_
White shell, bu	ulk pack of 400 plates	HSP9601B	-	-
Hard-Shell H	igh-Profile 96-Well Semi-Ski	rted PCR Plates, 25 plates		
Clear shell		HSS9601	_	_
Green shell		HSS9641	_	_
Black shell		—	HSS9665	_
Clear shell, ba	rcoded	HSS9901	-	_
Hard-Shell L	ow-Profile 96-Well Semi-Skir	ted PCR Plates, 25 plates		
Clear shell		HSL9601	HSL9605	_
Green shell		HSL9641	HSL9645	_
Clear shell, barcoded		HSL9901	HSL9905	-
Catalog #	Description			
Hard-Shell 9	6-Well 480 PCR Plates			
HSR9905	Hard-Shell 96-Well 480 PC	R Plates, clear shell/white well	PCR plate for use with Roche I	_ightCycler 480
	real-time PCR system, barco	ded, rigid 2-component design:	s, 25 plates	
HSR9905K	Hard-Shell 96-Well 480 PC	R Plates Kit, for use with Roch	e LightCycler 480 real-time PC	R system,
	includes 100 barcoded clear	shell/white well PCR plates (4 p	acks of #HSR-9905) and 100	Microseal 'C'
	optical seals (#MSC-1001)			
HSR9901		R Plates, clear shell/clear well F		ightCycler 480
		oded, rigid 2-component design,	•	
HSR9901K		R Plates Kit, for use with Roch		
		shell/clear well PCR plates (4 pa	acks of #HSR-9901) and 100 N	licroseal 'C'
	optical seals (#MSC-1001)			

Multiplate[™] 96-Well PCR Plates

Multiplate High-Profile 96-Well Unskirted PCR Plates

The single-component polypropylene construction of Multiplate PCR plates confers very low protein binding and excellent retention of sample. When less than a full plate is needed, these plates are easily cut with scissors to the required size. The plates are suitable for PCR volumes of $5-125 \mu I$.

Multiplate Low-Profile 96-Well Unskirted PCR Plates

Multiplate low-profile PCR plates combine the unskirted feature of the original Multiplate plate, but are 5 mm lower in overall height. The lower height (15.50 mm) reduces the potential for condensation and offers advantages for fast PCR, low-volume reactions, and light capture in fluorescence assays such as real-time PCR. A rigid top surface provides firm handling while still allowing the plate to be cut for use in other formats.

For More Information Web: bio-rad.com/96wellpcrplates



Multiplate High-Profile 96-Well Unskirted PCR Plate



Multiplate Low-Profile 96-Well Unskirted PCR Plate

bio-rad.com/pcrplastics

Ordering Information			
Catalog #	Description		
Multiplate H	igh-Profile 96-Well Unskirted PCR Plates		
MLP9601	Multiplate High-Profile 96-Well Unskirted PCR Plates, clear, 25 plates		
MLP9651	Multiplate High-Profile 96-Well Unskirted PCR Plates, white, 25 plates		
MLP9631	Multiplate High-Profile 96-Well Unskirted PCR Plates, blue, 25 plates		
Multiplate Lo	ow-Profile 96-Well Unskirted PCR Plates		
MLL9601	Multiplate Low-Profile 96-Well Unskirted PCR Plates, clear, 25 plates		
MLL9651	Multiplate Low-Profile 96-Well Unskirted PCR Plates, white, 25 plates		

iQ[™] High-Profile 96-Well Semi-Skirted Real-Time PCR Plates

These semi-skirted, high-profile PCR plates are optimized for iQ[™]5, iCycler iQ[®], MyiQ[™]2, and MyiQ[™] real-time PCR detection systems. The semi-skirted design adds stiffness and a labeling surface. Plates are perforated every three columns for easy setup of triplicate reactions.

For More Information Web: bio-rad.com/96wellpcrplates

Ordering Information

Catalog #	Description	
2239441	iQ High-Profile 96-Well Semi-Skirted PCR Plates, 25 plates	

Microseal[®] 96-Well PCR Plates

Microseal High-Profile 96-Well Semi-Skirted PCR Plates

These PCR plates are designed for Applied Biosystems 0.2 ml tube cyclers, standard real-time PCR systems, and DNA sequencers. They are not recommended for use in Bio-Rad thermal cyclers because the raised ridges around the plate prevent proper sealing in these instruments.

Microseal Low-Profile 96-Well Skirted PCR Plates

These PCR plates feature single-component construction and a skirted design that is suitable for high-throughput plate handling. The robot-friendly design features low-binding polypropylene construction, locator holes, and flat vertical sidewalls for secure handling and easy barcoding. Raised rims around wells provide an excellent surface for tight sealing with a variety of sealing methods and allow easy release of the sealer from the plate. Barcoded plates are also available.

For More Information Web: bio-rad.com/96wellpcrplates



Microseal High-Profile 96-Well Semi-Skirted PCR Plate



Microseal Low-Profile 96-Well Skirted PCR Plate

Ordering Information		
Description		
gh-Profile 96-Well Semi-Skirted PCR Plates		
Microseal High-Profile 96-Well Semi-Skirted PCR Plates, clear, 25 plates		
ow-Profile 96-Well Skirted PCR Plates		
Microseal Low-Profile 96-Well Skirted PCR Plates, clear, 50 plates		
Microseal Low-Profile 96-Well Skirted PCR Plates, barcoded, clear, 50 plates		

Hard-Shell[®] 384-Well Standard PCR Plates

Hard-Shell PCR plates are designed to withstand the stresses of thermal cycling and robotic handling. The patented twocomponent design provides superior stability and flatness, allowing precise positioning for automation. Features include:

- Reaction volumes of 1–30 µl (50 µl maximum)
- Minimized well-to-well variability that results in extremely uniform results in real-time PCR
- Compatibility with most 384-well thermal cyclers, realtime PCR detection systems, and DNA sequencers
- White-well option for increased fluorescent signal strength
- Color-coded skirts with clear or white wells
- Warp-free skirt and deck for improved robotic handling



- Footprint and well spacing that match ANSI/SBS standard dimensions
- Low-cost, user-readable barcode option

For More Information Web: bio-rad.com/384wellpcrplates Request or download bulletin: 5496

Ordering Information Clear Wells White Wells Black Wells Description Hard-Shell 384-Well Standard PCR Plates HSP3801 HSP3805 Clear shell, 50 plates Red shell, 50 plates HSP3811 _ Yellow shell, 50 plates HSP3821 _ Blue shell, 50 plates HSP3831 _ Green shell, 50 plates HSP3841 Black shell, 50 plates HSP3865 HSP3866 Clear shell, barcoded, 50 plates HSP3901 HSP3905 Clear shell, bulk pack of 500 plates HSP3801B

Hard-Shell[®] 384-Well 480 PCR Plates

Hard-Shell 384-well 480 PCR plates are optimized to work on the Roche LightCycler 480 and a range of Bio-Rad and Applied Biosystems instruments. They are designed to withstand the stresses of thermal cycling and robotic handling. The two-component design provides superior stability and flatness. Features include:

- Reaction volumes of 1–30 µl (50 µl maximum)
- Minimized well-to-well variability that results in extremely uniform results in real-time PCR
- Warp-free skirt and deck for improved robotic handling
- Black alphanumeric labeling for easy well identification
- Footprint and well spacing that match ANSI/SBS standard dimensions
- Barcoded at row A and column 24 side; available in clear or white well



For More Information Web: bio-rad.com/384wellpcrplates Request or download bulletin: 5496

Ordering Information			
Catalog #	Description		
HSR4805	Hard-Shell 384-Well 480 PCR Plates, clear shell/white well PCR plate for Roche LightCycler 480 real-time PCR system, barcoded, rigid 2-component design, 50 plates		
HSR4805K	Hard-Shell 384-Well 480 PCR Plates Kit, for use with Roche LightCycler 480 real-time PCR system, includes 100 barcoded clear shell/white well PCR plates (2 packs of #HSR-4805) and 100 Microseal 'C' optical seals (#MSC-1001)		
HSR4801	Hard-Shell 384-Well 480 PCR Plates, clear shell/clear well PCR plate for Roche LightCycler 480 real-time PCR system, barcoded, rigid 2-component design, 50 plates		
HSR4801K	Hard-Shell 384-Well 480 PCR Plates Kit, for use with Roche LightCycler 480 real-time PCR system, includes 100 barcoded clear shell/clear well PCR plates (2 packs of #HSR-4801) and 100 Microseal 'C' optical seals (#MSC-1001)		

Microseal® 384-Well Skirted PCR Plates

Microseal 384-well skirted PCR plates feature singlecomponent construction and are ideal for high-throughput thermal cycling applications.

For More Information Web: bio-rad.com/384wellplates

- Barcoded plates are available
- Footprint and well spacing that match ANSI/SBS standard dimensions

Ordering Information			
50 Plates	Barcoded, 50 Plates		
es			
MSP3842	MSP3846		
MSP3852	_		
MSP3862	_		
	s MSP3842 MSP3852	S MSP3842 MSP3852 -	

PCR Seals

Effective sealing is essential for PCR and qPCR reactions. Besides cap strips (page 389), Bio-Rad offers many sealing options to fit your needs.

PCR Plate Seals

Microseal[®] 'C' Optical Seals

- Optically clear adhesive films designed for tight seals even with wells with raised rims
- Pressure-sensitive adhesive allows easy application during plate sealing
- Designed with superior optical properties for real-time PCR

Microseal 'B' Adhesive Seals, Optically Clear

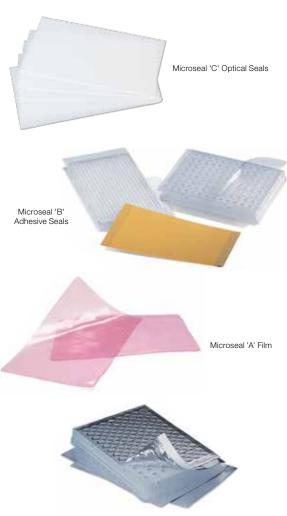
- Strongest adhesive-based optically clear sealing option designed for real-time PCR plates
- Withstands multiple storage or transport temperatures (-40 to 110°C)

Microseal 'A' Film

- A nonoptical, nonadhesive sealing option for quick pressure-based sealing of plates
- Allows easy removal without the risk of aerosol formation, minimizing cross-contamination
- Convenient option for standard PCR needs

Microseal 'F' Foil

- Aluminum foil allows opaque sealing option for DNA sequencing (ABI 3700 DNA analyzer) and sample storage
- Acts as a barrier against evaporation in extreme temperatures (-80 to 105°C)
- · Pierceable foil for easy sample retrieval



Microseal 'F' Foil

PCR Plastic Consumables

PCR Seals

bio-rad.com/pcrseals

96-Well PCR Plate Sealing Mats

These reusable mats are convenient for sealing 96-well PCR plates; they are not suitable for qPCR.

Pressure Pad

This foam pad with magnet distributes lid pressure uniformly over sealing film on plates used in thermal cyclers.

Optical Compression Pad (96-well)

This compression pad enhances the seal integrity of Microseal 'B' clear seals when used in real-time PCR detection systems.

Optical Film Sealing Kit

The sealing kits contain 100 Microseal 'B' clear seals and an optical compression pad.

For More Information

Web: bio-rad.com/pcrseals



96-Well PCR Plate Sealing Mat



Sealing Roller

Optical Compression Pad

Ordering Information			
Catalog #	Description		
MSC1001	Microseal 'C' Optical Seals, 100 pressure-sensitive adhesive seals		
MSA5001	Microseal 'A' Film, 50 seals		
MSB1001	Microseal 'B' Adhesive Seals, 100 optically clear seals		
MSF1001	Microseal 'F' Foil, 100 adhesive seals		
MSR0001	Sealing Roller, for sealing PCR plates with films		
ADR3296	Optical Compression Pad, for improved film sealing of 96-well plates in DNA Engine Opticon 2 and Chromo4 systems		
ADR5001	Pressure Pad, uniformly distributes lid pressure for sealing film		
MSO1001	Optical Film Sealing Kit , for 96-well plates, includes optical compression pad, 100 Microseal 'B' clear adhesive seals		
2239442	96-Well PCR Plate Sealing Mats, 5		

PCR Seals

Heat Sealing Films and Foils

Bio-Rad offers a family of heat sealing films and foils for use with the PX1[™] PCR plate sealer. These sealing solutions help deliver consistent and reliable data by minimizing sample evaporation during thermal cycling.

For More Information Web: bio-rad.com/heatseals Request or download bulletin: 6257

Optically Clear Heat Seals

These clear polymer films provide a secure sealing option for PCR and real-time PCR applications. The seals are peelable pre- and post-cycling, allowing easy sample retrieval when desired. Features include:

- High light transmission, ideal for optical assays
- Low level of autofluorescence to minimize interference with qPCR detection
- · Clear film enables easy inspection of sample wells
- Seal integrity from –80 to 110°C

Permanent Clear Heat Seal

These seals provide the strongest heat sealing option and are ideal when seals will not be removed. These seals are recommended for water bath cycling. Features include:

- Strong permanent adhesive can withstand water bath cycling
- Clear film enables easy inspection of sample wells
- High solvent resistance
- Seal integrity from –80 to 110°C

Pierceable Foil Heat Seal

This seal provides a secure sealing option for standard PCR and Droplet Digital[™] PCR (ddPCR[™]) applications. This pierceable foil film enables sample retrieval from select wells. Plates with pierced seals can be resealed with another pierceable foil heat seal. Features include:

- Compatible with ddPCR as validated using the QX100[™]/QX200[™] Droplet Digital PCR system workflow
- High solvent resistance
- Colored stripe clearly identifies sealing surface
- Seal integrity from –20 to 110°C

Peelable Foil Heat Seal

The peelable foil heat seal is ideal for sample storage. This seal can be easily peeled from PCR plates stored in a -80°C freezer or in liquid nitrogen. This seal is also validated for sealing PCR plates. Features include:

- · Forms a peel-away seal
- Moderate solvent resistance
- Seal integrity from –200 to 110°C



Optically Clear Heat Seal



Permanent Clear Heat Seal



Pierceable Foil Heat Seal



Peelable Foil Heat Seal

For More Information Web: bio-rad.com/heatseals Request or download bulletin: 6257

See Also

PX1 PCR plate sealer: page 386. PCR plates: page 391.

Catalog #	Description	
1814030	Optically Clear Heat Seal, package of 100	
1814035	Permanent Clear Heat Seal, package of 100	
1814040	Pierceable Foil Heat Seal, package of 100	
1814045	Peelable Foil Heat Seal, package of 100	

Sealing Pads for Automation

Microseal[®] 'P' and 'P+' Sealing Pads

These reusable sealing pads are designed to adhere to a motorized heated lid. Use 'P' pads with Power Bonnet[™] lids, and 'P+' pads with Moto Alpha[™] units. Microseal 'P+' pads provide improved sealing of low-volume reactions — as low as 5 µl in 96-well plates and 1 µl in 384-well plates. Each pad may be used for approximately 25 runs.



Microseal 'P+' Sealing Pad

Auto-Sealing Lids for PCR Plates

These lids are reusable automation-friendly sealers that prevent evaporation and contamination during reaction assembly and seal tightly for thermal cycling when the cycler lid is closed. They can be reused up to 50 times. The lids are constructed of metal with an attached compressible pad. Two varieties are available: a selfreleasing arched lid and an arched lid with wide tabs for robotic grippers.



Auto-Sealing Lids

Ordering Information		
Catalog #	Description	
Microseal 'P	" and 'P+' Pads	
MSP1001	Microseal 'P' Pads, reusable, for Power Bonnet lids, 10	
MSP1002	Microseal 'P+' Pads, reusable, for Moto Alpha unit lids, 10	
MSP1003	Microseal 'P' Replacement Pads, for MSL-2032, reusable, 10	
Auto-Sealing	g Lids for PCR Plates	
MSL2022	Arched Auto-Sealing PCR Plate Lids, reusable, 4	
MSL2032	Arched Auto-Sealing PCR Plate Lids with Wide Tabs, reusable, 4	

bio-rad.com/pcrseals

Chill-out[™] Liquid Wax

Chill-out liquid wax provides an excellent vapor barrier that may be used instead of mineral oil in thermal cyclers without heated lids. After cycling, the tubes are chilled below 10°C to harden the wax. The solid layer protects samples from spills or aerosol formation but is easy to penetrate with a pipet tip for sample retrieval. Chill-out liquid wax is available in a clear formulation for use in fluorescence assays, such as those performed in real-time PCR, and in a bright red formulation, easily visible when recovering reaction products (not recommended for sealing Microseal[®] 384-well PCR plates).



For More Information

Web: bio-rad.com/pcrseals

Ordering Information

Catalog #	Description
CHO1401	Chill-out Liquid Wax, red, 100 ml
CHO1404	Chill-out Liquid Wax, red, 1 L
CHO1411	Chill-out Liquid Wax, clear, optical grade, 100 ml
CHO1414	Chill-out Liquid Wax, clear, optical grade, 1 L

Frame-Seal[™] Incubation Chambers

Frame-Seal incubation chambers are easy-to-use, strongly adhesive hybridization chambers with flexible plastic coverslips. They provide vapor-tight sealing for FISH, polonies, in situ PCR, and PRINS and allow samples to be recovered easily. The seal withstands temperatures up to 97°C. Frame-Seal chambers should be used with plain (unprinted) glass slides. Slides with highly hydrophobic ink patterns are not recommended for use with Frame-Seal chambers. They are UV-treatable for inactivation of contaminating DNA.

For More Information Web: bio-rad.com/pcrseals

Ordering Information

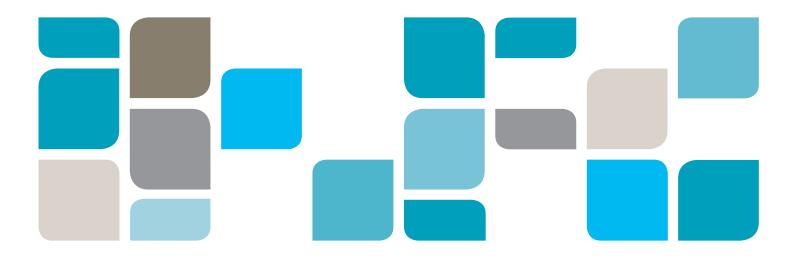
-	
Catalog #	Description
SLF0201	Frame-Seal Incubation Chambers, 9 x 9 mm, 25 µl capacity, coverslips included, 100
SLF0601	Frame-Seal Incubation Chambers, 15 x 15 mm, 65 µl capacity, coverslips included, 100
SLF1201	Frame-Seal Incubation Chambers, 17 x 28 mm, 125 µl capacity, coverslips included, 100
SLF3001	Frame-Seal Incubation Chambers, 19 x 60 mm, 300 µl capacity, coverslips included, 100



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Microseal® 96-Well PCR Plates, 394 Microseal® 384-Well Skirted PCR Plates, 396 Multiplate[™] 48-Well PCR Plates, 391 Multiplate[™] 96-Well PCR Plates, 393 One-Step RT-ddPCR Advanced Kit for Probes, 353 PCR Plate Seals 397 PCR Tubes and Strips, 389 Precision Melt Analysis[™] Software, 369 Precision Melt Supermix (HRM), 382 PrimePCR[™] Assays and Panels, 370 PrimePCR[™] ddPCR[™] Assays, 355 PX1[™] PCR Plate Sealer, 386 QX200[™] ddPCR[™] EvaGreen Supermix, 354 QX200[™] Droplet Digital[™] PCR System, 350 Reaction Modules, 359 S1000[™] Thermal Cycler, 358 Sealing Pads for Automation, 400 SingleShot[™] Cell Lysis Kits, 381 SsoAdvanced[™] PreAmp Supermix, 380 SsoAdvanced[™] Universal Inhibitor-Tolerant SYBR[®] Green Supermix, 376 SsoAdvanced[™] Universal Probes Supermix, 374 SsoAdvanced[™] Universal SYBR[®] Green Supermix, 373 T100[™] Thermal Cycler, 360



Plastic Consumables and General Laboratory Equipment

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Pipets

Micropipets, Tips, and Micro Test Tubes

For liquid-handling applications, Bio-Rad offers pipets, pipet tips, reagent reservoirs, 96-well EIA plates, and tubes.

Pipets

A full set of high-precision micropipets is available for all your liquid handling needs.

Micropipets and Accessories

Professional Micropipets

These adjustable-volume digital pipets deliver exceptional performance and are guaranteed to function efficiently and reliably for years. Micropipets are available in five volume ranges: 0.1-2.0, 0.5-10, 2-20, 20-200, and 100-1,000 µl.

Micropipet features include:

- Adjustable digital dial with volume lock
- Improved ergonomic handle and tip ejector
- Accommodation of standard pipet tips and serological pipets
- 3-year warranty*
- Fully autoclavable*
- * Except pipet controller.

8-Channel Professional Micropipet

These multichannel micropipets are ideal for use with standard 96-well formats. They have an adjustable working volume range of 5–50 µl or 20–200 µl. A volume lock feature will prevent any accidental volume changes. Along with its ergonomic handle for right- and left-hand use, the manifold can rotate 360° for added pipetting comfort. A curved ejector design pushes tips off in a single step with minimal applied force.

Each channel has an independent precision piston assembly to ensure accuracy and reproducibility from one pipetting series to the next as well as between channels. Each pipet has been tested and supplied with a certificate of quality and a calibration key. The multichannel pipet is fully autoclavable.

Professional Pipet Controller

This lightweight, ergonomic, cordless pipet controller can be used with all plastic or glass pipets between 0.1–100 ml. Single-hand operation is easy with twobutton speed control for aspirating and dispensing. A large LCD display clearly indicates battery status, pipet mode, and pipet speed. The unit comes with a bench stand, wall mount, charger, and 0.45 µm filter.

For More Information Web: bio-rad.com/micropipets



Professional Micropipets

Professional Micropipet Specifications

	Volume Range, µl	Channels	Adjustable- Volume Increments, µl
P2	0.1–2.0	1	0.002
P10	0.5–10	1	0.02
P20	2–20	1	0.02
P200	20-200	1	0.2
P1000	100–1,000	1	2.0
8-channel, P50	5-50	8	0.2
8-channel, P200	20–200	8	0.2



bio-rad.com/pipettips

Professional Micropipet Set with Backpack

The professional micropipet set with backpack is a readyto-go, complete set for those who need to start up a new lab or refresh lab equipment to meet their pipetting needs. This set comes with four professional micropipets (0.5–10, 2–20, 20–200, and 100–1,000 µl), a round carousel pipet rack that can hold up to six single-channel micropipets, four racks of Bio-Rad pipet tips (TBR-14, -35, -40, and Prot/Elec[™]) for general lab use, and a Bio-Rad backpack.

Carousel Pipet Rack

This round benchtop pipet rack holds up to six singlechannel pipets.



Professional Micropipet Set with Backpack

Ordering In	Ordering Information		
Catalog #	Description		
1660499	Professional Micropipet, adjustable volume, 0.1–2.0 µl		
1660505	Professional Micropipet, adjustable volume, 0.5–10 µl		
1660506	Professional Micropipet, adjustable volume, 2–20 μl		
1660507	Professional Micropipet, adjustable volume, 20–200 μl		
1660508	Professional Micropipet, adjustable volume, 100–1,000 μl		
1660496	Professional Micropipet, 8-channel, adjustable volume, 5–50 µl		
1660495	Professional Micropipet, 8-channel, adjustable volume, 20–200 μl		
1660486	Professional Micropipet Set with Backpack, set includes 4 professional series micropipets: P10, P20, P200, P1000, carousel pipet rack, 4 racks of pipet tips (TBR-14, -35, -40, Prot/Elec), and Bio-Rad backpack		
1660490	Professional Pipet Controller, 120 V, 0.1–100 ml, includes bench stand, charger, wall mount, 0.45 µm filter		
1660491	Professional Pipet Controller, 220 V, 0.1–100 ml, includes bench stand, charger, wall mount, 0.45 µm filter		
1660487	Carousel Pipet Rack, holds 6 single-channel micropipets		

Pipet Tips

Bio-Rad's pipet tips are made from virgin polypropylene and have been accurately molded for an airtight fit. The tips are guaranteed to have a smooth interior surface, which is essential for precision pipetting.

- Tips and racks are autoclavable at 120°C at 15 lb of pressure for 15 min; tips presterilized by e-beam irradiation are also available
- All materials used in both clear and colored pipet tips have been formulated without heavy metals
- Xcluda[™] pipet tips have been independently tested and certified to be free of DNase, RNase, and pyrogens
- Pipet tip racks are manufactured from polypropylene, with a plastic content code of 5, and are free of labels for convenient recycling

Pipet Tips

Tip Selection Guide

Pipet Type	Тір Туре	Pipet Type	Тір Туре
Bio-Rad Professio 0.1–2.0 μl 0.5–10 μl 2–20 μl 20–200 μl	Xcluda [™] A, Seque/Pro [™] , BR-14, TBR-14 Xcluda A, Seque/Pro, BR-31, TBR-14 Xcluda B, Prot/Elec [™] , BR-35, TBR-35 Xcluda D, Prot/Elec, MTP-26, -35, -37, -38,	Охford Benchmate 0.5–10 µl 10–50 µl 40–200 µl 200–1,000 µl	e Seque/Pro, Xcluda A, 14 Xcluda J, 35, 37–39 Prot/Elec, Xcluda C, D, G, 35, 37–39 Xcluda E
100–1,000 μl Costar (8-Pette, 12 20–200 μl 25–200 μl	MTP-28-S, BR-35, -37, -38, -39, TBR-35 Xcluda H, BR-40, 41, TBR-40, -41 -Pette) 28 28	Rainin Pipetman a 0.1–10 µl 2–20 µl 10–100 µl 20–200 µl	nd EDP Series Seque/Pro, Xcluda F, 31 Prot/Elec, Seque/Pro, Xcluda B, 31, 35, 37–39 Prot/Elec, Xcluda C and G, 35, 37–39 Prot/Elec, Xcluda D, 35, 37–39
Eppendorf 0.5–10 μl 2–20 μl 10–100 μl 50–250 μl 100–1,000 μl	Seque/Pro, Xcluda F, 31 Prot/Elec, Xcluda B, 14, 35, 37–39 Prot/Elec, Xcluda C and G, 35, 37–39 39, 40, 41 Xcluda H, 41	100–1,000 µl Socorex 0.5–10 µl 1–200 µl 200–1,000 µl	Xcluda E, 40, 41 Seque/Pro Prot/Elec, 35, 37–39 40, 41
Excalibur 1–200 μl 200–1,000 μl	Prot/Elec, 35, 37–39 40, 41	Titertek Flow 5–200 μl 5–300 μl	26 Xcluda D
Thermo Labsystem 5–40 μl 40–200 μl 200–1,000 μl	ns Finnpipette Prot/Elec, Xcluda B, C, G, 35, 37–39 Prot/Elec, Xcluda C and G, 35, 37–39 Xcluda E	Volac 1–20 µl 1–200 µl 200–1,000 µl	Prot/Elec, 31, 35, 37–39 Prot/Elec, 35, 37–39 40, 41

А

В

Xcluda styles: A through J

(shown at approximately 60% actual size)

С

D

Е

F

G

Н

.1



Xcluda[™] Aerosol Barrier Pipet Tips

Thermal cyclers for PCR: page 357. Real-time PCR systems: page 361.

Xcluda aerosol barrier pipet tips guard against aerosol contamination of samples, a feature of particular importance in PCR experiments. The barrier will not seal on contact with liquid if unintentional overpipetting occurs, which protects samples from accidental loss. Offered in nine different styles, the tips fit a variety of pipets. They are available presterilized in fully enclosed racks and are independently tested and certified to be free of DNase, RNase, and pyrogens.

For More Information Web: bio-rad.com/xcluda



Ordering Information

Catalog #	Description
2112001	Χcluda Style A , 0.5–10 μl, 960
2112006	Χcluda Style B , 2–20 μl, 960
2112011	Χcluda Style C , 10–100 μl, 960
2112016	Χcluda Style D , 20–200 μl, 960
2112021	Χcluda Style E , 100–1,000 μl, 960
2112026	Xcluda Style F , 0.5–10 µl, 1,000
2112031	Χcluda Style G , 10–100 μl, 1,000
2112036	Χcluda Style H , 100–1,000 μl, 1,000
2112041	Χcluda Style J , 10–100 μl, 960
1660491	Professional Pipet Controller, 220 V, 0.1–100 ml, includes bench stand, charger, wall mount, 0.45 µm filter
1660492	Professional Pipet Controller, 220 V for Australia, 0.1–100 ml, includes bench stand, charger, wall mount,
	0.45 μm filter
1660487	Carousel Pipet Rack, holds 6 single-channel micropipets

Micropipets, Tips, and Micro Test Tubes

Pipet Tips

Pipet Tips for Gel Loading

Seque/Pro[™] Capillary Pipet Tips

Seque/Pro capillary pipet tips have an average OD of <0.3 mm, making them ideal for loading sequencing gels or IEF tube gels. Seque/Pro tips perform best when used with Eppendorf ultra micropipets (0.5–10 µl) and can also be used with Rainin Pipetman 10 and 20 µl pipets.

Prot/Elec[™] Pipet Tips

Prot/Elec tips fit easily within a gap of 0.75 mm between vertical slab gel plates while maintaining a large bore for fast sample flow. The 200 μ l capacity tips are molded to fit Rainin Pipetman 20, 100, and 200 pipets and Eppendorf 20 and 100 μ l pipets. Prot/Elec tips are also available with an aerosol barrier to guard against airborne contaminants and cross-contamination of samples (see Xcluda style G).

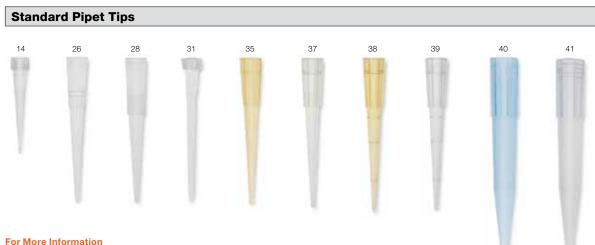




For More Information Web: bio-rad.com/gelloading Request or download bulletin: 5676

Ordering Information

Catalog #	Description
2239911	Seque/Pro Capillary Pipet Tips, in enclosed autoclavable rack, 0.5–10 µl, 200
2239912	Seque/Pro Capillary Pipet Tips, sterilized in enclosed rack, 0.5–10 µl, 200
2239915	Prot/Elec Pipet Tips, bulk pack, plastic bag in dust-free box, 1–200 µl, 1,000
2239917	Prot/Elec Pipet Tips, racked, 12 x 17 format, 204 per rack with a cover on each rack, 1–200 µl, 1,020
2239916	Prot/Elec Pipet Tips, racked, 8 x 12 format, 96 per rack with a cover on each rack, 1–200 μ l, 960



See Also

page 389.

Web: bio-rad.com/standardtips

Tip Packaging Options

				S	tandard Tip	Type Num	ber			
Packaging Option	14	26	28	31	35	37	38	39	40	41
BR	•		•	•	•	•	•	•	•	•
RBR					•					
TBR	•				•				•	•
MTP		•			•	•	•			
MTP-S (sterilized)			•		•	•	•			

See Also Vertical electrophoresis systems: page 184.

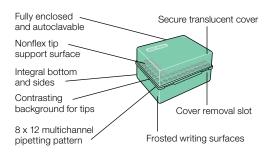
Micropipets, Tips, and Micro Test Tubes

Pipet Tips

bio-rad.com/pipettips

MTP

 $8\,x\,12$ format, enclosed, nonflex racks are suitable for repeated reloading and autoclaving. Racked tips are also available presterilized.





BR Bulk tips, plastic bag in a dust-free box.



RBR Racked tips, one cover on a stack of nested racks.



TBR Ideal for autoclaving, each rack has its own lid and covered bottom for full enclosure.

Ordering In	formation
Catalog #	Description
MTP 8 x 12 I	Format, Enclosed Racks
2239301	MTP-26 Tips, clear, 5–200 μl, 960
2239303	MTP-35 Tips, yellow, 1–200 μl, 960
2239304	MTP-37 Tips, clear, 1–200 µl, 960
2239313	MTP-38 Tips, yellow, graduated, beveled, 1–200 µl, 960
MTP-S 8 x 1	2 Format, Enclosed Racks, Presterilized*
2239307	MTP-28-S Tips, clear, 25–200 µl, 960
2239308	MTP-35-S Tips , yellow, 1–200 μl, 960
2239309	MTP-37-S Tips , clear, 1–200 μl, 960
2239318	MTP-38-S Tips, yellow, graduated, beveled, 1–200 µl, 960
BR Bulk Tip	S
2239014	BR-14 Tips, clear, 0.1–10 μl, 1,000
2239028	BR-28 Tips, clear, 25–200 μl, 1,000
2239031	BR-31 Tips, clear, 0.5–10 µl, 1,000
2239035	BR-35 Tips, yellow, 1–200 μl, 1,000
2239037	BR-37 Tips, clear, 1–200 μl, 1,000
2239038	BR-38 Tips, yellow, graduated, beveled, 1–200 µl, 1,000
2239039	BR-39 Tips, clear, graduated, beveled, 1–200 μl, 1,000
2239040	BR-40 Tips , blue, 100–1,000 μl, 500
2239041	BR-41 Tips , clear, 100–1,000 μl, 500
RBR Racked	Tips, One Cover on Nested Racks
2239135	RBR-35 Tips, yellow, 1–200 µl, 1,000
TBR Racked	Tips, Cover on Each Rack
2239354	TBR-14 Tips , clear, 0.1–10 μl, 1,000
2239347	TBR-35 Tips, yellow, 1–200 µl, 1,000
2239350	TBR-40 Tips, blue, 100-1,000 μl, 1,000
2239351	TBR-41 Tips , clear, 100–1,000 µl, 1,000

Micro Test Tubes

Titertube[®] Micro Test Tubes

Tubes and racks are made of polypropylene; they are autoclavable to 120°C and freezable to -80°C. The polyethylene plugs, which seal tightly for storage, are not designed for repeated use and cannot be autoclaved. The tubes are offered in sterile and unsterilized strips of eight, which may be cut to separate the tubes. Titertube micro test tubes have:

• 1 ml capacity, 8.8 x 45 mm

- Spacing that matches 96-well plates
- Enclosed racks that stack to store 5,800 samples/ft³
- Racks with a grid for identification of contents

Ordering Information

Catalog #	Description
2239390	Titertube Micro Test Tubes, unsterilized, 10 racks of 96 tubes
2239395*	Titertube Micro Test Tubes, presterilized, 10 racks of 96 tubes
2239391	Titertube Micro Test Tubes, unsterilized, bulk, 1,000
2239393	Titertube Plugs, unsterilized, 960 in 120 strips of 8
2239392*	Titertube Plugs, presterilized, 960 in 120 strips of 8
2239394	Titertube Rack, empty, holds 96 Titertube micro test tubes, 10
* Presterilized ra	acks and polyethylene plugs are not suitable for autoclaving. Order unsterilized racks to reload tubes and autoclave.

EZ Micro[™] and Standard Micro Test Tubes

EZ Micro graduated polypropylene test tubes have a frosted marking area and a flat top that is pierceable by a 19 gauge or thicker needle. Standard polypropylene micro test tubes are recommended for solvent extraction and heating when a very tight cap seal is required. Because of their tighter cap fit, standard tubes may be more difficult to manipulate in applications that require repeated opening and closing of the tubes. Separate polyethylene caps for the 1.5 ml capless tubes have a knurled top for easy handling.

For More Information Web: bio-rad.com/ezmicro Request or download bulletin: 5676

The micro test tubes are:

For More Information

Web: bio-rad.com/titertube

- Suitable for general-purpose benchtop centrifuge use; sturdy uniform walls easily withstand up to 13,000 x g
- Autoclavable* to 120°C; freezable to –80°C
- Available in 2 ml, 1.5 ml, and 500 µl sizes



* 1.5 ml Colored Microcentrifuge Tubes are not autoclavable.

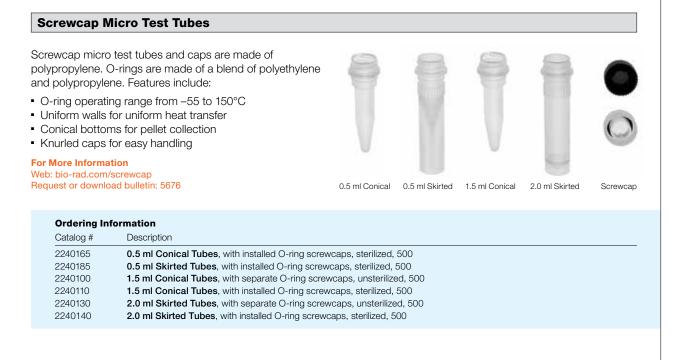


Reservoirs, EIA Plates, and Additional Plastic Products

bio-rad.com/microtesttube

Catalog #	Description
Catalog #	Description
2239503	EZ Micro Test Tubes, 500 μl, clear, 1,000
2239480	EZ Micro Test Tubes, 1.5 ml, clear, 500
2239430*	EZ Micro Test Tubes, 2 ml, clear, 500
2239501	Micro Test Tubes, standard, 1.5 ml, clear, 500
2239500	Micro Test Tubes, capless, 1.5 ml, polypropylene, clear, graduated, 500
2239490	Separate Caps, for capless micro test tubes, white, 1,000
1660473	Colored Microcentrifuge Tubes, 1.5 ml, 6 colors, 600

Heavy samples, high g forces, long runs, or centrifuges that radiate excessive heat may damage these tubes



Reservoirs, EIA Plates, and Additional Plastic Products

See Also	Reagent Re	eservoirs	
PCR tubes: page 389. ELISA reagents: page 332. rroplate readers: page 330.	compatible with enables effectiv		Reagent Reservoir
	Ordering In	Iformation	
	Ordering In Catalog #	iformation Description	

bio-rad.com/liquidhandling

Reservoirs, EIA Plates, and Additional Plastic Products

96-Well EIA Plates

For EIAs, ELISAs, and other protein-binding assays, use the Costar 96-well flat bottom EIA plate. This plate binds more protein more uniformly than any other plate.

For More Information Web: bio-rad.com/liquidhandling Costar 96-Well Flat Bottom EIA Plate

Ordering Information Catalog # Description

Uala	lug #	
2240	0096	

Costar 96-Well Flat Bottom EIA Plates, polystyrene, 5 per package, box of 100

Tube Racks and Storage Boxes

Bio-Rad plastic racks and storage units provide the ultimate in ease of storage and sample organization.

Racks and Storage Box Selection Guide

	Capacity	Dimensions (W x D x H)
Green racks	80 x 1.5/2.0 ml tubes	6.1 x 23.1 x 2.7 cm
Tube racks	60 x 15 ml 24 x 50 ml	10.5 x 24.6 x 7.2 cm 11.0 x 30.0 x 8.5 cm
Storage boxes	100 x 1.5/2.0 ml tubes	14.2 x 14.2 x 5.5 cm

For More Information

Web: bio-rad.com/racks



Storage Boxes and Green Rack



Ordering Information	
Catalog #	Description
1660481	Green Racks, hold 80 x 1.5/2.0 ml tubes, set of 5
1660483	Tube Racks, hold 60 x 15 ml tubes, set of 5
1660484	Tube Racks, hold 24 x 50 ml tubes, set of 5
1660482	Storage Boxes, hold 100 x 1.5/2.0 ml tubes, set of 5, multicolored

See Also

Cuvettes: page 25.

Additional Plastic Consumables

Bio-Rad now offers a wide selection of disposable plastic components for your everyday cell/bacterial culturing uses in the lab.

- Petri dishes ready-to-use polystyrene cell and bacterial culture petri dishes, 60 mm diameter, sterile
- Gel staining trays disposable plastic trays ideal for staining mini gels
- Inoculation loops the loops are smooth and flexible, making it easy to achieve uniform and smooth streaking without damaging the agar surface. Using disposable inoculation loops eliminates the risk of crosscontamination due to improper sterilization and the loops do not need flaming, which reduces fire hazards in the laboratory; 10 µl, sterile
- Jellyfish foam floating racks hold up to 12 microcentrifuge tubes, for use in cold and hot water baths
- Disposable plastic transfer pipets polyethylene plastic pipet bulbs for liquid handling needs; sterile and nonsterile pipets are available
- Conical centrifuge tubes 15 ml polypropylene conical tubes with volume graduations and screw caps
- Cell culture tubes round bottom snap cap, culture tube, 14 ml, sterile



Ordering In	Ordering Information	
Catalog #	Description	
1660476	Cell Culture Tubes, 17 x 100 mm, 14 ml, sterile, 25	
1660475	Conical Centrifuge Tubes, 15 ml, 50	
1660470	Petri Dishes, 60 mm diameter, sterile, 500	
1660471	Inoculation Loops, 10 µl, sterile, 80	
1660474	Disposable Plastic Transfer Pipets, sterile, 1 ml, graduated, 500	
1660480	Disposable Plastic Transfer Pipets, nonsterile, 1 ml, graduated, 500	
1660477	Gel Staining Trays, 4	
1660479	Jellyfish Foam Floating Racks, 8	

General Laboratory Equipment

UView[™] Transilluminator

See Also

UView 6x loading dye:

page 259.

Visualize your gel using the compact UView transilluminator.

For More Information Web: bio-rad.com/uview



bio-rad.com/labequipment

Ordering	Information
Catalog #	Description

1660531 UView Transilluminator

Centrifuges

- **Mini centrifuge** includes microtube and PCR strip tube rotors and 0.4 and 0.5 ml tube adaptors; the maximum speed is 6,000 rpm (2,000 x g)
- Model 16K microcentrifuge accommodates 1.5 or 2.0 ml tubes and has a quick-spin feature; the maximum speed is 14,000 rpm (16,000 x g). Safe for coldroom operation
- PCR tube adaptor for model 16K microcentrifuge holds two PCR 8-tube strips or 16 individual 0.2 ml tubes

For More Information Web: bio-rad.com/centrifuges

Ordering Information

1660603 Mini Centrifuge, 120 V 1660613 Mini Centrifuge, 220 V 1660623 Mini Centrifuge, 220 V (UK) 1660602 Model 16K Microcentrifuge, 120 V 1660612 Model 16K Microcentrifuge, 220 V 1660620 PCR Tube Adaptor, for model 16K microcentrifuge	Catalog #	Description
1660623 Mini Centrifuge, 220 V (UK) 1660602 Model 16K Microcentrifuge, 120 V 1660612 Model 16K Microcentrifuge, 220 V	1660603	Mini Centrifuge, 120 V
1660602 Model 16K Microcentrifuge, 120 V 1660612 Model 16K Microcentrifuge, 220 V	1660613	Mini Centrifuge, 220 V
1660612 Model 16K Microcentrifuge, 220 V	1660623	Mini Centrifuge, 220 V (UK)
U	1660602	Model 16K Microcentrifuge, 120 V
1660620 PCR Tube Adaptor, for model 16K microcentrifuge	1660612	Model 16K Microcentrifuge, 220 V
	1660620	PCR Tube Adaptor, for model 16K microcentrifuge

Mixing Devices

- Mini rocker provides superior three-dimensional mixing action; gentle yet thorough rocking makes it ideal to use for western blot incubations and gel staining. Compact footprint requires minimal benchspace
- Tube roller allows mixing of samples both horizontally and vertically. The compact design enables it to fit inside our mini incubation oven, making it ideal for mixing liquids while incubating. Comes with three interchangeable tube rotisseries to accommodate tubes from 1.5–50 ml. Compact footprint requires minimal benchspace
- BR-2000 vortexer a general-purpose vortex mixer; a flathead dimpled adaptor is also available
- UltraRocker[™] rocking platform dual-platform rocker that can be used for staining and destaining gels and blots, Southern hybridization, and overnight incubation

For More Information Web: bio-rad.com/mixingdevices



Model 16K Microcentrifuge

(PCR tube adaptor sold separately)









Mini Centrifuge

(includes PCR tube adaptor)

Tube Rolle



UltraRocker Rocking Platform



Micro test tubes: page 409. PCR tubes: page 389.

Ordering In	Ordering Information		
Catalog #	Description		
1660710	Mini Rocker, 120 V, includes two blotting boxes		
1660720	Mini Rocker, 230 V (EU/UK), includes two blotting boxes		
1660711	Tube Roller, 120 V, includes 3 tube carousels for 1.5, 15, and 50 ml tubes		
1660721	Tube Roller, 230 V, includes 3 tube carousels for 1.5, 15, and 50 ml tubes		
1660722	Tube Roller, 230 V (UK), includes 3 tube carousels for 1.5, 15, and 50 ml tubes		
1660610	BR-2000 Vortexer, 120 V		
1660611	BR-2000 Vortexer, 230 V		
1660621	BR-2000 Vortexer, 230 V (UK)		
1660622	Flathead Dimpled Adaptor, for BR-2000 vortexer		
1660709	UltraRocker Rocking Platform, 120 V		
1660719	UltraRocker Rocking Platform, 230 V		

Temperature Control Equipment

- Digital dry bath digitally controlled dry bath that is ideal for a multitude of laboratory procedures where incubation of samples is needed. It is accurate, built for safe continuous operation, economical, and versatile. Comes with one aluminum alloy 1.5 ml heating block (24 x 1.5 ml capacity). Additional 0.5, 2.0, and 15 ml heating blocks with 24 x 0.5, 24 x 2.0, and 12 x 15 ml capacity, respectively, can be purchased separately; 15 ml dry bath block not shown
- Mini incubation oven can accommodate up to eighty 6.5 cm plates and operates at temperatures up to 60°C. Contains a rear port to allow insertion of our tube roller or mini rocker for temperature-controlled mixing
- Water bath temperature controlled, dependable, affordable water bath that includes stainless steel tank and lid, electrostatically applied finish that resists rust, corrosion, and scratches, over-temperature protection, and thermometer
- DyNA Chill cooler keeps samples (up to 12 in 1.5–2.0 ml microtubes) chilled. Simply cool the DyNA Chill cooler to the desired temperature overnight, then chill samples without the mess of an ice bucket

For More Information Web: bio-rad.com/tempcontrol

Ordering Information



DyNA Chill Cooler

•		
Catalog #	Description	
1660562	Digital Dry Bath, 120 V, includes 1.5 ml heating block	
1660563	Digital Dry Bath, 230 V (EU/UK), includes 1.5 ml heating block	
1660565	Digital Dry Bath Heating Block, 0.5 ml, for 24 x 0.5 ml tubes	
1660566	Digital Dry Bath Heating Block, 2.0 ml, for 24 x 2.0 ml tubes	
1660567	Digital Dry Bath Heating Block, 15 ml, for 12 x 15 ml tubes	
1660564	DyNA Chill Cooler , maintains sample temperature between –15°C and room temperature	
	for up to 8 hr without ice	
1660501	Mini Incubation Oven, 120 V	
1660521	Mini Incubation Oven, 230 V	
1660504	Temperature-Controlled Water Bath, 120 V	
1660524	Temperature-Controlled Water Bath, 230 V	
1660712	Mini Incubation Oven and Mini Rocker, 120 V	
1660713	Mini Incubation Oven and Tube Roller, 120 V	

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Biotechnology Explorer™ Educational Products

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Captivating Science Education

Do You Have Teaching Responsibilities?

The Biotechnology Explorer[™] program makes it easy for educators to meet AAAS and NSF's goals for Vision and Change in Undergraduate Biology Education. The program provides kits, a textbook, and modular lab series that bring project-based learning and research skills into the classroom. Meet the challenge to:

- Integrate core concepts and competencies throughout your curriculum
- · Focus on student-centered and project-based learning
- Engage the biology community in the implementation of change

For more information about the products listed here, request the current Biotechnology Explorer catalog (bulletin 2112) or visit explorer.bio-rad.com.





New Photosynthesis and Cellular Respiration Kit

Our new ThINQ![™] Investigation kit facilitates inquiry and helps you teach many important photosynthesis and cellular respiration concepts. This laboratory kit offers value and features:

- Ease of use with consistent results
- Student-generated quantifiable data
- Alignment with AP Biology learning objectives and the American Association for the Advancement of Science (AAAS) Vision and Change program
- Long-life algae beads for multiple lab sessions

Your students will explore photosynthesis and cellular respiration using easy-to-handle algae beads and a simple colorimetric assay. The kit includes supplies for six inquiry labs (32 students):

- Algae beads
- CO₂ indicator
- Debeading solution
- trUView[™] cuvettes
- Disposable plastic transfer pipets, sterile
- Microcentrifuge tubes, 2 ml
- Indicator color guide
- Inquiry-based curriculum
- Teacher manual
- Student manual
- Online teaching resources



The curriculum for your class includes:

Inquiry-Based Curriculum

- 3 pre-lab activities
- 6 hands-on inquiry labs
- Science case study
- Post-lab assessment questions

Teacher Manual

- Step-by-step teacher preparation instructions
- Teachable moment suggestions
- Answer key
- Sample experimental design and datasets

Student Manual

 ThINQ! and focus questions to guide student inquiry and experimental design

For More Information

Web: bio-rad.com/algae1

Ordering In	Ordering Information	
Catalog #	Description	
Inquire	Photosynthesis and Cellular Respiration Kit, includes algae beads, colorimetric indicator solution, ThINQ! teacher and student manuals, and other accessories; provides materials for 32 students or 8 workstations	

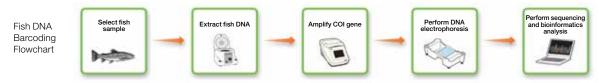
EDU price discounts are for qualified educational institutions and educators only. Items are available at list price for noneducators (must be ordered without an EDU suffix).

Fish DNA Barcoding Kit

What happens if one fish gets substituted for another? Most of the time, the consumer won't even notice. But what happens if substituting a less expensive fish for a more expensive one becomes a common practice? Or if a poisonous fish like pufferfish makes it into our food supply, or we deplete our oceans of critically endangered species? Bio-Rad's Fish DNA Barcoding kit helps students answer these and similar real-world questions, contributing to the global species barcoding initiative while also learning advanced genetic analysis skills.

- Real-world application
- Inquiry-based hands-on laboratory
- Aligns with AP Biology Big Ideas 1, 2, 3, and 4

For More Information Web: bio-rad.com/fishbarcoding



Ordering Information

	Catalog #	Description
	1665100EDU	Fish DNA Barcoding Kit, includes reagents for DNA extraction and PCR for up to 16 fish samples.
		Purchase sequencing module (US only) separately
	1665115EDU	DNA Barcoding Sequencing Module, prepaid sequencing service for up to 9 samples.
		Includes shipping of samples. Valid only for use with 1665100EDU. U.S. only
EDI I price discounts are for qualified educational institutions and educators only. Items are available at list price		unts are for qualified educational institutions and educators only. Items are available at list price

for noneducators (must be ordered without an EDU suffix).

Biotechnology: A Laboratory Skills Course

This laboratory textbook blends textbook theory with hands-on laboratory activities and real-world applications for your biotechnology course, and it incorporates Biotechnology Explorer[™] kits for easy implementation supported by live technical support. This textbook encourages the next generation of biotechnologists by:

- Developing key skills with multiple activities
- Encouraging students to consider the broader implications of biotechnology with bioethics case studies
- Broadening occupational awareness with profiles of careers in biotech
- Letting students answer a research question using independent research



The teacher supplement provides a thorough background on preparation, setup, results analysis, and assessment. It also provides guidance on how to implement and build your biotechnology course. Chapters include:

- The Biotechnology Industry
- Laboratory Skills
- Microbiology and Cell Culture
- DNA Structure and Analysis
- Bacterial Transformation and Plasmid Purification
- Polymerase Chain Reaction
- Protein Structure and Analysis
- Immunological Applications
- Research Projects

For More Information Web: explorer.bio-rad.com/textbook

explorer.bio-rad.com

Ordering Info	Ordering Information		
Catalog # Description			
1661027EDU	Biotechnology: A Laboratory Skills Course, teacher edition, includes one student edition and one teacher supplement		
1661025EDU	Biotechnology: A Laboratory Skills Course, student edition		
1661026EDU	Biotechnology: A Laboratory Skills Course, teacher supplement		
1661051EDU	Laboratory Notebook		
1661052EDU	Supplementary Materials DVD Set		
EDU price discounts are for qualified educational institutions and educators only. Items are available at list price for noneducators (must be ordered without an EDU suffix).			

Project-Based Learning Modular Laboratory Explorer Series

Integrated College Level Molecular Biology Labs

Looking for authentic project-based learning lab experiences that carry a gene or protein of interest from isolation to analysis? Bio-Rad's modular lab series provide validated procedures, easy preparation, and reproducible success year after year. Visit bio-rad.com/ad/college01 to learn about our advanced series for cloning, sequencing, bioinformatics, and protein expression and purification using affinity chromatography. These flexible, modular lab series can be used as capstone projects or a complete molecular biology course.

NEW AND IMPROVED Cloning and Sequencing Explorer Series*	Protein Expression and Purification Series*	
1. Nucleic Acid Extraction	1. Growth and Expression	
2. GAPDH PCR	2. SDS-PAGE Electrophoresis	
3. Electrophoresis	3. Purification Process Options:	
 PCR Kleen[™] Spin Purification 	Centrifugation Purification	
5. Ligation and Transformation	Hand-Packed Column Purification	
6. Microbial Culturing	Prepacked Cartridge Purification	
7. Aurum [™] Plasmid Mini Purification	 DHFR Enzymatic Assay 	
8. Sequencing and Bioinformatics	5. Assessment	

* Available as a complete series or as individual modules.

For More Information

Web: explorer.bio-rad.com/cloninglab explorer.bio-rad.com/proteinpurification



Ordering Information	
Catalog #	Description
1665000EDU*	Complete Cloning and Sequencing Explorer Series, includes all 8 modules and curriculum resource CD
	(sequencing service not included)
1665005EDU*	Nucleic Acid Extraction Module
1665010EDU*	GAPDH PCR Module
1660451EDU	Electrophoresis Module
7326300EDU	PCR Kleen Spin Purification Module
1665015EDU*	Ligation and Transformation Module
1665020EDU	Microbial Culturing Module
7326400EDU	Aurum Plasmid Mini Purification Module
1665025EDU*	Sequencing and Bioinformatics Module, includes sequencing primers, control plasmid,
	and bioinformatics subscription; sequencing service not included
1665001EDU	Curriculum Resource CD
1665040EDU*	Protein Expression and Purification Series, centrifugation purification process
1665045EDU*	Protein Expression and Purification Series, hand-packed purification process
1665050EDU*	Protein Expression and Purification Series, prepacked purification process
1665070EDU	Protein Expression and Purification Series Assessment Module, formative and summative
	assessment tool
1665055EDU*	Growth and Expression Module
1665060EDU*	SDS-PAGE Electrophoresis Module
1665041EDU	Centrifugation Purification Module
1665046EDU	Hand-Packed Purification Module
1665051EDU	Prepacked Purification Module
1665065EDU*	DHFR Enzymatic Assay Module
* Ships with bot at 4°C or –20°	h temperature-sensitive and room temperature components. Immediately store temperature-sensitive items C as indicated.
EDU price disco	punts are for qualified educational institutions and educators only. Items are available at list price for

noneducators (must be ordered without an EDU suffix).

Rapid Blotting and V3 Western Workflow™

V3 Western Workflow[™] (stain-free rapid blotting)

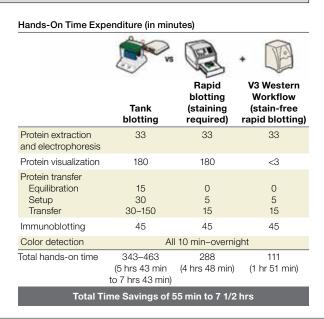
Western Blotting in Less than 2 Hours!

The new rapid blotting or V3 Western Workflow (stain-free rapid blotting) allows you to complete the entire western blot workflow in less than 2–5 hours in the classroom, depending on which time-saving steps are incorporated. TGX Stain-Free[™] gels combined with the super-fast Trans-Blot[®] Turbo[™] transfer system provide maximum time savings, allowing you to complete the workflow in less than a single 3-hour lab block. Teach students about the exciting new chemistry that allows visualization of samples separated on PAGE gels without staining.

Benefits:

- Time savings
- Stain-free

For More Information Web: explorer.bio-rad.com/rapidblotting



Ordering Info	Ordering Information			
Catalog #	Description			
1662875EDU	Rapid Blotting and V3 Western Workflow Starter Kit, comprehensive protein classroom study kit, includes protein profiler module (#1662700EDU), western blot module (#1662800EDU), Trans-Blot Turbo mini nitrocellulose transfer pack, TGX Stain-Free gels, application note, for 32 students			
	ounts are for qualified educational institutions and educators only. Items are available at list price for must be ordered without an EDU suffix).			

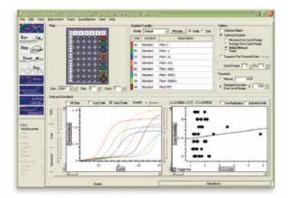
Real-Time PCR

Real-Time PCR Kits

How much DNA Is There?

The Bio-Rad[®] Crime Scene Investigator PCR Basics[™] kit is a good starting point for novices to become familiar with real-time PCR techniques using real-time PCR technology. Additionally, DNA fingerprints can still be investigated using gel electrophoresis and melt curve analysis, showing how real-time and standard PCR can be complementary techniques.

The Bio-Rad[®] GMO Investigator[™] kit is a tool for teaching the principles of PCR and its use in testing foods for genetic modifications. Demonstrate how much plant DNA is present and then compare how much genetically modified organism (GMO) DNA is recovered from each food sample when using real-time PCR. It is even possible to determine what fraction of a food product has been made with genetically modified ingredients in the same manner standard testing labs do.



- Quantify DNA
- Discover key differences between standard and real-time PCR analysis
- Analyze and evaluate real-time PCR results
- Perform melt curve analysis
- Determine the accuracy and reliability of pipetting techniques
- Learn DNA amplification using real-time PCR

For More Information Web: explorer.bio-rad.com/real-time

Ordering Information Description

Catalog #

1662660EDU Crime Scene Investigator PCR Basics Real-Time PCR Starter Kit 1662560EDU GMO Investigator Real-Time PCR Starter Kit

EDU price discounts are for qualified educational institutions and educators only. Items are available at list price for noneducators (must be ordered without an EDU suffix).

Classroom Kits

Biotechnology Explorer[™] Kits

Biotechnology Explorer kits address the critical need for inquiry-based activity — an important component of scientific literacy for an educated citizenry and a launch point of experience and practical training for students interested in careers in biotechnology. The kits range from introductory to advanced topics, including courses guiding students through entire molecular biology workflows.

Areas of biotechnology applications covered include:

- Transformation and microbiology
- Protein analysis and chromatography
- DNA analysis
- PCR amplification
- Fully developed course series in DNA and protein



Ordering Information

ordering into	
Catalog #	Description
1665075EDU	IDEA Kit — Inquiry Dye Electrophoresis Activity, provides materials for 32 students or 8 workstations
1665080EDU	STEM Electrophoresis Teacher Demonstration Kit, provides materials for 8 students or 2 workstations
1665090EDU	STEM Electrophoresis Classroom Kit, provides materials for 32 students or 8 workstations
1660003EDU	pGLO Bacterial Transformation Kit, provides materials for 32 students or 8 workstations
1660013EDU*	pGLO Kit SDS-PAGE Extension, provides materials for 32 students or 8 workstations
1660005EDU*	Green Fluorescent Protein (GFP) Chromatography Kit, provides materials for 32 students or 8 workstations
1660006EDU*	Secrets of the Rainforest Kit, provides materials for 32 students or 8 workstations
1665030EDU	Microbes and Health Kit, provides materials for 32 students or 8 workstations
1660500EDU	Long-Wave UV Lamp, requires 4 AA batteries
1660530EDU	Long-Wave UV Penlight
1660008EDU	Size Exclusion Chromatography Kit, provides materials for 32 students or 8 workstations
1662900EDU*	Got Protein? Kit, provides materials for 320 students or 80 workstations
1662400EDU*	ELISA Immuno Explorer Kit, provides materials for 48 students or 12 workstations
1662700EDU*	Comparative Proteomics Kit I: Protein Profiler Module, provides materials for 32 students or 8 workstations
1662800EDU*	Comparative Proteomics Kit II: Western Blot Module, provides materials for 32 students or 8 workstations
1665035EDU*	Biofuel Enzyme Kit, provides materials for 32 students or 8 workstations
1660007EDU*	Forensic DNA Fingerprinting Kit, provides materials for 32 students or 8 workstations
1660001EDU*	Analysis of Precut Lambda DNA Kit, provides materials for 32 students or 8 workstations
1660002EDU*	Restriction Digestion and Analysis of Lambda DNA Kit, provides materials for 32 students or 8 workstations
1662300EDU	Genes in a Bottle Kit, includes 1 DNA extraction module (#1662000EDU) and DNA necklace module
	(#1662250EDU); provides materials for 36 students or 9 workstations
1662600EDU*	Crime Scene Investigator PCR Basics Kit, provides materials for 32 students or 8 workstations
1662100EDU*	PV92 PCR Informatics Kit, provides materials for 32 students or 8 workstations
1662500EDU*	GMO Investigator Kit, provides materials for 32 students or 8 workstations
* Ships with both at 4°C or –20°0	n temperature-sensitive and room temperature components. Immediately store temperature-sensitive items C as indicated.

EDU price discounts are for qualified educational institutions and educators only. Items are available at list price for noneducators (must be ordered without an EDU suffix).

Biotechnology Explorer Educational Products

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Subject Index

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Legal Notices

Cell Signaling

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References

Sample Preparation

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Vuillard et al. (1995). Enhancing protein solubilization with nondetergent sulfobetaines. Anal Biochem 230, 290–294.

Sample Quantitation

Bradford MM (1976). A rapid and sensitive method for the quantitation of microgram quantities of protein utilizing the principle of protein-dye binding. Anal Biochem 72, 248–254.

Lowry OH et al. (1951). Protein measurement with the Folin phenol reagent. J Biol Chem 193, 265–275.

Electrophoresis and Blotting

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Li JK et al. (1987). Rapid alkaline blot-transfer of viral dsRNAs. Anal Biochem 163, 210–218.

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Amplification/PCR

Bustin SA et al (2009). The MIQE guidelines: minimum information for the publication of quantitative real-time PCR experiments. Clin Chem 55, 611–622.

Cat. #	Description	Page	Cat. #	Description	Pa
005430	PROTEAN II Latch Assembly Kit, for central cooling core		1351303	PureBlu DAPI Nuclear Staining Dye	
2001006	ddPCR NRAS Q61 Screening Kit		1351304	PureBlu Hoechst 33342 Nuclear Staining Dye	
2001037	ddPCR BRAF V600 Screening Kit.		140-1424	AG 1-X8 Resin, hydroxide, 20–50 mesh, 10 kg	
2001088	NGC Multi-D Starter Kit.	114	140-1445	AG 1-X8 Resin, chloride, 100–200 mesh, 10 kg	
2001094	ddPCR NRAS G12 Screening Kit		140-2341	AG 4-X4 Resin, free base, 100-200 mesh, 5 kg	
2001626	ddPCR KRAS Q61 Screening Kit		1401231	AG 1-X2 Resin, chloride, 50–100 mesh, 500 g	
2001627	ddPCR NRAS G12/G13 Screening Kit		1401241	AG 1-X2 Resin, chloride, 100–200 mesh, 500 g.	
250094	Aminex HPX-87C Column, 250 x 4.0 mm		1401251	AG 1-X2 Resin, chloride, 200–400 mesh, 500 g	
250095	Aminex HPX-87C Column, 300 x 7.8 mm		1401253	AG 1-X2 Resin, acetate, 200–400 mesh, 500 g	
250096	Aminex HPX-42C Column, 300 x 7.8 mm		1401255	AG 1-X2 Resin, acetate, 200–400 mesh, 10 kg	
250097	Aminex HPX-42A Column, 300 x 7.8 mm		1401331	AG 1-X4 Resin, chloride, 50–100 mesh, 500 g	
250098	Aminex HPX-87P Column, 300 x 7.8 mm		1401341	AG 1-X4 Resin, chloride, 100–200 mesh, 500 g	
250100	Fast Acid Analysis Column, 100 x 7.8 mm	101	1401342	AG 1-X4 Resin, chloride, 100–200 mesh, 10 kg	
250105	Fast Carbohydrate Column, 100 x 7.8 mm	101	1401351	AG 1-X4 Resin, chloride, 200–400 mesh, 500 g	
250115	Fermentation Monitoring Column, 150 x 7.8 mm	101	1401421	AG 1-X8 Resin, chloride, 20–50 mesh, 500 g	
250118	Micro-Guard De-Ashing Refill Cartridges, 30 x 4.6 mm, 2	102	1401422	AG 1-X8 Resin, hydroxide, 20–50 mesh, 500 g	
250119	Micro-Guard Carbo-P Refill Cartridges, 30 x 4.6 mm, 2		1401431	AG 1-X8 Resin, chloride, 50–100 mesh, 500 g	
250128	Micro-Guard Carbo-C Refill Cartridges, 30 x 4.6 mm, 2		1401441	AG 1-X8 Resin, chloride, 100–200 mesh, 500 g.	
250129	Micro-Guard Cation H Refill Cartridges, 30 x 4.6 mm, 2		1401443	AG 1-X8 Resin, acetate, 100–200 mesh, 500 g	
50131	Standard Cartridge Holder		1401444	AG 1-X8 Resin, formate, 100–200 mesh, 500 g.	
50139	De-Ashing Cartridge Holder, for 1250118		1401451	AG 1-X8 Resin, chloride, 200–400 mesh, 500 g	
50140	Aminex HPX-87H Column, 300 x 7.8 mm		1401453	AG 1-X8 Resin, acetate, 200–400 mesh, 500 g	
50142	Aminex HPX-87K Column, 300 x 7.8 mm		1401454	AG 1-X8 Resin, formate, 200–400 mesh, 500 g	
50143	Aminex HPX-87N Column, 300 x 7.8 mm	101	1404341	AG 4-X4 Resin, free base, 100–200 mesh, 500 g	
50147	Cartridge Holder Seal Replacement Kit	102	1407841	Bio-Rex 5 Resin, chloride, 100–200 mesh, 500 g	
50148	Cartridge Holder Seals, for 1250131	102	1407851	Bio-Rex 5 Resin, chloride, 200–400 mesh, 500 g	
50224	Injection Needle		141-1842	AG MP-1M Resin, chloride, 100–200 mesh, 10 kg	
50233	Carbohydrate Analysis Kit		141-1853	AG MP-1M Resin, nitrate, 200–400 mesh, 10 kg.	
50234	Organic Acid Analysis Kit.		1411831	AG MP-1M Resin, chloride, 50–100 mesh, 500 g	
50506	Micro-Guard Anion CO ₃ ⁻ Cartridges, 30 x 4.6 mm, 2			AG MP-1M Resin, chloride, 300–100 mesh, 500 g	
			1411841		
50508	Micro-Guard Cation Na ⁺ Cartridges, 30 x 4.6 mm, 2		1411851	AG MP-1M Resin, chloride, 200–400 mesh, 500 g	
50561	Anion Exchange Chromatography Protein Standard, 6 vials		142-1254	AG 50W-X12 Resin, hydrogen, 200–400 mesh, 1 kg	
50562	Cation Exchange Chromatography Protein Standard, 6 vials	90	142-1423	AG 50W-X8 Resin, hydrogen, 20–50 mesh, 10 kg	
50585	Carbohydrate Analysis Standard, 6 vials	90	142-1424	AG 50W-X8 Resin, ultrapure, 20–50 mesh, 10 kg	
50586	Organic Acid Analysis Standard, 6 vials	90	142-1442	AG 50W-X8 Resin, hydrogen, 100–200 mesh, 10 kg	
0-0421	Bio-Gel HTP Hydroxyapatite, powder, 1 kg	69	1421231	AG 50W-X2 Resin, hydrogen, 50–100 mesh, 500 g	
0-0425	Bio-Gel HTP Hydroxyapatite, powder, 5 kg.	69	1421241	AG 50W-X2 Resin, hydrogen, 100–200 mesh, 500 g	
00150	Bio-Gel HT Hydroxyapatite, hydrated, 250 ml		1421251	AG 50W-X2 Resin, hydrogen, 200–400 mesh, 500 g	
00151	Bio-Gel HT Hydroxyapatite, hydrated, 500 ml.		1421253	Chelex 100 Resin, mol. biol. grade, 200–400 mesh, 50 g	
00420	Bio-Gel HTP Hydroxyapatite, powder, 100 g		1421331	AG 50W-X4 Resin, hydrogen, 50–100 mesh, 500 g.	
00420			1421341		
	Bio-Gel HTP Hydroxyapatite, DNA grade, 100 g			AG 50W-X4 Resin, hydrogen, 100–200 mesh, 500 g	
51001	ReadiLink 350/440 Antibody Labeling Kit		1421351	AG 50W-X4 Resin, hydrogen, 200–400 mesh, 500 g	
51002	ReadiLink FITC Antibody Labeling Kit		1421421	AG 50W-X8 Resin, hydrogen, 20–50 mesh, 500 g	
51003	ReadiLink 555/570 Antibody Labeling Kit	41	1421431	AG 50W-X8 Resin, hydrogen, 50–100 mesh, 500 g	
51004	ReadiLink 594/610 Antibody Labeling Kit	41	1421441	AG 50W-X8 Resin, hydrogen, 100–200 mesh, 500 g	
51005	ReadiLink 633/655 Antibody Labeling Kit		1421451	AG 50W-X8 Resin, hydrogen, 200–400 mesh, 500 g	
1006	ReadiLink 647/674 Antibody Labeling Kit		1421641	AG 50W-X12 Resin, hydrogen, 100–200 mesh, 500 g	
51007	ReadiLink 680/701 Antibody Labeling Kit		1421651	AG 50W-X12 Resin, hydrogen, 200–400 mesh, 500 g	
1008	ReadiLink 700/713 Antibody Labeling Kit		1422822	Chelex 100 Resin, sodium, 50–100 mesh, 500 g	
			1422822		
1009	ReadiLink 750/780 Antibody Labeling Kit			Chelex 100 Resin, iron, 100–200 mesh, 100 g	
51010	ReadiLink 790/811 Antibody Labeling Kit		1422832	Chelex 100 Resin, sodium, 100–200 mesh, 500 g	
51011	ReadiLink 405/454 Antibody Labeling Kit		1422842	Chelex 100 Resin, sodium, 200–400 mesh, 500 g	
1012	ReadiLink 405/508 Antibody Labeling Kit		1425822	Bio-Rex 70 Resin, sodium, 20–50 mesh, 500 g	
1013	ReadiLink 405/537 Antibody Labeling Kit		1425832	Bio-Rex 70 Resin, sodium, 50–100 mesh, 500 g	
51101	ReadiDrop Propidium Iodide	43	1425842	Bio-Rex 70 Resin, sodium, 100–200 mesh, 500 g	
1102	ReadiDrop 7AAD.		1425852	Bio-Rex 70 Resin, sodium, 200–400 mesh, 500 g	
1111	VivaFix 353/442 Cell Viability Assay		1426424	AG 501-X8 Resin, H ⁺ + OH ⁻ , 20–50 mesh, 500 g	
1112	VivaFix 410/450 Cell Viability Assay.		1426425	AG 501-X8(D) Resin, HH ⁺ + OH ⁻ , 20–50 mesh, 500 g	
1113	VivaFix 408/512 Cell Viability Assay		1427425	Bio-Rex MSZ 501(D) Resin, H ⁺ + OH ⁻ , 25–35 mesh, 500 g	
51114	VivaFix 398/550 Cell Viability Assay.		1427834	AG 11 A8 Resin, self-adsorbed, 50–100 mesh, 500 g	
1115	VivaFix 498/521 Cell Viability Assay.		143-6427	AG 501-X8(D) Resin, H ⁺ + OH ⁻ , 20–50 mesh, 10 kg	
51116	VivaFix 547/573 Cell Viability Assay		143-7428	AG 501-X8 Resin, H+ + OH-, 20–50 mesh, 10 kg	
51117	VivaFix 583/603 Cell Viability Assay		1430841	AG MP-50 Resin, hydrogen, 100–200 mesh, 500 g	
51118	VivaFix 649/660 Cell Viability Assay.		1431255	AG 1-X2 Resin, biotech. grade, 200–400 mesh, 100 g	
51201	CFDA-SE		1431345	AG 1-X4 Resin, biotech. grade, 100-200 mesh, 100 g	
51202	CytoTrack Blue 403/454		1432445	AG 1-X8 Resin, biotechnology grade	
51202	CytoTrack Green 511/525		1432446	AG 1-X8 Resin, biotech grade, 200–400 mesh, 100 g	
	•				
51204	CytoTrack Orange 542/556 CvtoTrack Red 628/643		1432832 1435241	Chelex 100 Resin, biotech. grade, 100–200 mesh, 100 g AG 50W-X2 Resin, biotech. grade, 100–200 mesh, 100 g	
351205					

at. #	Description	Page	Cat. #	Description	Pa
35341	AG 50W-X4 Resin, biotech. grade, 200–400 mesh, 100 g	64	1510450	Bio-Gel A 1.5 m Media, fine, 500 ml	
35441	AG 50W-X8 Resin, biotech. grade, 100-200 mesh, 100 g	64	1511901	Gel Filtration Standard, 6 vials	
35451	AG 50W-X8 Resin, biotech. grade, 200-400 mesh, 100 g	64	152-3922	Bio-Beads SM-2 Adsorbents, 1 kg	
35832	Bio-Rex 70 Resin, biotech. grade, 50-100 mesh, 100 g		1522150	Bio-Beads S-X1 Media, 100 g	
35852	Bio-Rex 70 Resin, biotech. grade, 200–400 mesh, 100 g		1522151	Bio-Beads S-X1 Media, 1 kg.	
6424	AG 501-X8 Resin, mol. biol. grade, 20–50 mesh, 100 g.		1522750	Bio-Beads S-X3 Media, 100 g	
6425	AG 501-X8(D) Resin, mol. biol. grade, 20–50 mesh, 100 g		1523350	Bio-Beads S-X8 Media, 100 g	
7424	AG 501-X8 Resin, biotech. grade, 20–50 mesh, 100 g		1523650	Bio-Beads S-X12 Media, 100 g	
37425			1523920	Bio-Beads SM-2 Adsorbents, biotech. grade, 100 g	
	AG 501-X8(D) Resin, biotech. grade, 20–50 mesh, 100 g				
37834	AG 11 A8 Resin, biotech. grade, 50–100 mesh, 100 g		1523923	Bio-Beads SM-2 Adsorbents, 10 kg.	
1001	S3e Sheath Cap Assembly, white		1528920	Bio-Beads SM-2 Adsorbents, biotech. grade, 25 g	
1002	S3e DI Water Cap Assembly, blue		153-0023	Macro-Prep 25 Q Media, 1 L.	
1003	S3e Waste Cap Assembly, red		153-0024	Macro-Prep 25 Q Media, 5 L	
1005	S3e Filter Block A, empty with 2 dichroic filter holders		153-0033	Macro-Prep 25 S Media, 1 L	
1006	S3e Filter Block B, empty with 2 dichroic filter holders		153-0034	Macro-Prep 25 S Media, 5 L	
1007	S3e Individual Filter Holder, black, empty		153-1000	Affi-Gel 10 Media, 1 L	
1008	Neutral Density Filter, 1.0.		153-6104	Affi-Gel Boronate Media, 50 g.	
1009	S3e Nozzle Tip, 100 µm		1530021	Macro-Prep 25 Q Media, 50 ml.	
1010	S3e Nozzle O-Ring with Alignment Disk, 2-pack		1530022	Macro-Prep 25 Q Media, 200 ml.	
1011					
	S3e Collection Adaptor Set		1530031	Macro-Prep 25 S Media, 50 ml.	
012	Hex Driver, 2 mm.		1530032	Macro-Prep 25 S Media, 200 ml.	
013	S3e Individual Dichroic Filter Holder, empty.		1530990	EDAC, 5 g	
0003	TC20 Counting Kit		1532401	Affi-Gel 102 Media, 50 ml	
005	Thermal Label Printer		1536046	Affi-Gel 10 Media, 4 x 25 ml	
007	Thermal Printer Labels		1536047	Affi-Gel Hz Hydrazide Media, 25 ml	
013	TC20 Trypan Blue Dye		1536051	Affi-Gel 15 Media, 25 ml	
014	System Test Kit		1536052	Affi-Gel 15 Media, 4 x 25 ml	
015	Counting Slides, 150 dual-chamber slides		1536054	Affi-Gel Hz 10x Coupling Buffer Concentrate, 500 ml	
016	Counting Slides, 300 dual-chamber slides		1536060	Affi-Gel Hz Immunoaffinity Kit	
017	Counting Slides, 600 dual-chamber slides		1536098	Affi-Gel 10/15 Combination, 2 x 25 ml each	
017			1536099	Affi-Gel 10 Media, 25 ml	
	Counting Slides, 900 dual-chamber slides				
019	Counting Slides, 1,200 dual-chamber slides.		1536103	Affi-Gel Boronate Media, 5 g.	
020	Counting Slides, 2,400 dual-chamber counting slides		1536153	Affi-Gel Protein A Media, 5 ml	
021	Trypan Blue, 5 x 1.5 ml		1536154	Affi-Gel Protein A Media, 50 ml	
022	Trypan Blue, 10 x 1.5 ml		1536159	Affi-Gel Protein A MAPS II Kit	
031	ZOE Fluorescent Cell Imager		1536161	Protein A MAPS II Binding Buffer, makes 5 L	
102	TC20 Automated Cell Counter, 120–240 V.		1536173	Affi-Gel Heparin Media, 40 ml	
103	TC20 Automated Cell Counter with Printer, 120–240 V		1537301	Affi-Gel Blue Media, 100 ml, 50–100 mesh	
005	S3e Cell Sorter (488 nm), 488 nm 100 mW laser		1537302	Affi-Gel Blue Media, 100 ml, 100–200 mesh	
006	S3e Cell Sorter (488/561 nm), 488 nm and 561 nm 100 mW lasers		1537304	CM Affi-Gel Blue Media, 100 ml	
008	S3e Cell Sorter, 488 and 640 nm 100 mW lasers		1537307	DEAE Affi-Gel Blue Media, 100 ml.	
029	Size Cell Sorter (488 nm) with Size Biosafety System Class I		156-0022	Macro-Prep DEAE Media, 5 L.	
				Macro-Prep DEAE Media, 3 L	
030	S3e Cell Sorter (488/561 nm) with S3 Biosafety System Class I		156-0023		
032	S3e Cell Sorter, with S3e Biosafety System Class I		156-0032	Macro-Prep High S Media, 5 L	
065	S3e Accessory Kit		156-0033	Macro-Prep High S Media, 10 L	
076	S3e Power Conditioner, international		156-0042	Macro-Prep High Q Media, 5 L	
077	S3e Power Conditioner, U.S.		156-0043	Macro-Prep High Q Media, 10 L	
078	S3e Biosafety System Class I		156-0073	Macro-Prep CM Media, 10 L.	
082	ProFlow 8x Sheath Fluid		156-0082	Macro-Prep Methyl HIC Media, 5 L	
083	ProFlow Sort Grade Water		156-0083	Macro-Prep Methyl HIC Media, 10 L.	
084	S3e Fluidic Containers.		156-0093	Macro-Prep t-Butyl HIC Media, 10 L.	
085	ProLine Rainbow Beads		156-0107	UNOsphere Q Media, 10 L	
	ProLine Universal Calibration Beads				
086			156-0117	UNOsphere S Media, 10 L	
0739	Bio-Gel P-6DG Media, 1 kg		156-0317		
738	Bio-Gel P-6DG Media, 100 g		156-0417	Nuvia Q Media, 10 L	
114	Bio-Gel P-2 Media, fine, 100 g		156-0517	Nuvia HR-S Media, 10 L	
115	Bio-Gel P-2 Media, fine, 500 g		156-3404	Nuvia cPrime Media, 1 L	
118	Bio-Gel P-2 Media, extra fine, 100 g	85	156-3405	Nuvia cPrime Media, 5 L	
120	Bio-Gel P-4 Media, medium, 100 g.		156-3406	Nuvia cPrime Media, 10 L	
124	Bio-Gel P-4 Media, fine, 100 g		1560005	Affi-Prep Protein A Media, 25 ml	
128	Bio-Gel P-4 Media, extra fine, 100 g.		1560006	Affi-Prep Protein A Media, 5 ml	
130	Bio-Gel P-6 Media, medium, 100 g.		1560010	Affi-Prep Polymyxin Media, 25 ml	
134	Bio-Gel P-6 Media, fine, 100 g		1560020	Macro-Prep DEAE Media, 100 ml.	
134	Bio-Gel P-6 Media, extra fine, 100 g		1560020	Macro-Prep DEAE Media, 100 ml.	
130					
	Bio-Gel P-10 Media, medium, 100 g		1560030	Macro-Prep High S Media, 100 ml	
144	Bio-Gel P-10 Media, fine, 100 g		1560031	Macro-Prep High S Media, 500 ml	
150	Bio-Gel P-30 Media, medium, 100 g		1560040	Macro-Prep High Q Media, 100 ml	
154	Bio-Gel P-30 Media, fine, 100 g		1560041	Macro-Prep High Q Media, 500 ml	
1160	Bio-Gel P-60 Media, medium, 100 g		1560070	Macro-Prep CM Media, 100 ml.	
164	Bio-Gel P-60 Media, fine, 100 g		1560071	Macro-Prep CM Media, 500 ml.	
	Bio-Gel P-100 Media, medium, 100 g		1560080	Macro-Prep Methyl HIC Media, 100 ml.	
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560090	Macro-Prep t-Butyl HIC Media, 100 ml		1585200	CFT Ceramic Fluoroapatite, Type II, 40 µm, 10 g	
60091	Macro-Prep t-Butyl HIC Media, 500 ml		1588000	CHT Ceramic Hydroxyapatite, Type I, 80 µm, 10 g	
50101	UNOsphere Q Media, 25 ml		1588200	CHT Ceramic Hydroxyapatite, Type II, 80 µm, 10 g	
0103	UNOsphere Q Media, 100 ml		1610100		
				Acrylamide, 99.9%, 100 g	
30105	UNOsphere Q Media, 500 ml		1610101	Acrylamide, 99.9%, 500 g	
60111	UNOsphere S Media, 25 ml		1610103	Acrylamide, 99.9%, 2 kg	
60113	UNOsphere S Media, 100 ml		1610107	Acrylamide, 99.9%, 1 kg	
60115	UNOsphere S Media, 500 ml		1610108	Acrylamide, 99.9%, 5 kg	
60121	Profinity IMAC Uncharged Resin, 10 ml		1610120	Acrylamide/Bis, 19:1, 30 g	
60123	Profinity IMAC Uncharged Resin, 50 ml		1610121	Acrylamide/Bis, 29:1, 30 g	
60125	Profinity IMAC Uncharged Resin, 500 ml		1610122	Acrylamide/Bis, 37.5:1, 30 g.	
60123	Profinity IMAC Uncharged Resin, 300 million		1610122	Acrylamide/Bis, 19:1, 150 g	
60131	Profinity IMAC Ni-Charged Resin, 10 ml		1610124	Acrylamide/Bis, 29:1, 150 g	
60133	Profinity IMAC Ni-Charged Resin, 25 ml		1610125	Acrylamide/Bis, 37.5:1, 150 g	
60135	Profinity IMAC Ni-Charged Resin, 100 ml		1610140	40% Acrylamide Solution, 500 ml	
60137	Profinity IMAC Ni-Charged Resin, 500 ml		1610141	40% Acrylamide Solution, 2 x 500 ml	
60200	Profinity Epoxide Media, 5 g		1610142	2% Bis Solution, 500 ml	
60201	Profinity Epoxide Media, 25 g		1610143	2% Bis Solution, 2 x 500 ml	
			1610146	40% Acrylamide/Bis Solution, 19:1, 500 ml	
50218	UNOsphere SUPrA Affinity Media, 25 ml.				
60219	UNOsphere SUPrA Affinity Media, 100 ml.		1610145	40% Acrylamide/Bis Solution, 19:1, 2 x 500 ml	
50220	UNOsphere SUPrA Affinity Media, 500 ml		1610146	40% Acrylamide/Bis Solution, 29:1, 500 ml	
60311	Nuvia S Media, 25 ml		1610147	40% Acrylamide/Bis Solution, 29:1, 2 x 500 ml	
60313	Nuvia S Media, 100 ml		1610148	40% Acrylamide/Bis Solution, 37.5:1, 500 ml	
60315	Nuvia S Media. 500 ml		1610149	40% Acrylamide/Bis Solution, 37.5:1, 2 x 500 ml	
50411	Nuvia Q Media, 25 ml		1610154	30% Acrylamide/Bis Solution, 19:1, 500 ml	
50413	Nuvia Q Media, 20 ml		1610155	30% Acrylamide/Bis Solution, 19:1, 2 x 500 ml	
60415	Nuvia Q Media, 500 ml		1610156	30% Acrylamide/Bis Solution, 29:1, 500 ml	
60511	Nuvia HR-S Media, 25 ml		1610157	30% Acrylamide/Bis Solution, 29:1, 2 x 500 ml	
60513	Nuvia HR-S Media, 100 ml		1610158	30% Acrylamide/Bis Solution, 37.5:1, 500 ml	
0515	Nuvia HR-S Media, 500 ml		1610159	30% Acrylamide/Bis Solution, 37.5:1, 2 x 500 ml	
3002	Profinity eXact Supercoiled Expression Vector Kit		1610170	TGX Acrylamide Handcasting Solutions, 7.5%, 10 gel kit	
3004	Profinity eXact Antibody Reagent, 100 µl, 1 mg/ml		1610171	TGX Acrylamide Handcasting Solutions, 7.5%, 50 gel kit	
3005			1610172	TGX Acrylamide Handcasting Solutions, 10%, 10 gel kit	
	Profinity eXact Purification Resin, 10 ml.				
63006	Profinity eXact Mini Spin Purification Starter Kit		1610173	TGX Acrylamide Handcasting Solutions, 10%, 50 gel kit	
63007	Profinity eXact Mini Spin Columns		1610174	TGX Acrylamide Handcasting Solutions, 12%, 10 gel kit	
53401	Nuvia cPrime Media, 25 ml	65	1610175	TGX Acrylamide Handcasting Solutions, 12%, 50 gel kit	
63402	Nuvia cPrime Media, 100 ml	65	1610180	TGX Stain-Free Acrylamide Handcasting Solutions, 7.5%, 10 gel kit	
63403	Nuvia cPrime Media, 500 ml	65	1610181	TGX Stain-Free Acrylamide Handcasting Solutions, 7.5%, 50 gel kit	
7-0021	CHT Ceramic Hydroxyapatite, Type I, 20 µm, 1 kg		1610182	TGX Stain-Free Acrylamide Handcasting Solutions, 10%, 10 gel kit	
7-0041	CHT Ceramic Hydroxyapatite, Type I, 40 µm, 1 kg		1610183	TGX Stain-Free Acrylamide Handcasting Solutions, 10%, 50 gel kit	
-0045			1610184	TGX Stain-Free Acrylamide Handcasting Solutions, 12%, 10 gel kit	
	CHT Ceramic Hydroxyapatite, Type I, 40 µm, 5 kg				
-0081	CHT Ceramic Hydroxyapatite, Type I, 80 µm, 1 kg		1610185	TGX Stain-Free Acrylamide Handcasting Solutions, 12%, 50 gel kit	
-0085	CHT Ceramic Hydroxyapatite, Type I, 80 µm, 5 kg		1610200	Bis Crosslinker, 5 g	
-0201	MPC Ceramic Hydroxyfluoroapatite, 40 µm, Type I, 1 kg	67	1610201	Bis Crosslinker, 50 g	
-0205	MPC Ceramic Hydroxyfluoroapatite, 40 µm, Type I, 5 kg	67	1610202	PDA Crosslinker, 10 g	
-2100	CHT Ceramic Hydroxyapatite, Type II, 20 µm, 1 kg		1610301	SDS, 100 g	
-4100	CHT Ceramic Hydroxyapatite, Type II, 40 µm, 1 kg		1610302	SDS, 1 kg	
-4500	CHT Ceramic Hydroxyapatite, Type II, 40 µm, 5 kg		1610303	SDS-PAGE Standards, high range, 200 µl	
-5100	CFT Ceramic Fluoroapatite, Type II, 40 µm, 1 kg		1610304	SDS-PAGE Standards, low range, 200 µl	
-5500	CFT Ceramic Fluoroapatite, Type II, 40 µm, 5 kg		1610305	Prestained SDS-PAGE Standards, low range, 500 µl	
-8100	CHT Ceramic Hydroxyapatite, Type II, 80 µm, 1 kg	66	1610309	Prestained SDS-PAGE Standards, high range, 500 µl	
-8500	CHT Ceramic Hydroxyapatite, Type II, 80 µm, 5 kg		1610310	IEF Standards, 250 µl	
0020	CHT Ceramic Hydroxyapatite, Type I, 20 µm, 100 g		1610317	SDS-PAGE Standards, broad range, 200 µl	
0040	CHT Ceramic Hydroxyapatite, Type I, 40 µm, 100 g		1610318	Prestained SDS-PAGE Standards, broad range, 500 µl	
				2-D SDS-PAGE Standards, 500 ul	
0080	CHT Ceramic Hydroxyapatite, Type I, 80 µm, 100 g		1610320		
0200	MPC Ceramic Hydroxyfluoroapatite, 40 µm, Type I, 100 g		1610323	Prep Cell Starter Kit Protein Standard, 1 ml.	
2000	CHT Ceramic Hydroxyapatite, Type II, 20 µm, 100 g		1610324	Kaleidoscope Prestained Standards, 500 µl	
4000	CHT Ceramic Hydroxyapatite, Type II, 40 µm, 100 g	66	1610326	Polypeptide SDS-PAGE Standards, 200 µl	
5000	CFT Ceramic Fluoroapatite, Type II, 40 µm, 100 g	68	1610363	Precision Plus Protein Unstained Standards, 1 ml.	
8000	CHT Ceramic Hydroxyapatite, Type II, 80 µm, 100 g		1610373	Precision Plus Protein All Blue Standards, 500 µl	
0020	Macro-Prep DEAE Media, 25 ml.		1610374	Precision Plus Protein Dual Color Standards, 500 µl	
0030	Macro-Prep High S Media, 25 ml		1610375	Precision Plus Protein Kaleidoscope Standards, 500 µl	
0040	Macro-Prep High Q Media, 25 ml		1610376	Precision Plus Protein WesternC Standards, 250 µl	
80070	Macro-Prep CM Media, 25 ml.		1610377	Precision Plus Protein Dual Xtra Standards, 500 µl	
30080	Macro-Prep Methyl HIC Media, 25 ml		1610378	Precision Plus Protein Standard Plugs, 24	
30090	Macro-Prep t-Butyl HIC Media, 25 ml		1610380	Precision Protein StrepTactin-HRP Conjugate, 300 µl	
30100	Media Sampler Pack		1610381	Precision Protein StrepTactin-HRP Conjugate, 125 µl.	
30200	MPC Ceramic Hydroxyfluoroapatite, 40 µm, Type I, 10 g		1610382	Precision Protein StrepTactin-AP Conjugate, 300 µl	
32000	CHT Ceramic Hydroxyapatite, Type I, 20 µm, 10 g		1610385	Precision Plus Protein WesternC Pack	
32200	CHT Ceramic Hydroxyapatite, Type II, 20 µm, 10 g		1610393	Precision Plus Protein All Blue Standards Value Pack	
04000	CHT Ceramic Hydroxyapatite, Type I, 40 µm, 10 g		1610394	Precision Plus Protein Dual Color Standards Value Pack	
34000 34200	CHT Ceramic Hydroxyapatite, Type II, 40 µm, 10 g			Precision Plus Protein Kaleidescope Standards Value Pack	

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610396	Precision Plus Protein Unstained Standards Value Pack		1610771	10x Tris/Glycine, 5 L cube	••••••
610397	Precision Plus Protein Dual Xtra Standards Value Pack		1610772	10x Tris/Glycine/SDS, 5 L cube.	•••••••••••••••••••••••••••••••••••••••
10398	Precision Plus Protein WesternC Pack, HRP Value Pack		1610773	50x Tris/Acetic Acid/EDTA (TAE), 5 L cube	2
10399	Precision Plus Protein WesternC Standards Value Pack		1610774	20x SSC, 1 L.	
0400	Coomassie Brilliant Blue R-250, 10 g		1610775	20x SSC, 5 L cube	
0404	Bromophenol Blue, 10 g		1610778	10x Tris/CAPS, 1 L	
0406	Coomassie Brilliant Blue G-250, 10 g		1610780	10x Phosphate Buffered Saline, 1 L	
0407	Triton X-100 Detergent, 500 ml		1610781	10% Tween 20, 1 L	
0407	SDS Solution, 10% (w/v), 250 ml		1610782	1x Tris Buffered Saline with 1% Casein, 1 L	
0418	SDS Solution, 20% (w/v), 1 L		1610783	1x Phosphate Buffered Saline with 1% Casein, 1 L	
0423	Xylene Cyanole FF, 25 g		1610786	Bio-Safe Coomassie Stain, 1 L	
0433	Ethidium Bromide Solution, 10 mg/ml, 10 ml		1610787	Bio-Safe Coomassie Stain, 5 L	
0435	Coomassie Brilliant Blue R-250 Staining Solutions Kit		1610788	XT MOPS Running Buffer, 500 ml	
0436	Coomassie Brilliant Blue R-250 Staining Solution, 1 L		1610789	XT MES Running Buffer, 500 ml	
)437	Coomassie Brilliant Blue R-250 Staining Solution, 4 x 1 L		1610790	XT Tricine Running Buffer, 500 ml	
438	Coomassie Brilliant Blue R-250 Destaining Solution, 1 L		1610791	XT Sample Buffer, 10 ml	
)439	Coomassie Brilliant Blue R-250 Destaining Solution, 4 x 1 L		1610792	XT Reducing Agent, 1 ml	
)443	Silver Stain Kit		1610793	XT MOPS Buffer Kit.	
)444	Oxidizer Concentrate. 480 ml		1610796	XT MES Buffer Kit	
)445	Silver Reagent Concentrate, 480 ml		1610797	XT Tricine Buffer Kit	
)447	Silver Stain Developer, 4 x 115 g.		1610798	Resolving Gel Buffer, 1.5 M Tris-HCl, pH 8.8, 1 L	
				Stacking Gel Buffer, 0.5 M Tris-HCl, pH 6.8, 1 L	
448	Development Accelerator Reagent, 50 g		1610799		
449	Silver Stain Plus Kit		1610800	TEMED, 5 ml.	
450	Silver Stain Developer, 115 g		1610801	TEMED, 50 ml	
460	CHAPS, 1 g		1610803	QC Colloidal Coomassie Stain	
)461	Fixative Enhancer Concentrate, 1 L		1610992	Ready Gel Key Knife	
462	Silver Complex Solution, 100 ml		1611103	Ready Gel Tris-HCl Gel, 15%, 10-well, 30 µl	
463	Reduction Moderator Solution, 100 ml		1611105	Ready Gel Tris-HCl Gel, 4–20%, 10-well, 30 µl	
464	Image Development Reagent, 100 ml.		1611112	Ready Gel IEF Gels, pH 3–10	
480	Dodeca Silver Stain Kit, Large		1611115	Ready Gel TBE-Urea Gel, 5%, 10-well, 30 µl	
481	Dodeca Silver Stain Kit, small		1611122	Ready Gel Tris-HCl Gel, 4–15%, 15-well, 15 µl	
490	Flamingo Fluorescent Gel Stain, 10x, 20 ml		1611123	Ready Gel Tris-HCl Gel, 4–20%, 15-well, 15 µl	
	Flamingo Fluorescent Gel Stain, 10x, 20 ml			Ready Gel Tris-HCl Gel, 10–20%, 15-well, 15 µl.	
491	8		1611124		
492	Flamingo Fluorescent Gel Stain, 10x, 500 ml		1611154	Ready Gel Tris-HCl Gel, 7.5%, 10-well, 50 µl	
495	Oriole Fluorescent Gel Stain, 1x solution, 200 ml		1611155	Ready Gel Tris-HCl Gel, 10%, 10-well, 50 µl	
)496	Oriole Fluorescent Gel Stain, 1x solution, 1 L		1611156	Ready Gel Tris-HCl Gel, 12%, 10-well, 50 µl	
497	Oriole Fluorescent Gel Stain, 1x solution, 5 L		1611157	Ready Gel Tris-HCl Gel, 15%, 10-well, 50 µl	
501	Riboflavin-5'-Phosphate		1611158	Ready Gel Tris-HCl Gel, 4–15%, 10-well, 50 µl	
610	Dithiothreitol (DTT), 1 g		1611159	Ready Gel Tris-HCl Gel, 4–20%, 10-well, 50 µl	
611	Dithiothreitol (DTT), 5 g	5	1611160	Ready Gel Tris-HCl Gel, 10–20%, 10-well, 50 µl	
620	DATD Crosslinker, 25 g		1611167	Ready Gel Zymogram Gel, 10%, gelatin, 10-well, 50 µl	
700	Ammonium Persulfate (APS), 10 g		1611168	Ready Gel Zymogram Gel, 12%, casein, 10-well, 50 µl	
710	2-Mercaptoethanol, 25 ml.		1611213	Ready Gel Tris-HCl Gel, 5%, 10-well, 50 µl	
	Tricine, 500 g.		1611219	Ready Gel Tris-HCl Gel, 18%, 10-well, 50 µl	
713					
716	Tris, 500 g		1613000	ReadyAgarose Instruction Manual.	
0717	Glycine, 250 g		1613004	Mini ReadyAgarose Gel, TBE, 1.0% + EtBr, 8-well	
718	Glycine, 1 kg		1613006	Mini ReadyAgarose Gel, TBE, 3.0% + EtBr, 8-well	
719	Tris, 1 kg		1613010	Mini ReadyAgarose Gel, TBE, 1.0% + EtBr, 12-well	
722	Bio-Rad Cleaning Concentrate, 50x, 1 kg		1613012	Mini ReadyAgarose Gel, TBE, 3.0% + EtBr, 12-well	
729	EDTA, 500 g		1613015	Mini ReadyAgarose Gel, TAE, 1.0%, 8-well.	
730	Urea, 250 g		1613016	Mini ReadyAgarose Gel, TAE, 1.0% + EtBr, 8-well	
731	Urea, 1 kg		1613017	Mini ReadyAgarose Gel, TAE, 3.0%, 8-well.	
732	10x Tris/Glycine/SDS, 1 L		1613018	Mini ReadyAgarose Gel, TAE, 3.0% + EtBr, 8-well	
733	10x Tris/Boric Acid/EDTA (TBE), 1 L		1613022	Mini ReadyAgarose Gel, TAE, 1.0% + EtBr, 12-well	
734	10x Tris/Glycine, 1 L		1613024	Mini ReadyAgarose Gel, TAE, 3.0% + EtBr, 12 well	
734 737	Laemmli Sample Buffer, 1x, 30 ml			Will ReadyAgarose Gel, TAE, S.0% + Etbr, 12-weil Wide Mini ReadyAgarose Gel, TBE, 1.0% + EtBr, 20-well	
			1613028		
738	Native Sample Buffer, 30 ml		1613030	Wide Mini ReadyAgarose Gel, TBE, 3.0% + EtBr, 20-well	
739	Tricine Sample Buffer, 30 ml		1613034	Wide Mini ReadyAgarose Gel, TBE, 1.0% + EtBr, 32-well	
741	10x Tris/Boric Acid/EDTA (TBE), extended range, 1 L		1613036	Wide Mini ReadyAgarose Gel, TBE, 3.0% + EtBr, 32-well	
743	50x Tris/Acetic Acid/EDTA (TAE), 1 L		1613038	Wide Mini ReadyAgarose Gel, TBE, 1.0% + EtBr, 2 x 32-well	
744	10x Tris/Tricine/SDS, 1 L		1613040	Wide Mini ReadyAgarose Gel, TBE, 3.0% + EtBr, 2 x 32-well	
747	4x Laemmli Sample Buffer, 10 ml		1613044	Wide Mini ReadyAgarose Gel, TAE, 1.0% + EtBr, 20-well	
752	Gel Drying Solution, 1 L.		1613046	Wide Mini ReadyAgarose Gel, TAE, 3.0% + EtBr, 20-well	
761	10x IEF Anode Buffer, 250 ml		1613050	Wide Mini ReadyAgarose Gel, TAE, 1.0% + EtBr, 32-well,	
762	10x IEF Cathode Buffer, 1 L.		1613052	Wide Mini ReadyAgarose Gel, TAE, 3.0% + EtBr, 32-well.	
763	IEF Sample Buffer, 30 ml.		1613052	Wide Mini ReadyAgarose Gel, TAE, 3.0% + Etbl, 32-well Wide Mini ReadyAgarose Gel, TAE, 1.0% + EtBr, 2 x 32-well	
764	Zymogram Sample Buffer, 30 ml.				
			1613056	Wide Mini ReadyAgarose Gel, TAE, 3.0% + EtBr, 2 x 32-well.	
765	10x Zymogram Renaturation Buffer, 125 ml		1613057	Mini ReadyAgarose Gel, TAE, 1.0%, 2 x 8-well.	
0766	10x Zymogram Development Buffer, 125 ml		1613060	ReadyAgarose 96 Plus Gel, TBE, 1% + EtBr, 4 x 26-well	
0767	Nucleic Acid Sample Buffer, 5x, 30 ml		1613062	ReadyAgarose 96 Plus Gel, TBE, 3% + EtBr, 4 x 26-well	
)768	TBE/Urea Sample Buffer, 30 ml		1613063	ReadyAgarose 96 Plus Gel, TAE, 1% + EtBr, 4 x 26-well	
)700)770	10x Tris/Boric Acid/EDTA (TBE), 5 L cube.			ReadyAgarose 96 Plus Gel, TAE, 3% + EtBr, 4 x 26-well	

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613100	Certified Molecular Biology Agarose, 25 g	258	1620190	Zeta-Probe GT Membranes, 9 x 12 cm, 15	23
613101	Certified Molecular Biology Agarose, 125 g		1620191	Zeta-Probe GT Membranes, 10 x 15 cm, 15	23
613102	Certified Molecular Biology Agarose, 500 g	258	1620192	Zeta-Probe GT Membranes, 15 x 15 cm, 15	23
513103	Certified PCR Agarose, 25 g		1620193	Zeta-Probe GT Membranes, 15 x 20 cm, 15	23
613104	Certified PCR Agarose, 125 g		1620194	Zeta-Probe GT Membranes, 20 x 20 cm, 15	
613105	Certified PCR Agarose, 500 g.		1620195	Zeta-Probe GT Membranes, 20 x 25 cm, 3	
613106	Certified Low Range Ultra Agarose, 25 g		1620196	Zeta-Probe GT Membrane, 30 cm x 3.3 m roll	
613107	Certified Low Range Ultra Agarose, 125 g		1620197	Zeta-Probe GT Membrane, 20 cm x 3.3 m roll	
613108	Certified Megabase Agarose, 25 g		1620206	Zeta-Probe Membranes, 7 x 10 cm, 15	
613109	Certified Megabase Agarose, 125 g		1620208	Zeta-Probe GT Membranes, 7 x 10 cm, 15	
613110	Certified Megabase Agarose, 500 g		1620212	Nitrocellulose Sandwiches, 0.2 µm, 7 x 8.4 cm, 20	
613111	Certified Low-Melt Agarose, 25 g		1620213	Nitrocellulose Sandwiches, 0.2 µm, 7 x 8.4 cm, 50	
613112	Certified Low-Melt Agarose, 125 g		1620214	Nitrocellulose Sandwiches, 0.45 µm, 7 x 8.4 cm, 20	
613113	Certified PCR Low-Melt Agarose, 25 g		1620215	Nitrocellulose Sandwiches, 0.45 µm, 7 x 8.4 cm, 50	
513114	Certified PCR Low-Melt Agarose, 125 g.		1620218	Immun-Blot PVDF Sandwiches, 7 x 8.4 cm, 20	
613115	Certified PCR Low-Melt Agarose, 500 g.		1620219	Immun-Blot PVDF Sandwiches, 7 x 8.4 cm, 50	
614011	SureBeads Protein A Magnetic Beads, 1 x 1 ml vial		1620232	Nitrocellulose Sandwiches, 0.2 μm, 8.5 x 13.5 cm, 20	
514013	•		1620232		
	SureBeads Protein A Magnetic Beads, 1 x 3 ml vial		1620233	Nitrocellulose Sandwiches, 0.2 µm, 8.5 x 13.5 cm, 50	
514021	SureBeads Protein G Magnetic Beads, 1 x 1 ml vial			Nitrocellulose Sandwiches, 0.45 µm, 8.5 x 13.5 cm, 20	
614023	SureBeads Protein G Magnetic Beads, 1 x 3 ml vial		1620235	Nitrocellulose Sandwiches, 0.45 µm, 8.5 x 13.5 cm, 50	
614811	SureBeads Trial Kit Protein A, 1 x 1 ml vial, 4-tube magnetic rack		1620237	Sequi-Blot PVDF Sandwiches, 8.5 x 13.5 cm, 50.	
614813	SureBeads Starter Kit Protein A, 2 x 3 ml vials, 16-tube magnetic rack		1620238	Immun-Blot PVDF Sandwiches, 8.5 x 13.5 cm, 20 pack	
514821	SureBeads Trial Kit Protein G, 1 x 1 ml vial, 4-tube magnetic rack		1620239	Immun-Blot PVDF Sandwiches, 8.5 x 13.5 cm, 50 pack	
514823	SureBeads Starter Kit Protein G, 2 x 3 ml vials, 16-tube magnetic rack		1620251	Nitrocellulose Membranes, 0.45 µm, 26.5 x 28 cm, 10	
614833	SureBeads Starter Kit Protein A and G, 16-tube magnetic rack		1620252	Nitrocellulose Membranes, 0.2 µm, 26.5 x 28 cm, 10	
614916	16-Tube SureBeads Magnetic Rack, with separable magnets		1620255	Immun-Blot PVDF Membranes, 25 x 28 cm, 10	
615100	SDS-PAGE Reagent Starter Kit		1620260	Low-Fluorescence PVDF/Filter Paper Sandwich, 7 x 8.4 cm, 10	
615101	Prep Cell Starter Kit		1620261	Low-Fluorescence PVDF/Filter Paper Sandwich, 7 x 8.4 cm, 20	23
620022	Zero –mr Agarose, 10 g		1620262	Low-Fluorescence PVDF/Filter Paper Sandwich, 8.5 x 13.5 cm, 10	23
620070	Supp. Nitrocellulose Membranes, 0.45 µm, 8.5 x 13.5 cm, 10	233	1620263	Low-Fluorescence PVDF/Filter Paper Sandwich, 8.5 x 13.5 cm, 20	20
620071	Supp. Nitrocellulose Membranes, 0.2 µm, 8.5 x 13.5 cm, 10	233	1620264	Low-Fluorescence PVDF Roll, 28 x 3.8 cm, 1 roll	20
620090	Supp. Nitrocellulose Membranes, 0.45 µm, 7 x 8.4 cm, 10	233	1631112	Bio-Lyte 3/10 Ampholyte, 40%, 10 ml	19
520094	Supp. Nitrocellulose Membrane, 0.45 µm, 30 cm x 3 m roll	233	1631113	Bio-Lyte 3/10 Ampholyte, 40%, 25 ml	19
620095	Supp. Nitrocellulose Membranes, 0.2 µm, 7 x 8.4 cm, 10	233	1631132	Bio-Lyte 3/5 Ampholyte, 20%, 10 ml	19
620097	Supp. Nitrocellulose Membrane, 0.2 µm, 30 cm x 3 m roll		1631142	Bio-Lyte 4/6 Ampholyte, 40%, 10 ml	
620100	Standard Low –mr Agarose, 100 g.		1631143	Bio-Lyte 4/6 Ampholyte, 40%, 25 ml	
620102	Standard Low –mr Agarose, 500 g.		1631152	Bio-Lyte 5/7 Ampholyte, 40%, 10 ml	
620112	Nitrocellulose Membrane, 0.2 µm, 30 cm x 3.5 m roll.		1631153	Bio-Lyte 5/7 Ampholyte, 40%, 25 ml	
620112	Nitrocellulose Membranes, 0.45 µm, 20 x 20 cm, 5		1631162	Bio-Lyte 6/8 Ampholyte, 40%, 10 ml	
620114	Nitrocellulose Membranes, 0.45 µm, 15 x 9.2 cm, 10		1631163	Bio-Lyte 6/8 Ampholyte, 40%, 25 ml	
620115	Nitrocellulose Membrane, 0.45 µm, 30 cm x 3.5 m roll.		1631172	Bio-Lyte 7/9 Ampholyte, 40%, 10 ml	
620116	Nitrocellulose Membranes, 0.45 µm, 15 x 15 cm, 10		1631182	Bio-Lyte 8/10 Ampholyte, 20%, 10 ml	
620110 620117			1631192		
	Nitrocellulose Membranes, 0.45 µm, 9 x 12 cm, 10			Bio-Lyte 5/8 Ampholyte, 40%, 10 ml	
620118	Thin Blot Paper, 33 cm x 3 m roll.		1631193	Bio-Lyte 5/8 Ampholyte, 40%, 25 ml	
620137	Pulsed Field Certified Agarose, 100 g		1632000	ReadyStrip IPG Strips, pH 3–10, 7 cm, 12	
620138	Pulsed Field Certified Agarose, 500 g		1632001	ReadyStrip IPG Strips, pH 4–7, 7 cm, 12	
620145	Nitrocellulose Membranes, 0.45 µm, 7 x 8.4 cm, 10		1632002	ReadyStrip IPG Strips, pH 3–10 nonlinear, 7 cm, 12	
620146	Nitrocellulose Membranes, 0.2 µm, 7 x 8.4 cm, 10.		1632003	ReadyStrip IPG Strips, pH 3–6, 7 cm, 12	
620147	Nitrocellulose Membranes, 0.2 µm, 13.5 x 16.5 cm, 10		1632004	ReadyStrip IPG Strips, pH 5–8, 7 cm, 12	
620148	Nitrocellulose Membranes, 0.45 µm, 11.5 x 16 cm, 10		1632005	ReadyStrip IPG Strips, pH 7–10, 7 cm, 12	
620150	Nitrocellulose Membranes, 0.2 µm, 20 x 20 cm, 5		1632007	ReadyStrip IPG Strips, pH 3–10, 17 cm, 12	
620153	Zeta-Probe Membranes, 9 x 12 cm, 15		1632008	ReadyStrip IPG Strips, pH 4–7, 17 cm, 12	
620154	Zeta-Probe Membranes, 10 x 15 cm, 15		1632009	ReadyStrip IPG Strips, pH 3–10 nonlinear, 17 cm, 12	
620155	Zeta-Probe Membranes, 15 x 15 cm, 15	235	1632010	ReadyStrip IPG Strips, pH 3–6, 17 cm, 12	20
620156	Zeta-Probe Membranes, 15 x 20 cm, 15	235	1632011	ReadyStrip IPG Strips, pH 5–8, 17 cm, 12	20
620157	Zeta-Probe Membranes, 20 x 20 cm, 15	235	1632012	ReadyStrip IPG Strips, pH 7–10, 17 cm, 12	20
620158	Zeta-Probe Membranes, 20 x 25 cm, 3	235	1632014	ReadyStrip IPG Strips, pH 3–10, 11 cm, 12	20
620159	Zeta-Probe Membranes, 30 cm x 3.3 m roll	234	1632015	ReadyStrip IPG Strips, pH 4–7, 11 cm, 12	20
620161	Bio-Dot/Bio-Dot SF Filter Paper, 11.3 x 7.7 cm, 60 sheets.	230	1632016	ReadyStrip IPG Strips, pH 3–10 nonlinear, 11 cm, 12	
620162	C/P Lift Membrane Disks, 85 mm, 50.		1632017	ReadyStrip IPG Strips, pH 3–6, 11 cm, 12	
320165	Zeta-Probe Membrane, 20 cm x 3.3 m roll.		1632018	ReadyStrip IPG Strips, pH 5–8, 11 cm, 12	
520167	Nitrocellulose Membranes, 0.45 µm, 8.5 x 13.5 cm, 10		1632019	ReadyStrip IPG Strips, pH 7–10, 11 cm, 12	
20168	Nitrocellulose Membranes, 0.2 µm, 8.5 x 13.5 cm, 10		1632032	ReadyStrip IPG Strips, pH 3–10, 18 cm, 12	
520108 520174	Immun-Blot PVDF Membranes, 7 x 8.4 cm, 10		1632032	ReadyStrip IPG Strips, pH 3–10, 16 CH, 12	
	Immun-Blot PVDF Membranes, 10 x 15 cm, 10				
520175 520176	Immun-Blot PVDF Membranes, 10 x 15 cm, 10 Immun-Blot PVDF Membranes, 20 x 20 cm, 10		1632034	ReadyStrip IPG Strips, pH 4–7, 18 cm, 12	
520176			1632035	ReadyStrip IPG Strips, pH 3–6, 18 cm, 12	
620177	Immun-Blot PVDF Membrane, 26 cm x 3.3 m roll		1632036	ReadyStrip IPG Strips, pH 5–8, 18 cm, 12	
620180	Sequi-Blot PVDF Membranes, 10 x 15 cm, 10.		1632037	ReadyStrip IPG Strips, pH 7–10, 18 cm, 12	
520181	Sequi-Blot PVDF Membranes, 15 x 15 cm, 10		1632042	ReadyStrip IPG Strips, pH 3–10, 24 cm, 12	
620182	Sequi-Blot PVDF Membranes, 20 x 20 cm, 10		1632043	ReadyStrip IPG Strips, pH 3–10 nonlinear, 24 cm, 12	
		234	1632044	ReadyStrip IPG Strips, pH 4–7, 24 cm, 12	20
620184 620186	Sequi-Blot PVDF Membrane, 26 x 3.3 m roll Sequi-Blot PVDF Membranes, 7 x 8.4 cm, 10		1632045	ReadyStrip IPG Strips, pH 3–6, 24 cm, 12	

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32046	ReadyStrip IPG Strips, pH 5–8, 24 cm, 12	1646107	PROTEAN i12 7 cm Focusing Tray	2
32047	ReadyStrip IPG Strips, pH 7–10, 24 cm, 12	1646111	PROTEAN i12 11 cm Focusing Tray	2
32083	ReadyPrep 2-D Rehydration/Sample Buffer 15	1646113	PROTEAN i12 13 cm Focusing Tray	2
2084	ReadyPrep Protein Extraction Kit (Membrane II)	1646117	PROTEAN i12 17 cm Focusing Tray	
2085	ReadyPrep Protein Extraction Kit (Soluble/Insoluble)	1646118	PROTEAN i12 18 cm Focusing Tray	
2086	ReadyPrep Protein Extraction Kit (Total Protein)	1646124	PROTEAN i12 24 cm Focusing Tray	
2087	ReadyPrep Protein Extraction Kit (Signal)	1646313	i12 13 cm Rehydration/Equilibration Tray	
088	ReadyPrep Protein Extraction Kit (Membrane I)	1650921	Thick Blot Paper, 18 x 34 cm, 25 sheets.	
089	ReadyPrep Protein Extraction Kit (Cytoplasmic/Nuclear)	1650922	Cellophane Membrane Backing, 18 x 34 cm, 50 sheets	
2003		1650959	Sequencing Gel Filter Paper, 35 x 45 cm, 25 sheets.	
	ReadyPrep Reduction-Alkylation Kit			
091	ReadyPrep Proteomics Grade Water, 500 ml	1650962	Filter Paper Backing, 35 x 45 cm, 25 sheets.	
092	PROTEAN Plus Proteomics Grade Overlay Agarose, 125 ml	1650963	Cellophane Membrane Backing, 35 x 45 cm, 50 sheets	
093	ReadyStrip 100x pH 7–10 Buffer 206	1651270	Whole Gel Eluter Template	
094	Bio-Lyte 3/10 Ampholyte, 100x, 1 ml	1651275	Cellophane, for whole gel eluter, 25 sheets	
099	ReadyStrip Instruction Manual	1651276	Cellophane, for mini whole gel eluter, 25 sheets	
100	ReadyPrep Sequential Extraction Kit5	1651277	Sealing Tabs, for whole gel eluter, 50	
101	Tributylphosphine (TBP), 200 mM, 0.6 ml	1651278	Sealing Tabs, for mini whole gel eluter, 50	
102	ReadyPrep Sequential Extraction Kit Reagent 1	1651279	Roller	
103	ReadyPrep Sequential Extraction Kit Reagent 2	1651280	Lower Chamber Filter Paper, whole gel eluter, 75 sheets	
104	ReadyPrep Sequential Extraction Kit Reagent 3	1651281	Upper Chamber Filter Paper, whole gel eluter, 50 sheets	
105	ReadyPrep 2-D Starter Kit	1651282	Lower Chamber Filter Paper, mini whole gel eluter, 50 sheets	
105	ReadyPrep 2-D Starter Kit Rehydration/Sample Buffer	1651283	Upper Chamber Filter Paper, mini whole gel eluter, 50 sheets	
107	ReadyPrep 2-D Starter Kit Equilibration Buffer I, with DTT	1651745	Model 583 Gel Dryer, 100/120 V.	
108	ReadyPrep 2-D Starter Kit Equilibration Buffer II, no DTT	1651746	Model 583 Gel Dryer, 220/240 V.	
109	lodoacetamide, 30 g	1651747	Model 583 Gel Dryer Porous Gel Support.	
110	E. coli Protein Sample, lyophilized, 2.7 mg 207	1651748	Model 583 Gel Dryer Transparent Sealing Gasket	
111	ReadyPrep Proteomics Grade Overlay Agarose, 50 ml	1651771	GelAir Drying System 115 V, 60 Hz	
129	Mineral Oil, 500 ml	1651772	GelAir Drying System 230 V, 50 Hz	
130	ReadyPrep 2-D Cleanup Kit, 50 reaction size	1651775	GelAir Drying Frames, 2	
140	ReadyPrep 2-D Cleanup Kit, 5 preps	1651776	GelAir Assembly Table	
141	MicroRotofor Cell Lysis Kit (Mammal), 15 preps	1651777	GelAir Dryer, gel drying oven only, 115 V, 60 Hz	
142	MicroRotofor Cell Lysis Kit (Plant), 10 preps	1651778	GelAir Dryer, gel drying oven only, 230 V, 50 Hz	
143	MicroRotofor Cell Lysis Kit (Yeast), 15 preps	1651779	GelAir Cellophane Support, 50 precut sheets	
144	MicroRotofor Cell Lysis Kit (Bacteria), 15 preps	1651780	GelAir Drying Frame Clamps, 8.	
145	Protein Solubilization Buffer, makes 50 ml solution	1651781	HydroTech Vacuum Pump, 100/120 V	
146	ReadyPrep Mini Grinders, 20	1651782	HydroTech Vacuum Pump, 220/240 V	
003	ProteoMiner Sequential Elution Reagents, 10 preps	1651783	Quick Disconnect Fitting, fits 1/4" ID tubing	
006	ProteoMiner Protein Enrichment Small-Capacity Kit	1651784	Quick Disconnect Fitting, fits 3/8" ID tubing	
007	ProteoMiner Protein Enrichment Large-Capacity Kit	1651785	Vacuum Tubing, for HydroTech pump, 2 m	
800	ProteoMiner Protein Enrichment Introductory Small-Capacity Kit 8	1651786	Drain Tubing, 2 m	
009	ProteoMiner Protein Enrichment Introductory Large-Capacity Kit	1651787	3-Way Stopcock	
010	ProteoMiner Sequential Elution Small-Capacity Kit	1651788	HydroTech Vacuum Gauge	
011	ProteoMiner Sequential Elution Large-Capacity Kit	1651789	HydroTech Gel Drying System, 100/120 V	
300	Mini-Sub Cell GT Cell and PowerPac Basic Power Supply	1651790	HydroTech Gel Drying System, 220/240 V	
301	Wide Mini-Sub Cell GT Cell and PowerPac Basic Power Supply	1651791	Anti-Foam Agent, 100 ml	
302	Sub-Cell GT Cell and PowerPac Basic Power Supply	1651796	Double-Up Gel Dryer Rack	
303	Mini ReadySub-Cell GT Cell and PowerPac Basic Power Supply	1651797	Double-Up Gel Dryer System, 100/120 V	
303 304	, , , , , , , , , , , , , , , , , , , ,			
	Wide Mini ReadySub-Cell GT Cell, PowerPac Basic Power Supply	1651798	Double-Up Gel Dryer System, 220/240 V.	
305	Sub-Cell Model 96 Cell and PowerPac Basic Power Supply	1651801	PROTEAN II xi Cell, 16 cm (no spacers or combs)	
306	Sub-Cell Model 192 Cell and PowerPac Basic Power Supply	1651802	PROTEAN II xi Cell, 16 cm, 1.5 mm spacers, 15-well.	
050	PowerPac Basic Power Supply	1651803	PROTEAN II xi Cell, 16 cm, 1.0 mm spacers, 15-well.	
)52	PowerPac HC Power Supply 155	1651804	PROTEAN II xi Cell, 16 cm, 0.75 mm spacers, 15-well	
)56	PowerPac HV Power Supply155	1651806	Central Cooling Core	
)59	PowerPac HV Power Supply with Temperature Probe	1651807	Buffer Tank.	
062	PowerPac Adaptor, 2 mm	1651808	Cell Lid, with power cables	
064	PowerPac Adaptor, 4 mm	1651811	PROTEAN II xi Cell, 20 cm (no spacers or combs)	
069	PowerPac Universal IQ/OQ Protocol Binder and Test Box	1651812	PROTEAN II xi Cell, 20 cm, 1.5 mm spacers, 15-well.	
)70	PowerPac Universal Power Supply	1651813	PROTEAN II xi Cell, 20 cm, 1.0 mm spacers, 15-well.	
)97	PowerPac Data Transfer Software	1651814	PROTEAN II xi Cell, 20 cm, 0.75 mm spacers, 15-well.	
)99	PowerPac HV IQ/OQ Protocol Binder	1651815	PROTEAN II XI Cell 2-D Conversion Kit.	
			PROTEAN II XI Cell 2-D Conversion NL PROTEAN II XI Inner Plates, 16 cm, 16 x 20 cm, 2	
000	PROTEAN i12 IEF system	1651821		
001	PROTEAN 112 IEF Cell	1651822	PROTEAN II xi Outer Plates, 16 cm, 18.3 x 20 cm, 2.	
010	Electrode Assembly Pair	1651823	PROTEAN II xi/XL Inner Plates, 20 cm, 20 x 20 cm, 2	
011	Positive Electrode Assembly	1651824	PROTEAN II xi/XL Outer Plates, 20 cm, 22.3 x 20 cm, 2	
012	Negative Electrode Assembly 204	1651825	PROTEAN II xi Frosted Inner Plates, 16 x 20 cm, 2	
020	i12 Sample Cup Holder, with 25 pack of sample cups	1651826	PROTEAN II xi Frosted Inner Plates, 20 x 20 cm, 2	
021	i12 Sample Cups, 25 pack	1651827	Beveled Inner Glass Plates, for PROTEAN II xi cell, 16 x 20 cm, 2	
030	Gel-Side Up Electrode Wicks, 100 pack	1651828	Beveled Inner Glass Plates, for PROTEAN II xi cell, 20 x 20 cm, 2	
6031	Gel-Side Down Electrode Wicks, 500 pack	1651832	PROTEAN II xi Notched Inner Plate, 16 x 20 cm.	
6040	IPG Strip Retainers, 2 pack	1651833	PROTEAN II xi Notched Inner Plate, 10 x 20 cm.	
-0 4 0		1651834	PROTEAN II XI Notched Inner Plate, 20 X 20 Chi	
6050	Stylus, 3 pack			

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651836	PROTEAN II XL IPG Spacers, 20 cm, 1.0 mm		1652020	Model 225 Tube Gel Casting Stand	
651837	PROTEAN II XL IPG Spacers, 20 cm, 2.0 mm		1652024	PROTEAN II XL Multi-Gel Casting Chamber	
651838	PROTEAN II XL IPG Comb, 1.0 mm		1652025	PROTEAN II xi Multi-Gel Casting Chamber	
651839	PROTEAN II XL IPG Comb, 2.0 mm		1652026	Sealing Gaskets, 3.	
651840	PROTEAN II XL Alignment Cards, 2		1652029	PROTEAN II xi Alianment Cards. 2	
651841	PROTEAN II xi Spacers, 16 cm x 0.5 mm, 4.		1652081	Gene Pulser/MicroPulser Cuvettes, 0.4 cm gap, 5	
651842	PROTEAN II xi Spacers, 16 cm x 0.75 mm, 4.		1652082	Gene Pulser/MicroPulser Cuvettes, 0.2 cm gap, 5	
651843	PROTEAN II xi Spacers, 16 cm x 1.0 mm, 4.		1652083	Gene Pulser/MicroPulser Cuvettes, 0.1 cm gap, 5	
651844	PROTEAN II xi Spacers, 16 cm x 1.5 mm, 4.		1652086	Gene Pulser/MicroPulser Cuvettes, 0.2 cm gap, 50	
651845	PROTEAN II xi Spacers, 16 cm x 3.0 mm, 4		1652088	Gene Pulser/MicroPulser Cuvettes, 0.4 cm gap, 50	
651846	PROTEAN II xi Spacers, 20 cm x 0.5 mm, 4		1652089	Gene Pulser/MicroPulser Cuvettes, 0.1 cm gap, 50	
651847	PROTEAN II xi Spacers, 20 cm x 0.75 mm, 4		1652091	Gene Pulser/MicroPulser Cuvettes, 0.4 cm gap, 500	
651848	PROTEAN II xi Spacers, 20 cm x 1.0 mm, 4		1652092	Gene Pulser/MicroPulser Cuvettes, 0.2 cm gap, 500	
651849	• • • •		1652092	Gene Pulser/MicroPulser Cuvettes, 0.2 cm gap, 500	
651850	PROTEAN II xi Spacers, 20 cm x 1.5 mm, 4 PROTEAN II xi Spacers, 20 cm x 3.0 mm, 4		1652095	Gene Pulser Cuvette Rack	
	• • • •		1652100	MicroPulser Electroporator	
651859	PROTEAN II Comb Conversion Screws				
651861	PROTEAN II xi Comb, 25-well, 0.75 mm		1652225	Hepta Adaptor for PDS-1000/He System	
651862	PROTEAN II xi Comb, 25-well, 1.0 mm		1652226	Hepta Stopping Screens, 50.	
651863	PROTEAN II xi Comb, 25-well, 1.5 mm		1652244	GeneShot Control Cartridges, 12	
651865	PROTEAN II xi Comb, 20-well, 0.5 mm		1652257	PDS-1000/He System.	
651866	PROTEAN II xi Comb, 20-well, 0.75 mm		1652258	PDS-1000/He Hepta System	
651867	PROTEAN II xi Comb, 20-well, 1.0 mm		1652259	220/240 V Voltage Converter, PDS-1000/He system	
651868	PROTEAN II xi Comb, 20-well, 1.5 mm		1652262	0.6 µm Gold Microcarriers, 0.25 g	
651869	PROTEAN II xi Comb, 20-well, 3.0 mm		1652263	1.0 µm Gold Microcarriers, 0.25 g	
651870	PROTEAN II xi Comb, 15-well, 0.5 mm		1652264	1.6 μm Gold Microcarriers, 0.25 g	
651871	PROTEAN II xi Comb, 15-well, 0.75 mm		1652266	Tungsten M-10 Microcarriers, 6 g	
51872	PROTEAN II xi Comb, 15-well, 1.0 mm		1652267	Tungsten M-17 Microcarriers, 6 g	
651873	PROTEAN II xi Comb, 15-well, 1.5 mm		1652268	Tungsten M-20 Microcarriers, 6 g	
651874	PROTEAN II xi Comb, 15-well, 3.0 mm		1652269	Tungsten M-25 Microcarriers, 6 g	
651875	PROTEAN II xi Comb, 10-well, 0.5 mm		1652278	500 Optimization Kit	
651876	PROTEAN II xi Comb, 10-well, 0.75 mm		1652322	Macrocarrier Holders, 5	
651877	PROTEAN II xi Comb, 10-well, 1.0 mm		1652326	450 psi Rupture Disks, 100	
51878	PROTEAN II xi Comb, 10-well, 1.5 mm		1652327	650 psi Rupture Disks, 100	
51879	PROTEAN II xi Comb, 10-well, 3.0 mm		1652328	900 psi Rupture Disks, 100	
651882	PROTEAN II xi Comb, 5-well, 1.0 mm.		1652329	1,100 psi Rupture Disks, 100	
351883	PROTEAN II xi Comb, 5-well, 1.5 mm.		1652330	1,350 psi Rupture Disks, 100	
351884	PROTEAN II xi Comb, 5-well, 3.0 mm.		1652331	1,550 psi Rupture Disks, 100	
51888	PROTEAN II xi Comb, 3-well, 1.5 mm.		1652332	1,800 psi Rupture Disks, 100	
51891	PROTEAN II xi Comb, blank, 0.75 mm.		1652333	2,000 psi Rupture Disks, 100	
51892	PROTEAN II xi Comb, blank, 1.0 mm.		1652334	2,200 psi Rupture Disks, 100	
351893	PROTEAN II xi Comb, blank, 1.5 mm		1652335	Macrocarriers, 500	
351894	PROTEAN II xi Comb, blank, 3.0 mm		1652336	Stopping Screens, 500	
351897	PROTEAN II xi Comb, 2-D, 1.0 mm		1652411	Helios Gene Gun Kit, 100/120 V	
			1652411	Helium Hose Assembly, for Helios gene gun	
51898	PROTEAN II xi Comb, 2-D, 1.5 mm				
51899	PROTEAN II xi Comb, 2-D, 3.0 mm		1652413	Helium Regulator, for Helios gene gun	
351901	PROTEAN II xi Sandwich Clamps, 16 cm set		1652414	Low-Pressure Helium Regulator for Helios Gene Gun	
651902	PROTEAN II xi Sandwich Clamps, 20 cm set		1652416	O-Rings, for Helios gene gun, 5	
51909	PROTEAN II Upper Buffer Dam.		1652417	Barrel Liner, for Helios gene gun, 5	
51911	PROTEAN II xi/XL Slab Gel Casting Stand		1652418	Tubing Prep Station, for Helios gene gun, 100/120 V	
51912	PROTEAN II xi/XL Replacement Casting Stand Gaskets, 2		1652420	Tubing Prep Station, for Helios gene gun, 220/240 V	
51913	PROTEAN II xi Replacement Central Cooling Core Gaskets, 2		1652421	Syringe Kit, for Helios gene gun	
51931	PROTEAN II xi 2-D Cell, 1.0 mm, 16 cm.		1652422	Tubing Cutter, for Helios gene gun	
51932	PROTEAN II xi 2-D Cell, 1.5 mm, 16 cm		1652424	Helios Gene Gun Optimization Kit	
51933	PROTEAN II xi 2-D Cell, 1.0 mm, 20 cm		1652425	Nitrogen Regulator for U.S. Standard Connections	
51934	PROTEAN II xi 2-D Cell, 1.5 mm, 20 cm		1652426	Cartridge Holders, for Helios gene gun, 5	
51940	Tube Gel Adaptor, for PROTEAN II 2-D cell.		1652431	Helios Gene Gun System, 100/120 V	
51943	Tube Gel Loading Needles, for PROTEAN II 2-D cell		1652432	Helios Gene Gun System, 220/240 V	
51944	Tube Gel Extrusion Needles, for PROTEAN II 2-D cell.		1652435	Cartridge Extractor Tool, for Helios gene gun	
51947	PROTEAN II Replacement Tube Gel Adaptor Gaskets, 2		1652436	Battery, for Helios gene gun, 9 V.	
51951	PROTEAN II xi Multi-Cell		1652440	Cartridge Kit, for Helios gene gun	
51956	PROTEAN II xi Multi-Cell 2-D Conversion Kit.		1652441	Tefzel Tubing, for Helios gene gun, 15 m	
51957	PROTEAN II Multi-Gel Casting Chamber Acrylic Blocks, 4		1652451	Helios Gene Gun Low-Pressure System, 100/120 V	
51958	PROTEAN II Multi-Gel Casting Chamber Separation Sheets, 15		1652452	Helios Gene Gun Low-Pressure System, 220/240 V	
51984	Grommets and Stoppers, for 4–5 mm OD tubes, 12 each.		1652475	Helios Diffusion Screens, 5	
51985	Grommets and Stoppers, for 6–7.5 mm OD tubes, 12 each		1652660	Gene Pulser Xcell Total System	
51985 51988	Grommets and Stoppers, for Model 422 electro-eluter, 8		1652661	Gene Pulser Xcell Eukaryotic System	
51988 51991	PROTEAN II xi Plate Washer System			Gene Pulser Xcell Microbial System	
			1652662	,	
51992	PROTEAN II xi Plate Holder.		1652666	Gene Pulser Xcell Main Unit.	
52005	Exponential Piston, for Model 395/495 gradient former		1652667	Gene Pulser Xcell CE Module	
52006	Exponential Piston, for Model 385/485 gradient former		1652668	Gene Pulser Xcell PC Module	
652007	Gradient Pouring Needles, 2	175	1652669	Gene Pulser Xcell ShockPod Cuvette Chamber	
652008	Tubing Connection Kit		1652676	Gene Pulser Electroporation Buffer, 10 x 1.8 ml	

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652677	Gene Pulser Electroporation Buffer, 30 ml	1653403	Dodeca Stainer and Dodeca Silver Stain Kit, large	
652681	96-Well Electroporation Plate	1653404	Dodeca Stainer and Dodeca Silver Stain Kit, small	
52682	24-Well Electroporation Plate	1653405	Dodeca Stainer and Bio-Safe Coomassie Stain, large	
52683	12-Well Electroporation Plate	1653406	Dodeca Stainer and Bio-Safe Coomassie Stain, small	
52913	Replacement Gaskets, for Mini-PROTEAN 3 chamber	1653407	Dodeca Stainer and SYPRO Ruby Protein Gel Stain, large	
52948	Replacement Power Cables 167	1653408	Dodeca Stainer and SYPRO Ruby Protein Gel Stain, small	
52960	Mini-PROTEAN 2-D Cell	1653414	Gel Clip	
52961	Mini-PROTEAN Tube Cell	1653416	Dodeca Stainer Tray, small, 2	
52965	Mini-PROTEAN Tube Cell Module	1653420	Dodeca Stainer White Development Tray, small	18
52966	Mini-PROTEAN Capillary Tubes with Casting Tube, 200	1653422	Dodeca Stainer Shaking Rack, small	
52967	Mini 2-D Tube Gel Ejector	1653423	Dodeca Stainer Solution Tank, large	
52968	Mini-PROTEAN Tube Gel Sample Reservoirs, 8	1653424	Dodeca Stainer Solution Tank, small	18
52969	Mini-PROTEAN Tube Module Stoppers, 8 209	1653425	Dodeca Stainer Lid with Shaker Motor, 100–240 V	18
52970	Mini-PROTEAN Tube Module Tube Connectors, 50	1653426	Dodeca Stainer Lid without Shaker Motor	18
52976	Model 422 Electro-Eluter, complete	1653428	Dodeca Stainer Shaker Control Unit	
52977	Model 422 Electro-Eluter Module, no buffer tank or lid	1653429	Storage Box, large	
52978	Glass Tubes, Model 422 electro-eluter, 6	1653430	Storage Box, small	
52981	Silicone Adaptors, Model 422 electro-eluter, 6	1654010	17 cm Focusing Tray with Lid, for PROTEAN IEF cell	
52985	Membrane Caps, 12–15 kD cutoff, 12	1654015	Disposable Trays with Lids, 17 cm, 25	
52986	Membrane Caps, 3.5 kD cutoff, 12	1654020	11 cm Focusing Tray with Lid, for PROTEAN IEF cell	
52987	Frits, Model 422 electro-eluter, 12	1654025	Disposable Trays with Lids, 11 cm, 25	
53122	5.0 mm ID Glass Tubes, 7.0 mm OD, 125 mm, 24	1654030	7 cm Focusing Tray with Lid, for PROTEAN IEF cell	
53130	Mini Cell Buffer Dams, 2	1654035	Disposable Trays with Lids, 7 cm, 25	
53132	Sample Loading Guide, 15-well, blue	1654040	18 cm Focusing Tray with Lids, 7 cm, 25	
53136	1.0 mm ID Glass Tubes, 6.0 mm OD, 180 mm, 24	1654041	Disposable Trays with Lids, 18 cm, 25	
53130 53137	1.5 mm ID Glass Tubes, 7.5 mm OD, 150 mm, 24	1654042	24 cm Focusing Tray with Lids, for PROTEAN IEF cell	
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53138	1.5 mm ID Glass Tubes, 7.5 mm OD, 180 mm, 24		Disposable Trays with Lids, 24 cm, 25	
53146	Sample Loading Guide, 10-well, yellow	1654050	Cup Loading Tray, for PROTEAN IEF cell	
53149	Replacement Gaskets, for electrophoresis assembly, 2	1654051	Large Replacement Cups, for PROTEAN IEF cell, 150 µl, 120	
53150	3.4 mm ID Glass Tubes, 5.0 mm OD, 125 mm, 24	1654052	Small Replacement Cups, for PROTEAN IEF cell, 100 µl, 120	
3155	2.4 mm ID Glass Tubes, 4.0 mm OD, 160 mm, 24	1654053	Replacement Electrodes, for PROTEAN IEF cell, 1 pair	
3176	PROTEAN II XL Multi-Cell, wide format, 1.0 mm	1654054	Replacement Cup Loading Tray Base	
3177	PROTEAN II XL Multi-Cell, wide format, 1.5 mm	1654055	Cup Loading Tray with Forceps	
53178	PROTEAN II XL Multi-Cell, wide format, 2.0 mm	1654070	Forceps, for PROTEAN IEF cell, 1 pair	20
53181	PROTEAN II XL IPG Spacers, 20 cm x 1.5 mm	1654071	Electrode Wicks, for PROTEAN IEF cell, precut, 500	20
53182	PROTEAN II XL Replacement Central Cooling Core Gaskets, 2	1654072	Cleaning Brushes, for PROTEAN IEF cell, 3	
53183	PROTEAN II xi Cell IPG Conversion Kit, 1.0 mm	1654080	Thermal Printer, 100 V	
53184	PROTEAN II xi Cell IPG Conversion Kit, 2.0 mm.	1654100	Mini-PROTEAN 3 Dodeca Cell	16
3186	PROTEAN II xi Cell IPG Conversion Kit, 1.5 mm	1654101	Mini-PROTEAN 3 Dodeca Cell with Multi-Casting Chamber	10
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3190	PROTEAN II XL Cell, wide format, 2.0 mm	1654105	Replacement Cooling Coil, for Mini-PROTEAN 3 Dodeca cell	
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58006FC	Mini-PROTEAN Tetra for Ready Gel Precast Gels, 10-well, 1.5 mm.		1660500EDU	Long-Wave UV Lamp
658007FC	Mini-PROTEAN Tetra for Ready Gel Precast Gels, 10-well, 1.5 mm.		1660501	Mini Incubation Oven, 120 V
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0613	Mini Centrifuge, 220 V		1702502	Standard Cuvette, 1–3.5 ml, quartz	
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2800EDU	Comparative Proteomics Kit II: Western Blot Module		1702915	Mini Prep Cell with Reagent Starter Kit	
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03644	Variable Speed Pump, for CHEF Mapper system, 120 V		1703990	Trans-Blot Plus Cell with Plate Electrodes and Super Cooling Coil	
03645	Comb, for CHEF Mapper system, 45-well, 21 cm wide, 1.5 mm		1703991	Trans-Blot Plus Cell and PowerPac HC Power Supply	
			1703991	Trans-Blot Plus Cell and PowerPac Inc Power Supply	
03648	Electrodes, for CHEF Mapper system, thick gauge (0.02"), 6				
03654	Cooling Module, for CHEF Mapper system, 120 V		1703995	Foam Pads, 27 x 28.5 cm, 2	
03655	Cooling Module, for CHEF Mapper system, 220/240 V		1703997	Stirbar	
03667	CHEF DNA Size Marker, H. wingei, 5 agarose blocks		1703998	Trans-Blot Plus Roller, 6" wide	
03670	CHEF Mapper XA Chiller System, 120 V	254	1704017	Mini-PROTEAN II Multiscreen Apparatus	
03671	CHEF Mapper XA Chiller System, 100 V	254	1704018	Multiscreen Gaskets, 2	
03672	CHEF Mapper XA Chiller System, 220 V	254	1704019	Trans-Blot SD Agarose Gel Support Frame	
)3673	CHEF Mapper XA Chiller System, 240 V.	254	1704046	Leveling Table, for CHEF Mapper system, 20 x 30 cm	
03688	Cooling Module, for CHEF Mapper system, 100 V		1704070	Criterion Blotter with Plate Electrodes	
03689	Standard Casting Stand, for CHEF Mapper system		1704071	Criterion Blotter with Wire Electrodes	
03699	Combination Comb Holder, for CHEF Mapper system		1704076	Optional Criterion Blotter Cooling Coil	
03700	CHEF-DR III Chiller System, 120 V		1704077	Criterion Blotter Buffer Tank.	
)3700)3702	CHFF-DR III Chiller System, 220/240 V.		1704079	Criterion Blotter Lid	
	CHEF-DR III Chiller System, 220/240 V		1704079	Criterion Blotter Gel Holder Cassette.	
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03704	Wide/Long Casting Stand, for CHEF Mapper system.		1704081	Criterion Blotter Platinum Anode Plate Electrode	
03707	CHEF DNA Size Standard, 8–48 kb ladder		1704082	Criterion Blotter Stainless-Steel Cathode Plate Electrode	
03711	Screened Caps, for CHEF Mapper system, 5		1704083	Criterion Blotter Wire Electrode Card, anode.	
03713	50-Well Disposable Plug Molds, for CHEF Mapper system, 5 bags		1704084	Criterion Blotter Wire Electrode Card, cathode	
)3725	CHEF-DR II Chiller System, 120 V		1704085	Thick Blot Paper, 9.5 x 15.2 cm, 50 sheets	
03727	CHEF-DR II Chiller System, 220/240 V	256	1704086	Foam Pads, 0.5 x 15.2 cm, 4	
3728	CHEF-DR II Chiller System, 100 V	256	1704087	Sealed Ice Blocks, for Criterion blotter, 2	
03759	Bio-Rad Fluorescent Ruler.		1704089	Criterion Gel/Blot Assembly Tray	
03760	Gel Cutter Ruler.		1704150	Trans-Blot Turbo Blotting System	
03812	Mini Trans-Blot, central core		1704151	Trans-Blot Turbo Cassette. 1.	
J3612 J3825	Trans-Blot Cell (Wire), PowerPac HC Power Supply			Trans-Biol Turbo Casselle, 1	
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03836	Mini Trans-Blot Cell, PowerPac HC Power Supply		1704156	Trans-Blot Turbo Transfer Pack, PVDF, 7 x 8.4 cm	
03848	Trans-Blot SD System, PowerPac HC Power Supply		1704157	Trans-Blot Turbo Transfer Pack, PVDF, 8.5 x 13.5 cm	
03849	Trans-Blot SD Cell, PowerPac Universal Power Supply		1704158	Trans-Blot Turbo Transfer Pack, nitrocellulose, 7 x 8.4 cm	
03850	Trans-Blot Cell (Plate), PowerPac HC Power Supply		1704159	Trans-Blot Turbo Transfer Pack, nitrocellulose, 8.5 x 13.5 cm	
03853	Trans-Blot Cell (Plate), Super Cooling Coil.	228	1704270	Trans-Blot Turbo RTA Transfer Kit, nitrocellulose, mini	
	Criterion Blotter (Plate), PowerPac HC Power Supply		1704271	Trans-Blot Turbo RTA Transfer Kit, nitrocellulose, midi	
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704273	Trans-Blot Turbo RTA Transfer Kit, PVDF, midi		1704484	Sub-Cell GT System, 15 x 25 cm tray, gel caster	2
704274	Trans-Blot Turbo RTA Transfer Kit, LF PVDF, mini		1704485	Wide Mini-Sub Cell GT System, 15 x 7 cm tray, gel caster	2
04275	Trans-Blot Turbo RTA Transfer Kit, PVDF, midi		1704486	Mini-Sub Cell GT System, 7 x 7 cm tray, gel caster	
04320	Comb Holder, for adj. ht. combs		1704487	Mini ReadySub-Cell GT Cell	
04321	Comb, 20-well, adj. ht., 0.75 mm		1704489	Wide Mini ReadySub-Cell GT Cell	
04322	Comb, 20-well, adj. ht., 1.5 mm		1704491	Mini Handcasting Kit	
04323	Comb, 15-well, adj. ht., 0.75 mm		1704497	Wide Mini Handcasting Kit	
04324	Comb, 15-well, adj. ht., 1.5 mm		1704500	Sub-Cell Model 96 Cell, 25 x 10 cm tray, gel caster	
04325	Comb, 10-well, adj. ht., 0.75 mm		1704501	Sub-Cell Model 96 Cell, 25 x 15 cm tray, gel caster	2
04326	Comb, 10-well, adj. ht., 1.5 mm		1704502	Sub-Cell Model 96 Cell, 25 x 10 cm tray	
04328	Preparative Comb, adj. ht., 1 prep/2 ref. wells, 3 mm		1704503	Sub-Cell Model 96 Cell, 25 x 15 cm tray	
04330	Original UV-Transparent Mini-Gel Tray, 7 x 10 cm		1704504	Sub-Cell Model 192 Cell, 25 x 10 cm tray, gel caster	2
04331	Mini-Comb Holder, for adj. ht. combs		1704505	Sub-Cell Model 192 Cell, 25 x 15 cm tray, gel caster	
04332	Mini Comb, 15-well, adj. ht., 1.0 mm		1704506	Sub-Cell Model 192 Cell, 25 x 20 cm tray, gel caster	2
)4333	Mini Comb, 8-well, adj. ht., 1.0 mm		1704507	Sub-Cell Model 192 Cell, 25 x 25 cm tray, gel caster	
)4342	Mini Comb, 1 prep/2 ref. wells, adj. ht., 3 mm		1704508	Sub-Cell Model 192 Cell, 25 x 10 cm tray.	
04344	Comb, 30-well, adj. ht., 1.5 mm		1704509	Sub-Cell Model 192 Cell, 25 x 15 cm tray	
04362	Mini-Sub Cell GT Anode QuickSnap Electrode Assembly.		1704510	Sub-Cell Model 192 Cell, 25 x 20 cm tray	
4363	Mini-Sub Cell GT Cathode QuickSnap Electrode Assembly		1704511	Sub-Cell Model 192 Cell, 25 x 25 cm tray	
)4372	Wide Mini-Sub Cell GT Anode QuickSnap Electrode Assembly		1704514	Model 96 Gel Caster	
4373	Wide Mini-Sub Cell GT Cathode QuickSnap Electrode Assembly		1704517	Model 192 Gel Caster	
4392	Sub-Cell GT Anode QuickSnap Electrode Assembly		1704518	Model 96/192 Anode Electrode Assembly	
14392 14393	Sub-Cell GT Cathode QuickShap Electrode Assembly		1704510	Model 96/192 Cathode Electrode Assembly	
4393)4401	Sub-Cell GT Cathode QuickShap Electrode Assembly		1704519	Model 96/192 Gel Casting Gates	
)4401)4402	Sub-Cell GT System, with 15 x 15 cm tray		1704520	UV-Transparent Gel Tray, 25 x 10 cm	
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	Sub-Cell GT System, with 15 x 20 cm tray		1704522	UV-Transparent Gel Tray, 25 x 15 cm	
4404	Sub-Cell GT System, with 15 x 25 cm tray		1704523	UV-Transparent Gel Tray, 25 x 20 cm	
)4405	Wide Mini-Sub Cell GT System, with 15 x 7 cm tray.		1704524	UV-Transparent Gel Tray, 25 x 25 cm	
)4406	Mini-Sub Cell GT System, with 7 x 7 cm tray		1704525	Sub-Cell Models 96 and 192 Comb Holder	
4412	Gel Caster, full size		1704526	High-Throughput Comb, adj. ht., 26-well, 0.75 mm	
4415	Sub-Cell GT Casting Gates, 2		1704527	High-Throughput Comb, adj. ht., 26-well, 1.5 mm	
4416	Sub-Cell GT UV-Transparent Gel Tray, 15 x 10 cm		1704528	High-Throughput Comb, adj. ht., 51-well, 0.75 mm	
4417	Sub-Cell GT UV-Transparent Gel Tray, 15 x 15 cm		1704529	High-Throughput Comb, adj. ht., 51-well, 1.5 mm	
4418	Sub-Cell GT UV-Transparent Gel Tray, 15 x 20 cm		1704530	High-Throughput Comb, adj. ht., 2 or 4 prep/2 ref. wells, 0.75 mm	
)4419	Sub-Cell GT UV-Transparent Gel Tray, 15 x 25 cm		1704531	High-Throughput Comb, adj. ht., 2 or 4 prep/2 ref. wells, 1.5 mm	
)4422	Mini Gel Caster, for Sub-Cell GT cell		1704537	Model 96/192 Buffer Recirculation Kit	
)4425	Wide Mini-Sub Cell GT Casting Gates, 2		1704990	Trans-Blot Plus Super Cooling Coil	
)4426	Sub-Cell GT UV-Transparent Wide Mini-Gel Tray, 15 x 7 cm		1704991	Trans-Blot Plus Platinum Anode Plate Electrode	
04434	Mini-Sub Cell GT Casting Gates, 2		1704992	Trans-Blot Plus Stainless-Steel Cathode Plate Electrode	
)4435	Sub-Cell GT UV-Transparent Mini-Gel Tray, 7 x 10 cm		1705010	Immun-Star AP GAM-AP Detection Kit	
)4436	Sub-Cell GT UV-Transparent Mini-Gel Tray, 7 x 7 cm		1705011	Immun-Star AP GAR-AP Detection Kit	
)4440	Preparative Comb, fixed ht., 1 prep/2 ref. wells, 1.5 mm		1705012	Immun-Star AP Substrate Pack	
)4441	Preparative Comb, fixed ht., 2 prep/2 ref. wells, 1.5 mm		1705018	Immun-Star AP Substrate	
)4442	Preparative Comb, fixed ht., 4 prep/2 ref. wells, 1.5 mm		1705046	Immun-Star Goat Anti-Rabbit (GAR)-HRP, 2 ml	
)4443	Comb, 10-well, fixed ht., 0.75 mm		1705047	Immun-Star Goat-Anti-Mouse (GAM)-HRP, 2 ml.	
)4444	Comb, 10-well, fixed ht., 1.5 mm		1705060	Clarity Western ECL Substrate, 200 ml.	
)4445	Comb, 15-well, fixed ht., 0.75 mm		1705061	Clarity Western ECL Substrate, 500 ml.	
4446	Comb, 15-well, fixed ht., 1.5 mm		1706403	Biotinylated AP, 1 ml	
)4447	Comb, 20-well, fixed ht., 0.75 mm		1706404	Blotting-Grade Blocker, 300 g.	
4448	Comb, 20-well, fixed ht., 1.5 mm		1706425	Protein G-HRP Conjugate, 1 ml	
4449	Comb, 30-well, fixed ht., 1.5 mm		1706431	HRP Conjugate Substrate Kit	
4450	Multichannel Pipet-Compatible Comb, 10-well, fixed ht., 0.75 mm		1706432	AP Conjugate Substrate Kit.	
4451	Multichannel Pipet-Compatible Comb, 10-well, fixed ht., 1.5 mm		1706435	10x Tris Buffered Saline, 1 L	
4452	Multichannel Pipet-Compatible Comb, 14-well, fixed ht., 0.75 mm		1706460	Immun-Blot Goat Anti-Rabbit IgG (H + L)-AP Assay Kit	
4453	Multichannel Pipet-Compatible Comb, 14-well, fixed ht., 1.5 mm		1706461	Immun-Blot Goat Anti-Mouse IgG (H + L)-AP Assay Kit	
4454	Multichannel Pipet-Compatible Comb, 18-well, fixed ht., 0.75 mm		1706462	Immun-Blot Goat Anti-Human IgG (H + L)-AP Assay Kit	
)4455	Multichannel Pipet-Compatible Comb, 18-well, fixed ht., 1.5 mm		1706463	Immun-Blot Goat Anti-Rabbit IgG (H + L)-HRP Assay Kit	
)4456	Multichannel Pipet-Compatible Comb, 26-well, fixed ht., 0.75 mm		1706464	Immun-Blot Goat Anti-Mouse IgG (H + L)-HRP Assay Kit	
4457	Multichannel Pipet-Compatible Comb, 26-well, fixed ht., 1.5 mm		1706465	Immun-Blot Goat Anti-Human IgG (H + L)-HRP Assay Kit	
4460	Mini Comb, 1 prep/2 ref. wells, fixed ht., 1.5 mm		1706515	Goat Anti-Rabbit IgG (H + L)-HRP Conjugate, 2 ml	
4461	Mini Comb, 2 prep/2 ref. wells, fixed ht., 1.5 mm		1706516	Goat Anti-Mouse IgG (H + L)-HRP Conjugate, 2 ml	
4462	Mini Comb, 8-well, fixed ht., 0.75 mm		1706518	Goat Anti-Rabbit IgG-AP Conjugate, 1 ml.	
4463	Mini Comb, 8-well, fixed ht., 1.5 mm		1706520	Goat Anti-Mouse IgG-AP Conjugate, 1 ml	
4464	Mini Comb, 15-well, fixed ht., 0.75 mm		1706521	Goat Anti-Human IgG-AP Conjugate, 1 ml.	
)4465	Mini Comb, 15-well, fixed ht., 1.5 mm		1706522	Protein A-HRP Conjugate, 1 ml.	
)4466	Mini-Sub Cell GT System, with 7 x 10 cm tray		1706527	Colloidal Gold Total Protein Stain, 500 ml	
4467	Mini-Sub Cell GT System, with 7 x 10 cm tray, gel caster.		1706528	Avidin-HRP. 2 ml	
)4468	Wide Mini-Sub Cell GT System, with 15 x 10 cm tray, ger caster		1706531	Tween 20, EIA grade, 100 ml	
4400)4469	Wide Mini-Sub Cell GT System, with 15 x 10 cm tray, gel caster				
)4469)4481			1706534	HRP Color Development Reagent, 4CN, 5 g	
	Sub-Cell GT System, 15 x 10 cm tray, gel caster		1706535	HRP Color Development Reagent, DAB, 5 g	
)4482	Sub-Cell GT System, 15 x 15 cm tray, gel caster	010	1706537		

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706543	Bio-Dot SF Module, for Bio-Dot to Bio-Dot SF conversion		1708351	EZ Load 20 bp Molecular Ruler	
706544	Bio-Dot SF Gaskets. 2		1708352	EZ Load 100 bp Molecular Ruler.	
706545	Bio-Dot Apparatus.		1708353	EZ Load 100 bp PCR Molecular Ruler	
706546	Bio-Dot Gaskets, 3		1708354	EZ Load 500 bp Molecular Ruler.	
706547	Bio-Dot Module, for Bio-Dot SF to Bio-Dot conversion.		1708355	EZ Load 1 kb Molecular Ruler.	
706887	365 nm UV Lamps, 6		1708356	EZ Load Precision Molecular Mass Ruler	
707009	ImmunoWash 1575 Microplate Washer, 100–220 V.		1708370	ChemiDoc Touch Imager.	
			1708370		
707021	ImmunoWash 1575 12-Channel Manifold.			White Tray	
707026	ImmunoWash 1575 Standard Maintenance Kit.		1708373	Blue Tray	
707581	Mitsubishi Thermal Printer Paper, 4 rolls		1708374	UV /SF Tray	
707806	Eraser Screen-K, 220/240 V.		1708375	UV Safety shield.	
707809	Eraser Screen-K, 110/120 V		1708376	Gel Alignment Templates	
707811	Sample Tray		1708377	Attenuation Tray	
707812	Multi-Sample Tray I		1708378	IQ/OQ Protocols	
707814	Microplate Adaptor, for multi-sample tray I		1708380	Leveling Feet	
707819	Multi-Sample Tray II		1708381	ChemiDoc Touch V3 Western Workflow for Mini Gels	
707841	Imaging Screen-K (Kodak), 35 x 43 cm		1708382	ChemiDoc Touch V3 Western Workflow for Midi Gels	
707843	Imaging Screen-K (Kodak), 20 x 25 cm		1708840	iScript Ready-to-Use cDNA Supermix, 25 x 20 µl rxn	
707861	Exposure Cassette-K, for 20 x 25 cm Kodak screen		1708841	iScript Ready-to-Use cDNA Supermix, 100 x 20 µl rxn	
707862	Exposure Cassette-K, for 35 x 43 cm Kodak screen		1708860	iQ Supermix, 100 rxn.	
707863	Filter 555 nm LP		1708862	iQ Supermix, 500 rxn.	
07865	Filter 695 nm BP		1708864	iQ Supermix, 1,000 rxn	
07866	Filter 605 nm BP		1708870	iTaq DNA Polymerase, 250 U	
07867	Blank Filter Holder		1708872	MgCl ₂ Solution, 50 mM, 1.25 ml.	
07896	Filter 640 nm BP		1708874	dNTP Mix, 200 µl, 10 mM each dNTP	
07991	GS-900 Calibrated Densitometry System		1708875	iTaq DNA Polymerase, 5,000 U	
07993	GS-900 Regulatory Tools Package		1708880	iQ SYBR Green Supermix, 100 rxn	
707994	GS-900 Calibrated Densitometer IQ/OQ Kit		1708882	iQ SYBR Green Supermix, 500 rxn	
08008	Orange Fluorescence Reference Plate		1708884	iQ SYBR Green Supermix, 1,000 rxn, 20 x 1.25 ml	
08026	Image Lab Focus Calibration Target		1708885	iQ SYBR Green Supermix, 2,000 rxn, 50 ml	
08074	Filter, for SYBR Green/GFP/SYBR Gold/fluorescein		1708886	iQ SYBR Green Supermix, 1,000 rxn, 5 x 5 ml	
08075	Filter, for Cy3/rhodamine .		1708887	iQ SYBR Green Supermix, 2,000 rxn, 10 x 5 ml.	
08076	Filter, for SYPRO Ruby/Texas Red.		1708890	Script cDNA Synthesis Kit, 25 rxn	
08081	Filter, standard emission, 62 mm.		1708891	iScript cDNA Synthesis Kit, 100 rxn	
708089	Mitsubishi P93DW Printer		1708896	iScript Select cDNA Synthesis Kit, 25 rxn	
708097	Standard 302 nm UV Lamps, 6		1708897	iScript Select cDNA Synthesis Kit, 100 rxn	
08182	XcitaBlue Conversion Screen		1708898	iScript RT-qPCR Sample Preparation Reagent, 100 rxn	
08183	XcitaBlue Conversion Screen and Filter		1708899	iScript RT-qPCR Sample Preparation Reagent, 500 rxn	
08184	Gel Alignment Template		1709042	Model 475 Gradient Delivery System	
708193	Gel Doc XR+ IQ/OQ		1709080	DCode System for DGGE, 16 cm, 120 V	
708195	Gel Doc XR+ Imager with Software, PC or Mac		1709081	DCode System for DGGE, 16 cm, 220/240 V	
708199	Gel Doc XR+ Installation Kit.		1709082	DCode System for DGGE, 16 cm, 100 V	
08200	AmpliSize Molecular Ruler		1709088	DCode System for CDGE, 100 V	
08200	20 bp Molecular Ruler.		1709091	DCode System for TTGE, 100 V	
08201	100 bp Molecular Ruler		1709091		
	•			Complete DCode System, PC, 120 V.	
708203	500 bp Molecular Ruler		1709125	DGGE Kit, 16 cm	
708204	1 kb Molecular Ruler		1709126	DGGE Kit, 10 cm	
08205	2.5 kb Molecular Ruler		1709127	CDGE/TTGE Kit, 16 cm	
08206	100 bp PCR Molecular Ruler		1709128	Complete SSCP Kit, 20 cm	
08207	Precision Molecular Mass Ruler.		1709150	DCode Control Reagent Kit for DGGE/CDGE/TTGE	
08235	Opti-4CN Substrate Kit		1709151	DCode Control Reagent Kit for SSCP	
08236	Opti-4CN Goat Anti-Rabbit Detection Kit		1709170	DCode Electrophoresis Reagent Kit for DGGE	
08237	Opti-4CN Goat Anti-Mouse Detection Kit		1709240	WinMelt Software, PC/Windows.	
08238	Amplified Opti-4CN Substrate Kit	240	1709241	Interactive CD-ROM Training Guide.	
08239	Amplified Opti-4CN Goat Anti-Rabbit Detection Kit		1709459	Filter 530 nm BP .	
	Amplified Opti-40N Goat Anti-Naubit Detection Nit			PDQuest Basic 2-D Analysis Software	
08240			1709620		
08256	ChemiDoc XRS+ IQ/OQ		1709630	PDQuest Advanced 2-D Analysis Software.	
08265	ChemiDoc XRS+ Imager with Software, PC or Mac		1709631	PDQuest Advanced 1-User Network License	
08270	Gel Doc EZ Imaging System		1709632	PDQuest Advanced 2-User Network License	
08271	UV Sample Tray		1709633	PDQuest Advanced 3-User Network License	
08272	White Sample Tray		1709635	PDQuest Advanced 5-User Network License	
08273	Blue Sample Tray		1709636	PDQuest Advanced 10-User Network License	
08274	Stain-Free Sample Tray		1709640	PDQuest Basic to Advanced Software Version Upgrade	
08276	Sample Tray Holder		1709645	PDQuest Advanced CFR Module	
08277	GelDoc EZ, IQ/OQ.		1709660	PDQuest Basic Software Version Upgrade	
	ChemiDoc MP Imaging System with Software, PC or Mac				
08280	00,		1709670	PDQuest Advanced Software Version Upgrade	
08283	Red LED Module		1709690	Image Lab Software, version 4.0.	
08284	Green LED Module		1709691	Image Lab Software, Security Edition, 1 license	
708285	Blue LED Module		1709692	Image Lab Software, Security Edition, 5 licenses	
708289	White Light Conversion Screen		1709693	Image Lab Software, Security Edition, 10 licenses	
	ChemiDoc MP IQ/OQ		1709799	Real-Time PCR Applications Guide.	
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71000201	Bio-Plex 200 System, 100–240 V	171AFR1CK	Bio-Plex Pro RBM Human IGF panel	
71000205	Bio-Plex 200 System with HTF	171AGR1CK	Bio-Plex Pro RBM Human IGFBP Panel	
1001513	Bio-Plex Data Pro Software	171AHR1CK	Bio-Plex Pro RBM Human Hormone Panel 1	
1001523	Bio-Plex Data Pro Plus Software	171AK99MR2	Bio-Plex Pro Human Chemokine Panel 42-plex	
002002	Communication Cable, for Bio-Plex system, HTF	171AL001M	Bio-Plex Pro Human Inflammation Panel 37-Plex	
1002003	Communication Cable, for Bio-Plex system, USB	171AL002M	Bio-Plex Pro Human Inflammation Panel 24-Plex	
1002010	Sheath Fluid Bottle, for Bio-Plex system, 1 L	171AL003M	Bio-Plex Pro Human Inflammation Treg Cytokine Panel	
1002012	Sheath Waste Bottle, for Bio-Plex system, 1 L	171AM001M	Bio-Plex Pro Human MMP Panel 9-Plex	
1002020	Sample Needle, for Bio-Plex system, long	171AM002M	Bio-Plex Pro Human TIMP Panel 4-Plex	
1002020	Needle Guide, for Bio-Plex system	171AMR1CK	Bio-Plex Pro RBM Human Metabolic Panel 1	
1002023	Alignment Guide, for Bio-Plex system	171AMR2CK	Bio-Plex Pro RBM Human Metabolic Panel 2	
1002024	Needle Adjustment Wrench, for Bio-Plex system	171AMR3CK	Bio-Plex Pro RBM Human Metabolic Panel 3	
1002030	Protective Shield for Sample Needle	171AMR4CK	Bio-Plex Pro RBM Human Metabolic Panel 4	
1002032	Air Intake Filter	171ATR1CK	Bio-Plex Pro RBM Human Kidney Toxicity Panel 1	
1002033	Syringe Seal, for Bio-Plex system	171ATR2CK	Bio-Plex Pro RBM Human Kidney Toxicity Panel 2	
1002034	Syringe Seal with Cylinder, for Bio-Plex system	171B5001M	Bio-Plex Pro Human Cytokine IL-1β, 1 x 96-well	
1002038	Sheath Fluid Filter with Quick Connect Tubing	171B5002M	Bio-Plex Pro Human Cytokine IL-1ra, 1 x 96-well	
1002040	Sheath Cube Filter, 10 µm	171B5003M	Bio-Plex Pro Human Cytokine IL-2, 1 x 96-well	
1002056	Sheath Cube Filter, 10 µm, includes tubing	171B5004M	Bio-Plex Pro Human Cytokine IL-4, 1 x 96-well	
1012004	Bio-Plex MAGPIX Replacement Waste Fluid Container	171B5005M	Bio-Plex Pro Human Cytokine IL-5, 1 x 96-well	
1012005	Bio-Plex MAGPIX Sample Probe Needle	171B5006M	Bio-Plex Pro Human Cytokine IL-6, 1 x 96-well	
1012006	Bio-Plex MAGPIX Sample Probe Height Adjustment Kit	171B5007M	Bio-Plex Pro Human Cytokine IL-7, 1 x 96-well	
1012008	Bio-Plex MAGPIX 96-Well Plate Heater Block	171B5008M	Bio-Plex Pro Human Cytokine IL-8, 1 x 96-well	
1020100	Bio-Plex Handheld Magnetic Washer	171B5009M	Bio-Plex Pro Human Cytokine IL-9, 1 x 96-well	
1022001	Swivel Base, for Bio-Plex 3D system	171B5010M	Bio-Plex Pro Human Cytokine IL-10, 1 x 96-well	
1022001	Bio-Plex Pro Flat Bottom Plates, 40 x 96-well plates	171B5011M	Bio-Plex Pro Human Cytokine IL-12 (p70), 1 x 96-well	
1051555	Bio-Plex Manager MP Software	171B5012M	Bio-Plex Pro Human Cytokine IL-13, 1 x 96-well	
			Bio-Plex Pro Human Cytokine IL-15, 1 x 96-well	
1061000	Bio-Plex Probe Height Adjustment Plate	171B5013M		
1203001	Bio-Plex Validation Kit 4.0	171B5014M	Bio-Plex Pro Human Cytokine IL-17, 1 x 96-well	
1203033	Bio-Plex MCV Plate IV	171B5015M	Bio-Plex Pro Human Cytokine Eotaxin, 1 x 96-well.	
1203050	Bio-Plex Reservoir	171B5016M	Bio-Plex Pro Human Cytokine Basic FGF, 1 x 96-well	
1203060	Bio-Plex Calibration Kit	171B5017M	Bio-Plex Pro Human Cytokine G-CSF, 1 x 96-well	
1213001	Bio-Plex MAGPIX Calibration Kit	171B5018M	Bio-Plex Pro Human Cytokine GM-CSF, 1 x 96-well	
1213002	Bio-Plex MAGPIX Verification Kit	171B5019M	Bio-Plex Pro Human Cytokine IFN-γ, 1 x 96-well	
1213003	Bio-Plex MAGPIX Drive Fluid	171B5020M	Bio-Plex Pro Human Cytokine IP-10, 1 x 96-well	
1304006M	Bio-Plex Pro Cell Signaling Reagent Kit	171B5021M	Bio-Plex Pro Human Cytokine MCP-1 (MCAF), 1 x 96-well	
1304011	Bio-Plex Cell Lysis Kit, 1 x 96-well	171B5022M	Bio-Plex Pro Human Cytokine MIP-1α, 1 x 96-well	
1304012	Bio-Plex Cell Lysis Kit, 10 x 96-well	171B5023M	Bio-Plex Pro Human Cytokine MIP-1β, 1 x 96-well.	
1304050	Bio-Plex Pro Human Acute Phase Reagent Kit, 1 x 96-well	171B5024M	Bio-Plex Pro Human Cytokine PDGF-BB, 1 x 96-well	
1304055M	Bio-Plex Pro Reagent Kit II, 1 x 96-well Flat Bottom Plate	171B5025M	Bio-Plex Pro Human Cytokine RANTES, 1 x 96-well	
1304070	Bio-Plex Pro Reagent Kit, 1 x 96-well	171B5026M	Bio-Plex Pro Human Cytokine TNF- α , 1 x 96-well	
1304070M	Bio-Plex Pro Reagent Kit with Flat Bottom Plate	171B5027M	Bio-Plex Pro Human Cytokine VEGF Set, 1 x 96-well.	
13040700	Bio-Plex Pro Reagent Kit, 10 x 96-well	171B6001M	Bio-Plex Pro Human Cytokine L-1 α , 1 x 96-well	
1304080M	Bio-Plex Pro High Dilution Reagent Kit	171B6002M	Bio-Plex Pro Human Cytokine IL-2Rα, 1 x 96-well	
1304090M	Bio-Plex Pro Reagent Kit III with Flat Bottom Plate	171B6003M	Bio-Plex Pro Human Cytokine IL-3, 1 x 96-well	
1304500	Bio-Plex Wash Buffer, 1.5 L	171B6004M	Bio-Plex Pro Human Cytokine IL-12 (p40), 1 x 96-well	
1304501	Bio-Plex Streptavidin-PE	171B6005M	Bio-Plex Pro Human Cytokine IL-16, 1 x 96-well	
1304502	Filter Plate	171B6006M	Bio-Plex Pro Human Cytokine CTACK, 1 x 96-well	
1304515	Bio-Plex Pro Cell Signaling Wash Buffer	171B6007M	Bio-Plex Pro Human Cytokine Gro-α, 1 x 96-well	
1305050	Bio-Plex Pro Human Acute Phase Diluent Kit, 1 x 96-well	171B6008M	Bio-Plex Pro Human Cytokine HGF, 1 x 96-well	
1406001	Bio-Plex Amine Coupling Kit	171B6009M	Bio-Plex Pro Human Cytokine ICAM-1, 1 x 96-well	
15060xx	Bio-Plex COOH Beads, xx = bead region, 1 ml	171B6010M	Bio-Plex Pro Human Cytokine IFN-α2, 1 x 96-well	
6060xx	Bio-Plex COOH Beads xx = bead region, 16 ml	171B6011M	Bio-Plex Pro Human Cytokine LIF, 1 x 96-well	
A3100M	Bio-Plex Pro Human Isotyping Panel, 6-plex	171B6012M	Bio-Plex Pro Human Cytokine MCP-3, 1 x 96-well.	
A3101M	Bio-Plex Pro Human IgA Isotyping Assay	171B6013M	Bio-Plex Pro Human Cytokine M-CSF, 1 x 96-well	
A3102M	Bio-Plex Pro Human IgE Isotyping Assay	171B6014M	Bio-Plex Pro Human Cytokine MIF, 1 x 96-well	
A3103M	Bio-Plex Pro Human IgG Total Isotyping Assay	171B6015M	Bio-Plex Pro Human Cytokine MIG, 1 x 96-well	
A3103M A3104M	Bio-Plex Pro Human IgG Total Isotyping Assay	171B6016M	Bio-Plex Pro Human Cytokine β -NGF, 1 x 96-well	
	Bio-Plex Pro Human Acute Phase 5-Plex Panel, 1 x 96-well		Bio-Plex Pro Human Cytokine SCF, 1 x 96-well	
A4007M		171B6017M		
A4008M	Bio-Plex Pro Human Acute Phase 5-Plex Panel, 10 x 96-well	171B6018M	Bio-Plex Pro Human Cytokine SCGF-β, 1 x 96-well	
A4009M	Bio-Plex Pro Human Acute Phase 4-Plex Panel, 1 x 96-well	171B6019M	Bio-Plex Pro Human Cytokine SDF-1α, 1 x 96-well	
A4010M	Bio-Plex Pro Human Acute Phase 4-Plex Panel, 10 x 96-well	171B6020M	Bio-Plex Pro Human Cytokine TNF- β , 1 x 96-well	
A4C07M	Bio-Plex Pro Human Acute Phase 5-Plex Panel Complete Kit	171B6021M	Bio-Plex Pro Human Cytokine TRAIL, 1 x 96-well	
A4C09M	Bio-Plex Pro Human Acute Phase 4-Plex Panel Complete Kit	171B6022M	Bio-Plex Pro Human Cytokine VCAM-1, 1 x 96-well.	
A4S07M	Bio-Plex Pro Human Acute Phase Complete Kit	171B7003M	Bio-Plex Pro Human Diabetes C-Peptide	
A7001M	Bio-Plex Pro Human Diabetes 10-Plex Assay, 1 x 96-well	171B7004M	Bio-Plex Pro Human Diabetes Ghrelin.	
A7002M	Bio-Plex Pro Human Diabetes Adipsin and Adiponectin Assays	171B7005M	Bio-Plex Pro Human Diabetes GIP	
A7003M	Bio-Plex Pro Human Diabetes Adiponectin Assay, 1 x 96-well	171B7006M	Bio-Plex Pro Human Diabetes GLP-1	
1A7003M	Bio-Plex Pro Human Diabetes Adipsin Assay, 1 x 96-well	171B7000M	Bio-Plex Pro Human Diabetes Glucagon	
			Bio-Plex Pro Human Diabetes Glucagon Bio-Plex Pro Human Diabetes Insulin	
1AA001M 1AC500M	Bio-Plex Pro Human Th17 Cytokine 15-Plex Panel	171B7008M		
	Bio-Plex Pro Human Cancer Biomarker Panel 1	171B7009M	Bio-Plex Pro Human Diabetes Leptin	
1AC600M	Bio-Plex Pro Human Cancer Biomarker Panel 2	171B7010M	Bio-Plex Pro Human Diabetes PAI-1	

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IB7011M	Bio-Plex Pro Human Diabetes Resistin		171BK34MR2	Bio-Plex Pro Human Chemokine IP-10/CXCL10 Set	
37012M	Bio-Plex Pro Human Diabetes Visfatin.		171BK35MR2	Bio-Plex Pro Human Chemokine I-TAC/CXCL11 Set	
BA001M	Bio-Plex Pro Human Th17 IL-1β Cytokine		171BK36MR2	Bio-Plex Pro Human Chemokine MCP-1/CCL2 Set	
BA002M	Bio-Plex Pro Human Th17 IL-4 Cytokine		171BK37MR2	Bio-Plex Pro Human Chemokine MCP-2/CCL8 Set	
BA003M	Bio-Plex Pro Human Th17 IL-6 Cytokine		171BK38MR2	Bio-Plex Pro Human Chemokine MCP-3/CCL7 Set	
BA004M	Bio-Plex Pro Human Th17 IL-10 Cytokine		171BK39MR2	Bio-Plex Pro Human Chemokine MCP-4/CCL13 Set.	
IBA005M	Bio-Plex Pro Human Th17 IL-17A Cytokine		171BK41MR2	Bio-Plex Pro Human Chemokine MDC/CCL22 Set	
IBA006M	Bio-Plex Pro Human Th17 IL-17F Cytokine		171BK42MR2	Bio-Plex Pro Human Chemokine MIF Set	
1BA007M	Bio-Plex Pro Human Th17 IL-21 Cytokine		171BK43MR2	Bio-Plex Pro Human Chemokine MIG/CXCL9 Set	
1BA008M	Bio-Plex Pro Human Th17 IL-22 Cytokine		171BK44MR2	Bio-Plex Pro Human Chemokine MIP-1α/CCL3 Set	
1BA009M	Bio-Plex Pro Human Th17 IL-23 Cytokine		171BK46MR2	Bio-Plex Pro Human Chemokine MIP-1δ/CCL15 Set	
1BA010M	Bio-Plex Pro Human Th17 IL-25 Cytokine		171BK47MR2	Bio-Plex Pro Human Chemokine MIP-3α/CCL20 Set	
1BA011M	Bio-Plex Pro Human Th17 IL-31 Cytokine		171BK48MR2	Bio-Plex Pro Human Chemokine MIP-3β/CCL19 Set.	
1BA012M	Bio-Plex Pro Human Th17 IL-33 Cytokine		171BK49MR2	Bio-Plex Pro Human Chemokine MPIF-1/CCL23 Set.	
IBA013M	Bio-Plex Pro Human Th17 IFN-γ Cytokine		171BK51MR2	Bio-Plex Pro Human Chemokine SCYB16/CXCL16 Set	
IBA014M	Bio-Plex Pro Human Th17 sCD40L Cytokine		171BK52MR2	Bio-Plex Pro Human Chemokine SDF1 α + β /CXCL12 Set	
BA015M	Bio-Plex Pro Human Th17 TNF-α Cytokine		171BK53MR2	Bio-Plex Pro Human Chemokine TARC/CCL17 Set	
IBA016M	Bio-Plex Pro Human Th17 IL-17A/F Cytokine		171BK54MR2	Bio-Plex Pro Human Chemokine TECK/CCL25 Set	
BC501M	Bio-Plex Pro Human Cancer Biomarker Panel 1 sEGFR.		171BK55MR2	Bio-Plex Pro Human Chemokine TNF-α Set	
BC502M	Bio-Plex Pro Human Cancer Biomarker Panel 1 FGF-basic		171BL001M	Bio-Plex Pro Human Inflammation APRIL / TNFSF13 Set	
IBC503M	Bio-Plex Pro Human Cancer Biomarker Panel 1 Follistatin		171BL002M	Bio-Plex Pro Human Inflammation BAFF / TNFSF13B Set	
BC504M	Bio-Plex Pro Human Cancer Biomarker Panel 1 G-CSF.		171BL003M	Bio-Plex Pro Human Inflammation sCD30 / TNFRSF8 Set	
BC505M	Bio-Plex Pro Human Cancer Biomarker Panel 1 HGF		171BL004M	Bio-Plex Pro Human Inflammation sCD163 Set	
BC506M	Bio-Plex Pro Human Cancer Biomarker Panel 1 sHER-2/neu		171BL005M	Bio-Plex Pro Human Inflammation Chitinase 3-like 1 Set	
BC507M	Bio-Plex Pro Human Cancer Biomarker Panel 1 slL-6Rα		171BL006M	Bio-Plex Pro Human Inflammation gp130 / slL-6Rβ Set	
BC508M	Bio-Plex Pro Human Cancer Biomarker Panel 1 Leptin		171BL007M	Bio-Plex Pro Human Inflammation IFN-α2 Set	
BC509M	Bio-Plex Pro Human Cancer Biomarker Panel 1 Osteopontin	320	171BL008M	Bio-Plex Pro Human Inflammation IFN-β Set	
BC510M	Bio-Plex Pro Human Cancer Biomarker Panel 1 PECAM-1		171BL009M	Bio-Plex Pro Human Inflammation IFN-γ Set.	
	Bio-Plex Pro Human Cancer Biomarker Panel 1 PDGF-AB/BB		171BL009M	Bio-Plex Pro Human Inflammation IL-2 Set.	
IBC511M					
BC512M	Bio-Plex Pro Human Cancer Biomarker Panel 1 Prolactin		171BL011M	Bio-Plex Pro Human Inflammation sIL-6Rα Set	
BC513M	Bio-Plex Pro Human Cancer Biomarker Panel 1 SCF		171BL012M	Bio-Plex Pro Human Inflammation IL-8 Set	
IBC514M	Bio-Plex Pro Human Cancer Biomarker Panel 1 sTIE-2		171BL013M	Bio-Plex Pro Human Inflammation IL-10 Set.	
BC515M	Bio-Plex Pro Human Cancer Biomarker Panel 1 sVEGFR-1		171BL014M	Bio-Plex Pro Human Inflammation IL-11 Set	
IBC516M	Bio-Plex Pro Human Cancer Biomarker Panel 1 sVEGFR-2	320	171BL015M	Bio-Plex Pro Human Inflammation IL-12 (p40) Set	
1BC601M	Bio-Plex Pro Human Cancer Biomarker Panel 2 Angiopoietin-2		171BL016M	Bio-Plex Pro Human Inflammation IL-12 (p70) Set	
1BC602M	Bio-Plex Pro Human Cancer Biomarker Panel 2 sCD40L		171BL017M	Bio-Plex Pro Human Inflammation IL-19 Set.	
BC603M	Bio-Plex Pro Human Cancer Biomarker Panel 2 EGF		171BL018M	Bio-Plex Pro Human Inflammation IL-20 Set.	
1BC604M	Bio-Plex Pro Human Cancer Biomarker Panel 2 Endoglin		171BL019M	Bio-Plex Pro Human Inflammation IL-22 Set.	
1BC605M	Bio-Plex Pro Human Cancer Biomarker Panel 2 sFASL		171BL020M	Bio-Plex Pro Human Inflammation IL-26 Set	
1BC606M	Bio-Plex Pro Human Cancer Biomarker Panel 2 HB-EGF		171BL021M	Bio-Plex Pro Human Inflammation IL-27 (p28) Set	
1BC607M	Bio-Plex Pro Human Cancer Biomarker Panel 2 IGFBP-1		171BL022M	Bio-Plex Pro Human Inflammation IL-28A / IFN-λ2 Set	
BC608M	Bio-Plex Pro Human Cancer Biomarker Panel 2 IL-6		171BL023M	Bio-Plex Pro Human Inflammation IL-29 / IFN-λ1 Set	
1BC609M	Bio-Plex Pro Human Cancer Biomarker Panel 2 IL-8		171BL024M	Bio-Plex Pro Human Inflammation IL-32 Set.	
			171BL025M	Bio-Plex Pro Human Inflammation IL-34 Set.	
IBC611M	Bio-Plex Pro Human Cancer Biomarker Panel 2 PAI-1				
IBC612M	Bio-Plex Pro Human Cancer Biomarker Panel 2 PLGF		171BL026M	Bio-Plex Pro Human Inflammation IL-35 Set.	
IBC613M	Bio-Plex Pro Human Cancer Biomarker Panel 2 TGF-a		171BL027M	Bio-Plex Pro Human Inflammation LIGHT / TNFSF14 Set	
IBC614M	Bio-Plex Pro Human Cancer Biomarker Panel 2 TNF-a		171BL028M	Bio-Plex Pro Human Inflammation MMP-1 Set.	
BC615M	Bio-Plex Pro Human Cancer Biomarker Panel 2 uPA		171BL029M	Bio-Plex Pro Human Inflammation MMP-2 Set	
BC616M	Bio-Plex Pro Human Cancer Biomarker Panel 2 VEGF-A		171BL030M	Bio-Plex Pro Human Inflammation MMP-3 Set.	
IBC617M	Bio-Plex Pro Human Cancer Biomarker Panel 2 VEGF-C.		171BL031M	Bio-Plex Pro Human Inflammation Osteocalcin Set	
BC618M	Bio-Plex Pro Human Cancer Biomarker Panel 2 VEGF-D		171BL031M	Bio-Plex Pro Human Inflammation Osteopontin Set	
BK11MR2	Bio-Plex Pro Human Chemokine 6Ckine/CCL21 Set		171BL033M	Bio-Plex Pro Human Inflammation Pentraxin-3 Set.	
BK12MR2	Bio-Plex Pro Human Chemokine BCA-1/CXCL13 Set		171BL034M	Bio-Plex Pro Human Inflammation sTNF-R1 Set.	
BK13MR2	Bio-Plex Pro Human Chemokine CTACK/CCL27 Set		171BL035M	Bio-Plex Pro Human Inflammation sTNF-R2 Set.	
BK14MR2	Bio-Plex Pro Human Chemokine ENA-78/CXCL5 Set		171BL036M	Bio-Plex Pro Human Inflammation TSLP Set	
BK15MR2	Bio-Plex Pro Human Chemokine Eotaxin/CCL11 Set		171BL037M	Bio-Plex Pro Human Inflammation TWEAK / TNFSF12 Set	
BK16MR2	Bio-Plex Pro Human Chemokine Eotaxin-2/CCL24 Set		171BM001M	Bio-Plex Pro Human MMP and TIMP MMP-1 Set	
BK17MR2	Bio-Plex Pro Human Chemokine Eotaxin-3/CCL26 Set		171BM002M	Bio-Plex Pro Human MMP and TIMP MMP-2 Set	
BK18MR2	Bio-Plex Pro Human Chemokine Fractalkine/CX3CL1		171BM002M	Bio-Plex Pro Human MMP and TIMP MMP-3 Set	
BK19MR2	Bio-Plex Pro Human Chemokine GCP-2/CXCL6 Set		171BM004M	Bio-Plex Pro Human MMP and TIMP MMP-7 Set	
BK21MR2	Bio-Plex Pro Human Chemokine GM-CSF Set		171BM005M	Bio-Plex Pro Human MMP and TIMP MMP-8 Set	
BK22MR2			171BM006M	Bio-Plex Pro Human MMP and TIMP MMP-9 Set	
BK23MR2	Bio-Plex Pro Human Chemokine Gro-β/CXCL2 Set		171BM007M	Bio-Plex Pro Human MMP and TIMP MMP-10 Set	
BK24MR2	Bio-Plex Pro Human Chemokine I-309/CCL1 Set		171BM008M	Bio-Plex Pro Human MMP and TIMP MMP-12 Set	
1BK25MR2			171BM009M	Bio-Plex Pro Human MMP and TIMP MMP-13 Set	
1BK26MR2	Bio-Plex Pro Human Chemokine IL-1β Set		171D10501		
				Bio-Plex Human Cytokine Standards Group I, 50-pack	
IBK27MR2	Bio-Plex Pro Human Chemokine IL-2 Set.		171D40002	Bio-Plex Pro Human Acute Phase Standards, 2-pack	
IBK28MR2			171D40006	Bio-Plex Pro Human Acute Phase Standards, 50-pack	
1BK29MR2	Bio-Plex Pro Human Chemokine IL-6 Set		171D50001	Bio-Plex Human Cytokine Standards Group I, 48 analytes	
1BK31MR2	Bio-Plex Pro Human Chemokine IL-8/CXCL8 Set		171D70001	Bio-Plex Pro Human Diabetes Standards, 1 vial of 12 analytes	
BK32MR2	Bio-Plex Pro Human Chemokine IL-10 Set		171D70050	Bio-Plex Pro Human Diabetes Standards, 50 vials of 12 analytes	

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1DA0501	Bio-Plex Pro Human Th17 Cytokine Standards, pkg of 50	311	171K1001M	Bio-Plex Pro Rat Cytokine 25-plex Assay	
1DC5000	Bio-Plex Pro Human Cancer Biomarker Panel 1, 16-plex, 1-pk		171K1002M	Bio-Plex Pro Rat Cytokine Th1/Th2 Panel	
1DC5001	Bio-Plex Pro Human Cancer Biomarker Panel 1, 16-plex, 50-pk		171KTR1CK	Bio-Plex Pro RBM Rat Kidney Toxicity Panel 1	
1DC6000	Bio-Plex Pro Human Cancer Biomarker Panel 2, 18-Plex, 1-pk		171KTR2CK	Bio-Plex Pro RBM Rat Kidney Toxicity Panel 2	3
1DC6001	Bio-Plex Pro Human Cancer Biomarker Panel 2, 18-Plex, 50-pk		171KTR3CK	Bio-Plex Pro RBM Rat Kidney Toxicity Albumin Kit	
1DK0001	Bio-Plex Pro Human Chemokines Standard, 1pk vial		171L1002M	Bio-Plex Pro Rat Cytokine EPO.	
1DK0050	Bio-Plex Pro Human Chemokines Standard, 50pk vial		171L1003M	Bio-Plex Pro Rat Cytokine G-CSF.	
1DL0001	Human Inflammation Std, 1PK		171L1004M	Bio-Plex Pro Rat Cytokine GM-CSF	
1DL0050	Human Inflammation Std, 50PK		171L1005M	Bio-Plex Pro Rat Cytokine Gro/KC	
1DM0001	MMP Standard, 1 pkg of 1 vial		171L1006M	Bio-Plex Pro Rat Cytokine IFN-γ	
1DM0501	MMP Standard, pkg of 50 lot-matched vials.		171L1007M	Bio-Plex Pro Rat Cytokine IL-1α.	
1F7001M	Bio-Plex Pro Mouse Diabetes 8-Plex Assay, 1 x 96-well.		171L1008M	Bio-Plex Pro Rat Cytokine IL-1β	
1F7002M	Bio-Plex Pro Mouse Diabetes Adiponectin Assay.		171L1009M	Bio-Plex Pro Rat Cytokine IL-2	
1FA001M	Bio-Plex Pro Mouse Cytokine Th17 Panel B 8-Plex Group III		171L1010M	Bio-Plex Pro Rat Cytokine IL-4	
1G5001M	Bio-Plex Pro Mouse Cytokine IL-1a, 1 x 96-well.		171L1011M	Bio-Plex Pro Rat Cytokine IL-5	
			171L1011M	Bio-Plex Pro Rat Cytokine IL-6	
1G5002M	Bio-Plex Pro Mouse Cytokine IL-1β, 1 x 96-well.			· · · · · · · · · · · · · · · · · · ·	
1G5003M	Bio-Plex Pro Mouse Cytokine IL-2, 1 x 96-well		171L1013M	Bio-Plex Pro Rat Cytokine IL-7	
1G5004M	Bio-Plex Pro Mouse Cytokine IL-3, 1 x 96-well		171L1014M	Bio-Plex Pro Rat Cytokine IL-10	
1G5005M	Bio-Plex Pro Mouse Cytokine IL-4, 1 x 96-well		171L1015M	Bio-Plex Pro Rat Cytokine IL-12 (p40).	
1G5006M	Bio-Plex Pro Mouse Cytokine IL-5, 1 x 96-well		171L1016M	Bio-Plex Pro Rat Cytokine IL-12 (p70)	
1G5007M	Bio-Plex Pro Mouse Cytokine IL-6, 1 x 96-well		171L1017M	Bio-Plex Pro Rat Cytokine IL-13	
1G5008M	Bio-Plex Pro Mouse Cytokine IL-9, 1 x 96-well		171L1018M	Bio-Plex Pro Rat Cytokine IL-17	
1G5009M	Bio-Plex Pro Mouse Cytokine IL-10, 1 x 96-well	313	171L1020M	Bio-Plex Pro Rat Cytokine M-CSF	
1G5010M	Bio-Plex Pro Mouse Cytokine IL-12 (p40), 1 x 96-well		171L1021M	Bio-Plex Pro Rat Cytokine MIP-1α	3 [.]
1G5011M	Bio-Plex Pro Mouse Cytokine IL-12 (p70), 1 x 96-well		171L1022M	Bio-Plex Pro Rat Cytokine MIP-2	
G5012M	Bio-Plex Pro Mouse Cytokine IL-13, 1 x 96-well.		171L1023M	Bio-Plex Pro Rat Cytokine MIP-3α	
IG5013M	Bio-Plex Pro Mouse Cytokine IL-17, 1 x 96-well		171L1024M	Bio-Plex Pro Rat Cytokine RANTES	
IG5014M	Bio-Plex Pro Mouse Cytokine Eotaxin, 1 x 96-well		171L1025M	Bio-Plex Pro Rat Cytokine TNF-α	
1G5015M	Bio-Plex Pro Mouse Cytokine G-CSF, 1 x 96-well.		171L1026M	Bio-Plex Pro Rat Cytokine VEGF.	
1G5016M	Bio-Plex Pro Mouse Cytokine GM-CSF, 1 x 96-well		171L1020M	Bio-Plex Pro Rat Cytokine MCP-1 Set	
1G5017M	Bio-Plex Pro Mouse Cytokine IFN-y, 1 x 96-well		171L7001M	Bio-Plex Pro Rat Diabetes Ghrelin.	
G5018M	Bio-Plex Pro Mouse Cytokine KC, 1 x 96-well		171L7003M	Bio-Plex Pro Rat Diabetes GLP-1	
G5019M	Bio-Plex Pro Mouse Cytokine MCP-1 (MCAF), 1 x 96-well		171L7004M	Bio-Plex Pro Rat Diabetes Glucagon.	
G5020M	Bio-Plex Pro Mouse Cytokine MIP-1α, 1 x 96-well.		171L7006M	Bio-Plex Pro Rat Diabetes Leptin	
G5021M	Bio-Plex Pro Mouse Cytokine MIP-1β, 1 x 96-well		171L7007M	Bio-Plex Pro Rat Diabetes PAI-1	
1G5022M	Bio-Plex Pro Mouse Cytokine RANTES, 1 x 96-well		171NZ0001	Bio-Plex Pro Rat Standards, 1-pk of 30 analytes	
1G5023M	Bio-Plex Pro Mouse Cytokine TNF-α, 1 x 96-well		171NZ0501	Bio-Plex Pro Rat Standards, 50-pk of 30 analytes	
1G6001M	Bio-Plex Pro Mouse Cytokine IL-15, 1 x 96-well	313	171QTR1CK	Bio-Plex Pro RBM Canine Kidney Toxicity Panel 1	
G6002M	Bio-Plex Pro Mouse Cytokine Basic FGF, 1 x 96-well	313	171QTR2CK	Bio-Plex Pro RBM Canine Kidney Toxicity Albumin Kit	3
G6003M	Bio-Plex Pro Mouse Cytokine LIF, 1 x 96-well	313	171SCRT00	Bio-Plex Manager 6.0 Instrument Control License, Security Edition	3
G6004M	Bio-Plex Pro Mouse Cytokine M-CSF, 1 x 96-well	313	171SCRT01	Bio-Plex Manager 6.0 Security Edition Software, desktop	3
G6005M	Bio-Plex Pro Mouse Cytokine MIG, 1 x 96-well.	313	171SCRT05	Bio-Plex Manager 6.0 Security Edition Software, 5 licenses	3
G6006M	Bio-Plex Pro Mouse Cytokine MIP-2, 1 x 96-well		171STND01	Bio-Plex Manager 6.0 Software, desktop	
G6007M	Bio-Plex Pro Mouse Cytokine PDGF-BB, 1 x 96-well		171STND05	Bio-Plex Manager 6.0 Software, 5 licenses.	
G6008M	Bio-Plex Pro Mouse Cytokine VEGF, 1 x 96-well.		171STND10	Bio-Plex Manager 6.0 Software, 10 licenses.	
G7002M	Bio-Plex Pro Mouse Diabetes Ghrelin		171STND23	Bio-Plex Manager 6.0 Software (IS 2.3 System)	
G7002M	Bio-Plex Pro Mouse Diabetes GIP.		171STND25	Bio-Plex Manager 6.0 Software (IS 2.3 System)	
	Bio-Plex Pro Mouse Diabetes GIP.				
G7004M			171SUPG30	Bio-Plex Manager 6.0 for 3.0 Software, version upgrade	
G7005M	Bio-Plex Pro Mouse Diabetes Glucagon		171SUPG40	Bio-Plex Manager 6.0 for 4.0 Software, version upgrade	
G7006M	Bio-Plex Pro Mouse Diabetes Insulin.		171SUPG41	Bio-Plex Manager 6.0 for 4.1 Software, version upgrade	
G7007M	Bio-Plex Pro Mouse Diabetes Leptin.		171SUPG50	Bio-Plex Manager 6.0 for 5.0 Software, version upgrade	
G7008M	Bio-Plex Pro Mouse Diabetes PAI-1		171V4001M	Bio-Plex TGF-β1	
G7009M	Bio-Plex Pro Mouse Diabetes Resistin		171V4002M	Bio-Plex TGF-β2	
GA001M	Bio-Plex Pro Mouse Cytokine CD40L		171V4003M	Bio-Plex TGF-β3	
GA002M	Bio-Plex Pro Mouse Cytokine IL-17F	313	171V50001M	Bio-Plex Phospho-Akt (Ser ⁴⁷³).	3
GA003M	Bio-Plex Pro Mouse Cytokine IL-21	313	171V50002M	Bio-Plex Phospho-Akt (Thr308)	3
GA004M	Bio-Plex Pro Mouse Cytokine IL-22		171V50003M	Bio-Plex Phospho-c-Jun (Ser ⁶³)	3
GA005M	Bio-Plex Pro Mouse Cytokine IL-23 (p19)		171V50004M	Bio-Plex Phospho-EGFR (Tyr ¹⁰⁶⁸)	
GA006M	Bio-Plex Pro Mouse Cytokine IL-25		171V50005M	Bio-Plex Phospho-EGFR (Tyr ¹¹⁷³)	
GA007M	Bio-Plex Pro Mouse Cytokine IL-27 (p28)		171V50006M	Bio-Plex Phospho-Erk1/2 (Thr ²⁰² /Tyr ²⁰⁴ ,Thr ¹⁸⁵ /Tyr ¹⁸⁷)	
GA008M	Bio-Plex Pro Mouse Cytokine IL-31		171V50007M	Bio-Plex Phospho-GSK-3a/ β (Ser ²¹ /Ser ⁹)	
GA000M	Bio-Plex Pro Mouse Cytokine IL-33		171V50008M	Bio-Plex Phospho-HER-2 (Tyr ¹²⁴⁸)	
GA009IVI	Bio-Plex Pro Mouse Cytokine IC-35			Bio-Plex Phospho-IGF-1R (Tyr ¹³¹)	
			171V50009M		
GA011M	Bio-Plex Pro Mouse Cytokine MIP-3α.		171V50010M	Bio-Plex Phospho-I κ B- α (Ser ³² /Ser ³⁶).	
10501	Bio-Plex Mouse Cytokine Standards Group I, 50-pack		171V50011M	Bio-Plex Phospho-JNK (Thr ¹⁸³ /Tyr ¹⁸⁵)	
10502	Bio-Plex Mouse Cytokine Standards Group II, 50-pack		171V50012M	Bio-Plex Phospho-MEK1 (Ser ²¹⁷ /Ser ²²¹)	
50001	Bio-Plex Mouse Cytokine Standards Group I, 1-pack of 23 analytes		171V50013M	Bio-Plex Phospho-NF-κB p65 (Ser ⁵³⁶)	
60001	Bio-Plex Mouse Cytokine Standards Group II, 1-pack of 9 analytes	313	171V50014M	Bio-Plex Phospho-p38 MAPK (Thr ¹⁸⁰ /Tyr ¹⁸²)	3
170001	Bio-Plex Pro Mouse Diabetes Standards, 1 vial of 9 analytes		171V50015M	Bio-Plex Phospho-p70 S6 Kinase (Thr ⁴²¹ /Tyr ⁴²⁴)	
170050	Bio-Plex Pro Mouse Diabetes Standards, 50 vials of 9 analytes		171V50016M	Bio-Plex Phospho-p70 S6 Kinase (Thr ³⁸⁹).	
	Bio-Plex Pro Mouse Standard Group III, 1 pack		171V50017M	Bio-Plex Phospho-PDGFR-α (Tyr ⁷⁵⁴).	
IA0001					

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71V50019M	Bio-Plex Phospho-Smad2 (Ser465/Ser467)	317	1725080	SingleShot Cell Lysis Kit, 100 x 50 µl reactions	
71V50020M	Bio-Plex Phospho-Stat1 (Tyr ⁷⁰¹)		1725081	SingleShot Cell Lysis Kit, 500 x 50 µl reactions	
71V50021M	Bio-Plex Phospho-Stat3 (Ser ⁷²⁷)		1725085	SingleShot SYBR Green Kit.	
71V50022M	Bio-Plex Phospho-Stat3 (Ser ⁷⁰⁵)		1725090	SingleShot Probes Kit	
71V50023M	Bio-Plex Phospho-VEGFR-2 (Tyr ¹¹⁷⁵)		1725095	SingleShot SYBR Green One-Step Kit	
71V50024M	ATF-2 (Thr ⁷¹)		1725110	Precision Melt Supermix, includes 2 x 1 ml	
71V50025M	BAD (Ser ¹³⁶).		1725112	Precision Melt Supermix, includes 10 x 1 ml.	
71V50026M	Btk (Tyr ²²³)		1725120	ITaq Universal SYBR Green Supermix, 2 ml	
71V50027M	c-Abl (Tvr ²⁴⁵)		1725120	ITaq Universal SYBR Green Supermix, 5 ml	
71V50028M	CREB (Ser ¹³³)		1725122	ITaq Universal SYBR Green Supermix, 10 ml	
71V50020M	HSP27 (Ser ⁷⁸)		1725122	ITaq Universal SYBR Green Supermix, 25 ml	
71V50029W	IRS-1 (Ser ⁶³⁶ /Ser ⁶³⁹)		1725124	iTaq Universal SYBR Green Supermix, 50 ml	
	IR-β (Tyr ¹¹⁴⁶)			iTaq Universal Probes Supermix, 2 ml	
71V50031M			1725130		
71V50032M	Lyn (Tyr ⁵⁰⁷)		1725131	Taq Universal Probes Supermix, 5 ml	
1V50033M	mTOR (Ser ²⁴⁴⁸)		1725132	iTaq Universal Probes Supermix, 10 ml	
1V50034M	p53 (Ser ¹⁵)		1725134	Taq Universal Probes Supermix, 25 ml	
1V50035M	p90 RSK (Ser ³⁸⁰)		1725135	Taq Universal Probes Supermix, 50 ml	
1V50036M	PI3K p85 (Tyr ⁴⁵⁸)		1725140	iTaq Universal Probes One-Step Kit, 100 Reactions, 1 ml	
1V50037M	PTEN (Ser ³⁸⁰)		1725141	iTaq Universal Probes One-Step Kit, 500 Reactions, 5 ml	
1V50038M	S6 ribosomal protein (Ser ²³⁵ /Ser ²³⁶)	317	1725150	iTaq Universal SYBR Green One-Step Kit, 100	
1V50039M	Src (Tyr ⁴¹⁶)	317	1725151	iTaq Universal SYBR Green One-Step Kit, 500	
1V50040M	Syk (Tyr ³⁵²)	317	1725160	SsoAdvanced PreAmp Supermix	
1V50041M	ZAP-70 (Týr ³¹⁹)		1725270	SsoAdvanced Universal SYBR Green Supermix, 2 ml	
1V60001M	Bio-Plex Total Target Akt		1725271	SsoAdvanced Universal SYBR Green Supermix, 5 ml	
1V60002M	Bio-Plex Total Target c-Jun		1725272	SsoAdvanced Universal SYBR Green Supermix, 10 ml	
1V60003M	Bio-Plex Total Target Erk1/2		1725274	SsoAdvanced Universal SYBR Green Supermix, 25 ml	
1V60004M	Bio-Plex Total Target GSK-38		1725275	SsoAdvanced Universal SYBR Green Supermix, 50 ml	
1V60005M	Bio-Plex Total Target HER-2		1725280	SsoAdvanced Universal Probes Supermix, 2 ml	
1V60006M	Bio-Plex Total Target I κ B- α .		1725281	SsoAdvanced Universal Probes Supernix, 5 ml.	
1V60007M	Bio-Plex Total Target JNK		1725282	SsoAdvanced Universal Probes Supermix, 10 ml	
1V60008M	Bio-Plex Total Target MEK1		1725284	SsoAdvanced Universal Probes Supermix, 25 ml	
1V60009M	Bio-Plex Total Target p38 MAPK		1725285	SsoAdvanced Universal Probes Supermix, 50 ml	
1V60010M	Bio-Plex Total Target p70 S6 Kinase		1725300	iProof High-Fidelity DNA Polymerase, 20 U	
1V60011M	Bio-Plex Total Target Smad2		1725301	iProof High-Fidelity DNA Polymerase, 100 U	
1V60012M	t-Btk	317	1725302	iProof High-Fidelity DNA Polymerase, 500 U	
1V60013M	t-CREB	317	1725310	iProof HF Master Mix, 100 rxn	
1V60014M	t-IGF-1rβ	317	1725320	iProof GC Master Mix, 100 rxn	
1V60015M	t-mTOR	317	1725330	iProof High-Fidelity PCR Kit, 50 U	
1V60016M	t-PTEN	317	1725331	iProof High-Fidelity PCR Kit, 200 U	
1V60017M	t-Src	317	1725391	5x iProof HF Buffer, 1.5 ml	
1V60018M	t-ZAP-70	317	1725392	5x iProof GC Buffer, 1.5 ml	
1V60019M	Human GAPDH		1725393	5x iProof HPLC HF Buffer, 1.5 ml	
1V60020M	β-Actin		1725394	5x iProof HPLC GC Buffer, 1.5 ml	
1W4001M	Bio-Plex Pro TGF-β 3-plex Assay		1725555	Precision Blue Real-Time PCR Dye, 55 µl.	
1WAR1CK			1725848		
	Bio-Plex Pro RBM Apoptosis Panel 1, 1 x 96			iQ Multiplex Powermix, 50 rxn	
1WAR2CK	Bio-Plex Pro RBM Apoptosis Panel 2, 1 x 96		1725849	iQ Multiplex Powermix, 200 rxn	
1WAR3CK	Bio-Plex Pro RBM Apoptosis Panel 3, 1 x 96		1725858	ROX Passive Reference Dye, 0.5 ml	
1X40001	Bio-Plex Pro TGF-β Standard, 1 pack		1814000	PX1 PCR Plate Sealer	
1X40501	Bio-Plex Pro TGF-β Standard, 50 pack		1814030	Optically Clear Heat Seal	
21011	Goat Anti-Mouse IgG (H + L)-HRP Conjugate, EIA grade, 2 ml	332	1814035	Permanent Clear Heat Seal	
21017	Rabbit Anti-Sheep IgG (H + L)-HRP Conjugate, 1 ml	332	1814040	Pierceable Foil Heat Seal	
21019	Goat Anti-Rabbit IgG (H + L)-HRP Conjugate, 1 ml	332	1814045	Peelable Foil Heat Seal	
21033	Goat Anti-Human IgG (g)-HRP Conjugate, 1 ml		1814080	Sealing Frame	
21034	Rabbit Anti-Goat IgG (H + L)-HRP Conjugate, 1 ml		1814085	Plate Support Block	
21037	Rabbit Anti-Goat IgG (H + L)-AP Conjugate, 1 ml.		1840138	384-Well Reaction Module	
21050	Goat Anti-Human IgG (H + L)-HRP Conjugate, 2 ml.		1840148	Dual 48/48 Fast Reaction Module	
21063	AP Substrate Kit		1840196	96-Well Fast Reaction Module	
21063	HRP Substrate Kit		1840190	96-Deep Well Reaction Module	
	TMB Peroxidase EIA Substrate Kit, 200 ml.			1000-Series Connectivity Kit	
21066			1841001		
21067	TMB Peroxidase EIA Substrate Kit, 1 L		1841100	C1000 Touch Thermal Cycler Chassis	
21068	Single-Component TMB Peroxidase EIA Substrate Kit, 100 ml		1842000	S1000 Thermal Cycler.	
21072	Single-Component TMB Peroxidase ELISA Substrate Kit.		1844095	CFX96 Deep Well Optical Reaction Module	
22051	Mouse Typer Isotyping Kit		1844096	CFX96 Deep Well Optical Reaction Module, with reagents.	
22055	Mouse Typer Isotyping Panel.		1845000	CFX Manager Software	
25016	SsoAdvanced Universal Inhibitor-Tolerant SYBR Green Supermix, 2 ml	376	1845001	CFX Manager Software, Security Edition, 1 user license	
25017	SsoAdvanced Universal Inhibitor-Tolerant SYBR Green Supermix, 5 ml		1845005	CFX Manager Software, Security Edition, 5 user licenses	
25018	SsoAdvanced Universal Inhibitor-Tolerant SYBR Green Supermix, 10 ml		1845008	CFX Manager Software, Chinese Edition	
25034	iScript gDNA Clear cDNA Synthesis Kit.		1845010	CFX Manager Software, Security Edition, 10 user licenses	
25035	iScript gDNA Clear cDNA Synthesis Kit.		1845015	Precision Melt Analysis Software Only.	
	, ,		1845015	Melt Calibration Kit.	
725037 725038	iScript Advanced cDNA Synthesis Kit for RT-qPCR, 25 x 20 µl reactions iScript Advanced cDNA Synthesis Kit for RT-qPCR, 100 x 20 µl reactions				
	ISCOULAUVAUCEU CUNA SYDIDESIS NU OF BI-OPCIA. TUUX ZU ULIPACTIONS		1845025	Precision Melt Analysis Software, 2 user licenses	

at. #	Description F	Page	Cat. #	Description	Pa
845075	CFX Automation System II.	. 366	2112001	Xcluda Aerosol Barrier Pipet Tips, sterile, style A, 960	4
345096	CFX96 Optical Reaction Module, with reagents	. 363	2112006	Xcluda Aerosol Barrier Pipet Tips, sterile, style B, 960	
345097	CFX96 Optical Reaction Module	. 363	2112011	Xcluda Aerosol Barrier Pipet Tips, sterile, style C, 960	4
45098	CFX Qualification Plate, 96-well format	. 362	2112016	Xcluda Aerosol Barrier Pipet Tips, sterile, style D, 960	
45099	CFX Qualification Plate, 384-well format		2112021	Xcluda Aerosol Barrier Pipet Tips, sterile, style E, 960	
45384	CFX384 Optical Reaction Module, with reagents		2112026	Xcluda Aerosol Barrier Pipet Tips, sterile, style F, 1,000	
45385	CFX384 Optical Reaction Module		2112031	Xcluda Aerosol Barrier Pipet Tips, sterile, style G, 1,000	
48000	USB Cable, for use with C1000 and S1000 thermal cyclers.		2112036	Xcluda Aerosol Barrier Pipet Tips, sterile, style H, 1,000	
49000	Tube Frame, for dual 48- and 96-well reaction modules.		2112000	Xcluda Aerosol Barrier Pipet Tips, sterile, style J, 960	
49001	Tube Frame, for 96-deep well reaction module.		2239014	BR-14 Bulk Tips, natural, 1,000	
49010	Touch-Screen Protector		2239014	BR-28 Bulk Tips, natural, 1,000	
51138	C1000 Touch Thermal Cycler with 384-Well Reaction Module		2239031	BR-31 Bulk Tips, natural, 1,000	
				BR-35 Bulk Tips, vellow, 1.000	
51148	C1000 Touch Thermal Cycler w/Dual 48/48 Fast Reaction Module		2239035		
51196	C1000 Touch Thermal Cycler with 96-Well Fast Reaction Module		2239037	BR-37 Bulk Tips, natural, 1,000	
51197	C1000 Touch Thermal Cycler w/96-Deep Well Reaction Module		2239038	BR-38 Bulk Tips, yellow, graduated, beveled, 1,000	
52138	S1000 Thermal Cycler with 384-Well Reaction Module		2239039	BR-39 Bulk Tips, natural, graduated, beveled, 1,000	
52148	S1000 Thermal Cycler with Dual 48/48 Fast Reaction Module		2239040	BR-40 Bulk Tips, blue, 500	
52196	S1000 Thermal Cycler with 96-Well Fast Reaction Module	. 358	2239041	BR-41 Bulk Tips, natural, 500	
52197	S1000 Thermal Cycler with 96-Deep Well Reaction Module	. 358	2239135	RBR-35 Racked Tips, yellow, 1,000	4
54095	CFX96 Touch Deep Well Real-Time PCR Detection System.	. 364	2239301	MTP-26 Racked Tips, natural, 960	4
54096	CFX96 Touch Deep Well Real-Time PCR Detection System.	. 364	2239303	MTP-35 Racked Tips, yellow, 960	
55195	CFX96 Touch Real-Time PCR Detection System		2239304	MTP-37 Racked Tips, natural, 960	
5196	CFX96 Touch Real-Time PCR Detection System, w/reagents		2239307	MTP-28-S Racked Tips, natural, sterile, 960	
5200	CFX Connect Real-Time PCR Detection System		2239308	MTP-35-S Racked Tips, vellow, sterile, 960	
5201	CFX Connect Real-Time PCR Detection System		2239309	MTP-37-S Racked Tips, natural, sterile, 960	
5484	CFX384 Touch Real-Time PCR Detection System, w/reagents		2239313	MTP-38 Racked Tips, yellow, graduated, beveled, 960	
			2239318	MTP-38-S Racked Tips, yellow, graduated, beveled, 900	
5485	CFX384 Touch Real-Time PCR Detection System				
1096	T100 Thermal Cycler		2239347	TBR-35 Racked Covered Tips, yellow, 1,000	
2000	Tube Support Ring, for T100 thermal cycler		2239350	TBR-40 Racked Covered Tips, blue, 1,000	
3000	Touch-Screen Protector, for T100 thermal cycler		2239351	TBR-41 Racked Covered Tips, natural, 1,000	
3004	Droplet Reader Oil, 2 x 1 L	. 351	2239354	TBR-14 Racked Covered Tips, natural, 1,000	4
3005	Droplet Generation Oil, 10 x 7 ml	. 351	2239390	Titertube Micro Test Tubes, unsterilized, 10 racks of 96	4
3009	DG8 Gaskets for QX100 Droplet Generator	. 351	2239391	Titertube Micro Test Tubes, bulk, 1,000	
3010	ddPCR Supermix for Probes, 5 x 1 ml vials	. 353	2239392	Titertube Plugs, presterilized, 120 strips of 8	4
3023	ddPCR Supermix for Probes (no dUTP), 2 x 1 ml vials		2239393	Titertube Plugs, unsterilized, 120 strips of 8	
3024	ddPCR Supermix for Probes (no dUTP), 5 x 1 ml vials		2239394	Titertube Rack, empty, holds 96 tubes, 10	
3025	ddPCR Supermix for Probes (no dUTP), 5 x 5 ml vials		2239395	Titertube Micro Test Tubes, presterilized, 10 racks of 96	
3026	ddPCR Supermix for Probes, 2 x 1 ml vials		2239430	EZ Micro Test Tubes, 2 ml, natural, 500	
3020			2239430	iQ 96-Well Plates, 25	
	ddPCR Supermix for Probes, 5 x 5 ml vials				
3028	ddPCR Supermix for Probes, 10 x 5 ml vials		2239442	96-Well PCR Plate Sealing Mats, 5	
3040	Illumina MySeq Llbrary Kit		2239480	EZ Micro Test Tubes, 1.5 ml, natural, 500	
3041	Ion Torrent Library Kit.		2239490	Separate Caps, for capless micro test tubes, white, 1,000	
3051	DG8 Cartridge Holder		2239500	Micro Test Tubes, capless, 1.5 ml, natural, graduated, 500	
3500	ddPCR SMN1 Copy Number Determination Kit	. 355	2239501	Micro Test Tubes, standard, 1.5 ml, natural, 500	
3503	ddPCR SMN2 Copy Number Determination Kit	. 356	2239503	EZ Micro Test Tubes, 500 µl, natural, 1,000	
3506	ddPCR KRAS G12/G13 Screening Kit	. 356	2239750	Clear Polypropylene Tubes, 13 x 100 mm, 9 ml, 1,000	
4001	QX200 Droplet Digital PCR System.	. 351	2239751	Natural Polystyrene Tubes, 13 x 100 mm, 9 ml, 1,000	
1002	QX200 Droplet Generator		2239911	Seque/Pro Capillary Pipet Tips, in autoclavable rack, 200	
4003	QX200 Droplet Reader		2239912	Seque/Pro Capillary Pipet Tips, sterile, racked, 200	
4005	Droplet Generation Oil for EvaGreen, 2 x 7 ml.		2239915	Prot/Elec Pipet Tips, bulk, 1,000	
4005	Droplet Generation Oil for EvaGreen, 10 x 7 ml.		2239915	Prot/Elec Pipet Tips, racked, 960	
	Droplet Generator Cartridges and Gaskets		2239910	Prot/Elec Pipet Tips, racked, 1,020.	
1007					
4008	DG8 Cartridges for QX100/QX200 Droplet Generator		2239950	Standard Disposable Polystyrene Cuvettes, 3.5ml, 100	
4021	One-Step RT-ddPCR Kit for Probes, 2 x 1 ml.		2239955	Semimicrovolume Disposable Polystyrene Cuvettes, 1.5 ml, 100	
4022	One-Step RT-ddPCR Kit for Probes, 5 x 1 ml.		2240096	Costar 96-Well Flat Bottom EIA Plates, polystyrene, 100	
4033	QX200 ddPCR EvaGreen Supermix		2240100	Conical Tubes, 1.5 ml, separate O-ring caps, unsterilized, 500	
1034	QX200 ddPCR EvaGreen Supermix		2240110	Conical Tubes, 1.5 ml, installed O-ring caps, sterilized, 500	
4035	QX200 ddPCR EvaGreen Supermix		2240130	Skirted Tubes, 2.0 ml, separate O-ring caps, unsterilized, 500	
1036	QX200 ddPCR EvaGreen Supermix		2240140	Skirted Tubes, 2.0 ml, installed O-ring caps, sterilized, 500	
1037	ddPCR Supermix for Residual DNA Quantification, 2 x 1 ml vials	. 352	2240165	Conical Tubes, 0.5 ml, installed O-ring caps, sterile, 500	
1038	ddPCR Supermix for Residual DNA Quantification, 5 x 1 ml vials	. 352	2240185	Skirted Tubes, 0.5 ml, installed O-ring caps, sterile, 500	
1039	ddPCR Supermix for Residual DNA Quantification, 5 x 5 ml vials		2244872	Sterilized Reagent Reservoirs, polystyrene, 200	
1040	ddPCR Supermix for Residual DNA Quantification, 10 x 5 ml vials		30034376	Bio-Plex Pro Wash Station	
100	QX200 AutoDG Droplet Digital PCR System.		3450001	Criterion Tris-HCl Gel. 5%. 12+2-well. 45 ul	
4101	Automated Droplet Eightan on Oystan.		3450002	Criterion Tris-HCl Gel, 5%, 18-well, 30 µl	
4108				Criterion Tris-HCl Gel, 5%, 76-well, 30 µl	
	DG32 Automated Droplet Generator Cartridges, 1 pkg of 30		3450003		
4109	DG32 Automated Droplet Generator Cartridges, 1 pkg of 60		3450005	Criterion Tris-HCI Gel, 7.5%, 12+2-well, 45 µl	
4110	Automated Droplet Generation Oil for Probes.		3450006	Criterion Tris-HCl Gel, 7.5%, 18-well, 30 µl.	
4112	Automated Droplet Generation Oil for EvaGreen.		3450007	Criterion Tris-HCl Gel, 7.5%, 26-well, 15 µl	
4120	Pipet Tips for AutoDG System, 1 pkg of 20		3450008	Criterion Tris-HCl Gel, 7.5%, prep+2-well, 800 µl	
4121	Pipet Tips for AutoDG System, 1 pkg of 40	. 351	3450009	Criterion Tris-HCl Gel, 10%, 12+2-well, 45 µl	
1121		. 351		Criterion Tris-HCl Gel, 10%, 18-well, 30 µl	

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450011	Criterion Tris-HCl Gel, 10%, 26-well, 15 µl		3450107	Criterion Tris-HCl Gel, 10–20%, 11 cm IPG+1-well	
450012	Criterion Tris-HCl Gel, 10%, prep+2-well, 800 µl		3450111	Criterion XT Bis-Tris Gel, 10%, 12+2-well, 45 µl	
450014	Criterion Tris-HCl Gel, 12.5%, 12+2-well, 45 µl		3450112	Criterion XT Bis-Tris Gel, 10%, 18-well, 30 µl	
450015	Criterion Tris-HCl Gel, 12.5%, 18-well, 30 µl		3450113	Criterion XT Bis-Tris Gel, 10%, 26-well, 15 µl	
450016	Criterion Tris-HCl Gel, 12.5%, 26-well, 15 µl		3450115	Criterion XT Bis-Tris Gel, 10%, 11 cm IPG+1-well	
150017	Criterion Tris-HCl Gel, 12.5%, prep+2-well, 800 µl		3450117	Criterion XT Bis-Tris Gel, 12%, 12+2-well, 45 µl	
450019	Criterion Tris-HCl Gel, 15%, 12+2-well, 45 µl		3450118	Criterion XT Bis-Tris Gel, 12%, 18-well, 30 µl	
450020	Criterion Tris-HCl Gel, 15%, 18-well, 30 µl		3450119	Criterion XT Bis-Tris Gel, 12%, 26-well, 15 µl	
450021	Criterion Tris-HCl Gel, 15%, 26-well, 15 µl		3450120	Criterion XT Bis-Tris Gel, 12%, prep+2-well, 800 µl	
450022	Criterion Tris-HCl Gel, 15%, prep+2-well, 800 µl		3450121	Criterion XT Bis-Tris Gel, 12%, 11 cm IPG+1-well.	
150023	Criterion Tris-HCl Gel, 18%, 12+2-well, 45 µl		3450123	Criterion XT Bis-Tris Gel, 4–12%, 12+2-well, 45 µl	
450024	Criterion Tris-HCl Gel, 18%, 18-well, 30 µl		3450124	Criterion XT Bis-Tris Gel, 4–12%, 18-well, 30 µl	
150025	Criterion Tris-HCl Gel, 18%, 26-well, 15 µl		3450125	Criterion XT Bis-Tris Gel, 4–12%, 26-well, 15 µl	
50026	Criterion Tris-HCl Gel, 18%, prep+2-well, 800 µl		3450126	Criterion XT Bis-Tris Gel, 4–12%, prep+2-well, 800 µl.	
50027	Criterion Tris-HCl Gel, 4–15%, 12+2-well, 45 µl		3450127	Criterion XT Bis-Tris Gel, 4–12%, 11 cm IPG+1-well.	
50028	Criterion Tris-HCl Gel, 4–15%, 18-well, 30 µl		3450129	Criterion XT Tris-Acetate Gel, 3–8%, 12+2-well, 45 µl	
50029	Criterion Tris-HCl Gel, 4–15%, 26-well, 15 µl		3450130	Criterion XT Tris-Acetate Gel, 3–8%, 18-well, 30 µl	
150030	Criterion Tris-HCl Gel, 4–15%, prep+2-well, 800 µl.		3450131	Criterion XT Tris-Acetate Gel, 3–8%, 26-well, 15 µl	
50032	Criterion Tris-HCl Gel, 4–20%, 12+2-well, 45 µl		3450133	Criterion XT Tris-Acetate Gel, 3–8%, 11 cm IPG+1-well	
50033	Criterion Tris-HCl Gel, 4–20%, 18-well, 30 µl		3450135	Criterion XT Tris-Acetate Gel, 7%, 12+2-well, 45 µl.	
50034	Criterion Tris-HCl Gel, 4–20%, 26-well, 15 µl		3450136	Criterion XT Tris-Acetate Gel, 7%, 18-well, 30 µl.	
50034 50035	Criterion Tris-HCl Gel, 4–20%, 26-well, 15 µl		3450136	Criterion XT Tris-Acetate Gel, 7%, 10-well, 30 µl	
50035 50037	Criterion Tris-HCl Gel, 8–16%, 12+2-well, 800 µl		3450412	Criterion Stain Free Gel, Tris-HCl, 12-well, 4–20%	
	Criterion Tris-HCl Gel, 8–16%, 12+2-Well, 45 µl		3450412 3450418		
50038			3450418 3450426	Criterion Stain Free Gel, Tris-HCl, 18-well, 4–20% Criterion Stain Free Gel, Tris-HCl, 26-well, 4–20%	
50039	Criterion Tris-HCl Gel, 8–16%, 26-well, 15 µl				
50040	Criterion Tris-HCl Gel, 8–16%, prep+2-well, 800 µl.		3451012	Criterion Stain Free Gel, Tris-HCl, 12+2-well, 10%	
50042	Criterion Tris-HCl Gel, 10–20%, 12+2-well, 45 µl		3451018	Criterion Stain Free Gel, Tris-HCl, 18+2-well, 10%	
50043	Criterion Tris-HCl Gel, 10–20%, 18-well, 30 µl		3458161	Criterion Stain Free Gel, Tris-HCl, IPG+1-well, 8–16%	
50044	Criterion Tris-HCl Gel, 10–20%, 26-well, 15 µl		3458162	Criterion Stain Free Gel, Tris-HCl, 12-well, 8–16%	
50045	Criterion Tris-HCl Gel, 10–20%, prep+2-well, 800 µl		3458166	Criterion Stain Free Gel, Tris-HCl, 26-well, 8–16%	
50047	Criterion TBE Gel, 5%, 12+2-well, 45 µl		3459901	Criterion Empty Cassettes, 1.0 mm, 12+2-well, 10	
50048	Criterion TBE Gel, 5%, 18-well, 30 µl		3459902	Criterion Empty Cassettes, 1.0 mm, 18-well, 10	
50049	Criterion TBE Gel, 5%, 26-well, 15 µl		3459903	Criterion Empty Cassettes, 1.0 mm, 26-well, 10	
50051	Criterion TBE Gel, 10%, 12+2-well, 45 µl		3459904	Criterion Empty Cassettes, 1.0 mm, prep+2-well, 10	
50052	Criterion TBE Gel, 10%, 18-well, 30 µl		3459906	Criterion Empty Cassettes, 1.0 mm, IPG+1-well, 10	
50053	Criterion TBE Gel, 10%, 26-well, 15 µl		3459920	Criterion Staining/Blotting Trays, with lids, 12	
50055	Criterion TBE Gel, 15%, 12+2-well, 45 µl		3459921	Criterion Staining/Blotting Trays, with lids, 2	
50056	Criterion TBE Gel, 15%, 18-well, 30 µl		3459949	Criterion Tris-HCl Gel, 10.5–14%, 12+2-well, 45 µl	
50057	Criterion TBE Gel, 15%, 26-well, 15 µl		3459950	Criterion Tris-HCl Gel, 10.5–14%, 18-well, 30 µl	
50059	Criterion TBE Gel, 4–20%, 12+2-well, 45 µl		3459951	Criterion Tris-HCl Gel, 10.5–14%, 26-well, 15 µl	
50060	Criterion TBE Gel, 4–20%, 18-well, 30 µl		4110001	Criterion Precast Gel Application Guide.	
50061	Criterion TBE Gel, 4–20%, 26-well, 15 µl		444-9998	Bio-Rex RG 501-X8 Resin, 1 ft ³ , 20–50 dry mesh	
50063	Criterion Tris-Tricine Gel, 16.5%, 12+2-well, 45 µl		4449999	Bio-Rex RG 501-X8 Resin, 20–50 mesh, 500 g	
50064	Criterion Tris-Tricine Gel, 16.5%, 18-well, 30 µl.		4560000	Mini-PROTEAN Precast Gel Opening Lever	
50065	Criterion Tris-Tricine Gel, 16.5%, 26-well, 15 µl.		4560001	Mini-PROTEAN Empty Cassette, IPG well	
50066	Criterion Tris-Tricine Gel, 16.5%, prep+2-well, 800 µl		4560003	Mini-PROTEAN Empty Cassette, 10-well, 30 µl	
50066 50067					
	Criterion Tris-Tricine Gel, 10–20%, 12+2-well, 45 µl		4560005	Mini-PROTEAN Empty Cassette, 10-well, 50 µl	
50068	Criterion Tris-Tricine Gel, 10–20%, 18-well, 30 µl		4560006	Mini-PROTEAN Empty Cassette, 12-well	
50069	Criterion Tris-Tricine Gel, 10–20%, 26-well, 15 µl		4560011	Mini-PROTEAN Combs, IPG well	
50071	Criterion IEF Gel, pH 3–10, 12+2-well, 45 µl		4560013	Mini-PROTEAN Combs, 10-well, 30 µl	
50072	Criterion IEF Gel, pH 3–10, 18-well, 30 µl		4560015	Mini-PROTEAN Combs, 12-well	
50073	Criterion IEF Gel, pH 3–10, 26-well, 15 µl		4560016	Mini-PROTEAN Combs, 15-well	
50076	Criterion IEF Gel, pH 5–8, 18-well, 30 µl		4561021	Mini-PROTEAN TGX Gels, 7.5%, 7 cm IPG strip	
50079	Criterion Zymogram Gel with Gelatin, 10%, 12+2-well, 45 µl		4561023	Mini-PROTEAN TGX Gels, 7.5%, 10-well, 30 µl	
50080	Criterion Zymogram Gel with Gelatin, 10%, 18-well, 30 µl		4561024	Mini-PROTEAN TGX Gels, 7.5%, 10-well, 50 µl	
50081	Criterion Zymogram Gel with Gelatin, 10%, 26-well, 15 µl		4561025	Mini-PROTEAN TGX Gels, 7.5%, 12-well, 20 µl	
50082	Criterion Zymogram Gel with Casein, 12.5%, 12+2-well, 45 µl		4561026	Mini-PROTEAN TGX Gels, 7.5%, 15-well, 15 µl	
50083	Criterion Zymogram Gel with Casein, 12.5%, 18-well, 30 µl		4561029	Mini-PROTEAN TGX Gels, 7.5%, 8+1-well	
50084	Criterion Zymogram Gel with Casein, 12.5%, 26-well, 15 µl		4561031	Mini-PROTEAN TGX Gels, 10%, 7 cm IPG strip	
50086	Criterion TBE-Urea Gel, 5%, 18-well, 30 µl		4561033	Mini-PROTEAN TGX Gels, 10%, 10-well, 30 µl	
60088	Criterion TBE-Urea Gel, 10%, 12+2-well, 45 µl		4561034	Mini-PROTEAN TGX Gels, 10%, 10-well, 50 µl	
60089	Criterion TBE-Urea Gel, 10%, 18-well, 30 µl		4561035	Mini-PROTEAN TGX Gels, 10%, 12-well, 20 µl.	
50090	Criterion TBE-Urea Gel, 10%, 26-well, 15 µl		4561036	Mini-PROTEAN TGX Gels, 10%, 15-well, 15 µl	
50091	Criterion TBE-Urea Gel, 15%, 12+2-well, 45 µl		4561039	Mini-PROTEAN TGX Gels, 10%, 8+1-well	
50092	Criterion TBE-Urea Gel, 15%, 18-well, 30 µl		4561041	Mini-PROTEAN TGX Gels, 12%, 7 cm IPG strip	
50093	Criterion TBE-Urea Gel, 15%, 26-well, 15 µl		4561043	Mini-PROTEAN TGX Gels, 12%, 10-well, 30 µl	
50101	Criterion Tris-HCl Gel, 10%, 11 cm IPG+1-well.		4561044	Mini-PROTEAN TGX Gels, 12%, 10 well, 50 µl	
50102	Criterion Tris-HCl Gel, 12.5%, 11 cm IPG+1-well		4561045	Mini-PROTEAN TGX Gels, 12%, 10-well, 30 µl	
50102 50103	Criterion Tris-HCI Gel, 12.5%, 11 cm IPG+1-well		4561045 4561046	Mini-PROTEAN TGX Gels, 12%, 12-well, 20 µl	
50103 50104	Criterion Tris-HCl Gel, 4–20%, 11 cm IPG+1-well.		4561046 4561049	Mini-PROTEAN TGX Gels, 12%, 15-well, 15 µl Mini-PROTEAN TGX Gels, 12%, 8+1-well	
JU 104	Criterion Tris-HCl Gel, 8–16%, 11 cm IPG+1-well.		4561049 4561081	Mini-PROTEAN TGX Gels, 12%, 8+1-weil Mini-PROTEAN TGX Gels, 4–15%, 7 cm IPG strip	
50105					

Cat. #	Description Pa	age <u>Cat.</u> #	Description Pag
1561084	Mini-PROTEAN TGX Gels, 4–15%, 10-well, 50 µl.	170 456809	5 Mini-PROTEAN TGX Stain-Free Gels, 4–20%, 12-well, 20 μl
561085	Mini-PROTEAN TGX Gels, 4–15%, 12-well, 20 µl.	170 456809	Mini-PROTEAN TGX Stain-Free Gels, 4–20%, 15-well, 15 µl
561086	Mini-PROTEAN TGX Gels, 4–15%, 15-well, 15 µl.	170 456809	Mini-PROTEAN TGX Stain-Free Gels, 4–20%, 8+1-well
561089	Mini-PROTEAN TGX Gels, 4–15%, 8+1-well		Mini-PROTEAN TGX Stain-Free Gels, 8–16%, IPG-well
561091	Mini-PROTEAN TGX Gels, 4–20%, 7 cm IPG strip		
561093	Mini-PROTEAN TGX Gels, 4–20%, 10-well, 30 µl.		
561094	Mini-PROTEAN TGX Gels, 4–20%, 10-well, 50 µl		
1561095	Mini-PROTEAN TGX Gels, 4–20%, 12-well, 20 µl		
1561096	Mini-PROTEAN TGX Gels, 4–20%, 15-well, 15 µl.		
4561099	Mini-PROTEAN TGX Gels, 4–20%, 8+1-well		, ,
4561101	Mini-PROTEAN TGX Gels, 8–16%. IPG-well.		
4561103	Mini-PROTEAN TGX Gels, 8–16%, 10-well, 30 µl.		
4561103	Mini-PROTEAN TGX Gels, 8–16%, 10-well, 50 µl.		
4561105	Mini-PROTEAN TGX Gels, 8–16%, 12-well, 20 µl.		
4561105 4561106			
	Mini-PROTEAN TGX Gels, 8–16%, 15-well, 15 µl		· · · · · · · · · · · · · · · · · · ·
4561109	Mini-PROTEAN TGX Gels, 8–16%, 8+1-well		
1563063	Mini-PROTEAN Tris-Tricine Gels, 16.5%, 10-well, 30 µl		
1563064	Mini-PROTEAN Tris-Tricine Gels, 16.5%, 10-well, 50 µl		
1563065	Mini-PROTEAN Tris-Tricine Gels, 16.5%, 12-well, 20 µl		
1563066	Mini-PROTEAN Tris-Tricine Gels, 16.5%, 15-well, 15 µl		
4563113	Mini-PROTEAN Tris-Tricine Gels, 10–20%, 10-well, 30 µl		
4563114	Mini-PROTEAN Tris-Tricine Gels, 10–20%, 10-well, 50 µl		
4563115	Mini-PROTEAN Tris-Tricine Gels, 10–20%, 12-well, 20 µl		
4563116	Mini-PROTEAN Tris-Tricine Gels, 10–20%, 15-well, 15 µl	170 500000	5 Protein Standard I, bovine γ-globulin2
4565013	Mini-PROTEAN TBE Gels, 5%, 10-well, 30 µl	170 500000	Bio-Rad Protein Assay Dye Reagent Concentrate, 450 ml
4565014	Mini-PROTEAN TBE Gels, 5%, 10-well, 50 µl	170 500000	Protein Standard II, BSA 2
4565015	Mini-PROTEAN TBE Gels, 5%, 12-well, 20 µl	170 500011	DC Protein Assay Kit 1 2
4565016	Mini-PROTEAN TBE Gels, 5%, 15-well, 15 µl	170 500011	2 DC Protein Assay Kit 2
4565033	Mini-PROTEAN TBE Gels, 10%, 10-well, 30 µl.	170 500011	B Protein Assay Reagent A
4565034	Mini-PROTEAN TBE Gels, 10%, 10-well, 50 µl	170 500011-	Protein Assay Reagent B
4565035	Mini-PROTEAN TBE Gels, 10%, 12-well, 20 µl.		
4565036	Mini-PROTEAN TBE Gels, 10%, 15-well, 15 µl.		, ,
4565053	Mini-PROTEAN TBE Gels, 15%, 10-well, 30 µl.		
4565054	Mini-PROTEAN TBE Gels, 15%, 10-well, 50 µl.		0
4565055	Mini-PROTEAN TBE Gels, 15%, 12-well, 20 µl		
4565056	Mini-PROTEAN TBE Gels, 15%, 15-well, 15 μl		
4565093	Mini-PROTEAN TBE Gels, 4–20%, 10-well, 30 μl		
4565094	Mini-PROTEAN TBE Gels, 4–20%, 10-well, 50 µl.		
4565095	Mini-PROTEAN TBE Gels, 4–20%, 12-well, 20 μl		
4565096	Mini-PROTEAN TBE Gels, 4–20%, 15-well, 15 µl		
4566033	Mini-PROTEAN TBE-Urea Gels, 10%, 10-well, 30 µl		
4566036	Mini-PROTEAN TBE-Urea Gels, 10%, 15-well, 15 µl		
4566053	Mini-PROTEAN TBE-Urea Gels, 15%, 10-well, 30 µl		
4566055	Mini-PROTEAN TBE-Urea Gels, 15%, 12-well, 20 µl	170 500020	Quick Start BSA Standard
4566056	Mini-PROTEAN TBE-Urea Gels, 15%, 15-well, 15 µl	170 500020	7 Quick Start BSA Standard Set 2
4568021	Mini-PROTEAN TGX Stain-Free Gels, 7.5%, IPG-well	170 500020	3 Quick Start Bovine γ-Globulin Standard
4568023	Mini-PROTEAN TGX Stain-Free Gels, 7.5%, 10-well, 30 µl	170 500020	Quick Start Bovine γ-Globulin Standard Set
4568024	Mini-PROTEAN TGX Stain-Free Gels, 7.5%, 10-well, 50 µl	170 567102	3 Criterion TGX Gels, 7.5%, 12+2-well
4568025	Mini-PROTEAN TGX Stain-Free Gels, 7.5%, 12-well, 20 µl	170 567102	Criterion TGX Gels, 7.5%, 18-well
4568026	Mini-PROTEAN TGX Stain-Free Gels, 7.5%, 15-well, 15 µl	170 567102	5 Criterion TGX Gels, 7.5%, 26-well
4568029	Mini-PROTEAN TGX Stain-Free Gels, 7.5%, 8+1-well	170 567103	3 Criterion TGX Gels, 10%, 12+2-well
4568031	Mini-PROTEAN TGX Stain-Free Gels, 10%, IPG-well		
4568033	Mini-PROTEAN TGX Stain-Free Gels, 10%, 10-well, 30 µl		
4568034	Mini-PROTEAN TGX Stain-Free Gels, 10%, 10-well, 50 µl.		
4568035	Mini-PROTEAN TGX Stain-Free Gels, 10%, 10-well, 30 µl		
4568036	Mini-PROTEAN TGX Stain-Free Gels, 10%, 12-weil, 20 µ.		
4568039	Mini-PROTEAN TGX Stain-Free Gels, 10%, 15-weil, 15 µr.		
4568039 4568041	Mini-PROTEAN TGX Stain-Free Gels, 10%, 8+1-weil.		
1568043	Mini-PROTEAN TGX Stain-Free Gels, 12%, 10-well, 30 µl		
1568044	Mini-PROTEAN TGX Stain-Free Gels, 12%, 10-well, 50 µl.		
1568045	Mini-PROTEAN TGX Stain-Free Gels, 12%, 12-well, 20 µl		
1568046	Mini-PROTEAN TGX Stain-Free Gels, 12%, 15-well, 15 µl		
1568049	Mini-PROTEAN TGX Stain-Free Gels, 12%, 8+1-well.		
4568081	Mini-PROTEAN TGX Stain-Free Gels, 4–15%, IPG-well		
4568083	Mini-PROTEAN TGX Stain-Free Gels, 4–15%, 10-well, 30 µl	170 567108	4 Criterion TGX Gels, 4–15%, 18-well
4568084	Mini-PROTEAN TGX Stain-Free Gels, 4–15%, 10-well, 50 µl	170 567108	5 Criterion TGX Gels, 4–15%, 26-well
1568085	Mini-PROTEAN TGX Stain-Free Gels, 4–15%, 12-well, 20 µl	170 567109	Criterion TGX Gels, 4–20%, IPG+1-well
568086	Mini-PROTEAN TGX Stain-Free Gels, 4–15%, 15-well, 15 µl		
1568089	Mini-PROTEAN TGX Stain-Free Gels, 4–15%, 8+1-well.		
1568091	Mini-PROTEAN TGX Stain-Free Gels, 4–20%, IPG-well		
1568093	Mini-PROTEAN TGX Stain-Free Gels, 4–20%, 10-well, 30 µl		

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671102	Criterion TGX Gels, 8–16%, prep+2-well	180	6200236	Profinia GST Purification Kit, 5 ml	
671103	Criterion TGX Gels, 8–16%, 12+2-well	180	6200238	Profinia Desalting Purification Kit, 50 ml	
671104	Criterion TGX Gels, 8–16%, 18-well		6200239	Native IMAC Buffer Kit.	7
671105	Criterion TGX Gels, 8–16%, 26-well		6200240	GST Buffer Kit	7
671111	Criterion TGX Gels, 10–20%, IPG+1-well		6200241	Native IMAC Purification Kit	
671112	Criterion TGX Gels, 10–20%, prep+2-well		6200242	Native IMAC Purification Kit	
671113	Criterion TGX Gels, 10–20%, 12+2-well		6200243	GST Purification Kit	
671114	Criterion TGX Gels, 10–20%, 18-well		6200244	GST Purification Kit	
671115	Criterion TGX Gels, 10–20%, 26-well		7007030	Experion Priming Station	
671121	Criterion TGX Gels, Any kD, IPG+1-well		7007031	Experion Priming Seals, 2	
671122	Criterion TGX Gels, Any kD, prep+2-well		7007043	Experion Vortex Station II, 100–240 V.	
671123	Criterion TGX Gels, Any kD, 12+2-well		7007050	Experion Software, version 3.	
671120	Criterion TGX Gels, Any kD, 18-well		7007051	Experion Validation Kit.	
671125	Criterion TGX Gels, Any kD, 26-well		7007052	Experion Software, Security Edition.	
678023	Criterion TGX Stain-Free Gels, 7.5%, 12+2-well		7007101	Experion Pro260 Analysis Kit for 10 Chips	
678024	Criterion TGX Stain-Free Gels, 7.5%, 18-well		7007102	Experion Pro260 Analysis Kit for 25 Chips	
578024 578025	Criterion TGX Stain-Free Gels, 7.5%, 16-Weil		7007102	Experion RNA StdSens Analysis Kit for 10 Chips	
678033			7007103	Experior RNA StdSens Analysis Kit for 25 Chips	
	Criterion TGX Stain-Free Gels, 10%, 12+2-well		7007104		
678034	Criterion TGX Stain-Free Gels, 10%, 18-well.			Experion RNA HighSens Analysis Kit for 10 Chips	
678035	Criterion TGX Stain-Free Gels, 10%, 26-well.		7007106	Experion RNA HighSens Analysis Kit for 25 Chips	
678043	Criterion TGX Stain-Free Gels, 12%, 12+2-well		7007107	Experion DNA 1K Analysis Kit for 10 Chips.	
678044	Criterion TGX Stain-Free Gels, 12%, 18-well.		7007108	Experion DNA 12K Analysis Kit for 10 Chips.	
678045	Criterion TGX Stain-Free Gels, 12%, 26-well.		7007110	Experion Pro260 Starter Kit.	
678071	Criterion TGX Stain-Free Gels, 18%, IPG+1-well		7007111	Experion RNA StdSens Starter Kit	
678072	Criterion TGX Stain-Free Gels, 18%, prep+2-well		7007112	Experion Mouse Liver Total RNA Standard	
678073	Criterion TGX Stain-Free Gels, 18%, 12+2-well		7007151	Experion Pro260 Chips, 10	
678074	Criterion TGX Stain-Free Gels, 18%, 18-well.		7007152	Experion Pro260 Reagents and Supplies, for 10 chips	
678075	Criterion TGX Stain-Free Gels, 18%, 26-well.		7007153	Experion RNA StdSens Chips, 10	
678081	Criterion TGX Stain-Free Gels, 4–15%, IPG+1-well		7007154	Experion RNA StdSens Reagents and Supplies, for 10 chips	
678082	Criterion TGX Stain-Free Gels, 4–15%, prep+2-well		7007155	Experion RNA HighSens Chips, 10	2
678083	Criterion TGX Stain-Free Gels, 4–15%, 12+2-well		7007156	Experion RNA HighSens Reagents and Supplies, for 10 chips	
678084	Criterion TGX Stain-Free Gels, 4–15%, 18-well.		7007163	Experion DNA Chips, 10	2
678085	Criterion TGX Stain-Free Gels, 4–15%, 26-well.		7007164	Experion DNA 1K Reagents and Supplies, for 10 chips	27
678091	Criterion TGX Stain-Free Gels, 4–20%, IPG+1-well.		7007165	Experion DNA 12K Reagents and Supplies, for 10 chips	2
678092	Criterion TGX Stain-Free Gels, 4–20%, prep+2-well		7007251	Experion Cleaning Chips, 10	2
678093	Criterion TGX Stain-Free Gels, 4–20%, 12+2-well		7007252	Experion Electrode Cleaner, 250 ml.	
678094	Criterion TGX Stain-Free Gels, 4–20%, 18-well.		7007253	Experion DEPC-Treated Water, 100 ml	
678095	Criterion TGX Stain-Free Gels, 4–20%, 26-well.		7007254	Experion Spin Filters, 10	
678101	Criterion TGX Stain-Free Gels, 8–16%, IPG+1-well.		7007255	Experion RNA Ladder, 20 µl	
678102	Criterion TGX Stain-Free Gels, 8–16%, prep+2-well.		7007256	Experion Pro260 Ladder, 60 µl	
678103	Criterion TGX Stain-Free Gels, 8–16%, 12+2-well		7007261	Experion DNA 1K Ladder, 20 µl.	
678104	Criterion TGX Stain-Free Gels, 8–16%, 18-well.		7007262	Experion DNA 12K Ladder, 20 µl.	
678105	Criterion TGX Stain-Free Gels, 8–16%, 26-well.		7007262	Cleaning Swabs, lint free, for Experion system electrode cleaning	
678105	Criterion TGX Stain-Free Gels, 10–20%, IPG+1-well		7007204	Experion Pro260 Sample Buffer, 400 µl, 2 vials	
678112					
	Criterion TGX Stain-Free Gels, 10–20%, prep+2-well.		7007307 7007308	Experion DNA 1K Analysis Kit for 30 Chips	
678113	Criterion TGX Stain-Free Gels, 10–20%, 12+2-well			Experion DNA 12K Analysis Kit for 30 Chips.	
678114	Criterion TGX Stain-Free Gels, 10–20%, 18-well.		7200001	UNO Q1 Column, 7 x 35 mm	
678115	Criterion TGX Stain-Free Gels, 10–20%, 26-well.		7200003	UNO Q6 Column, 12 x 53 mm	
678121	Criterion TGX Stain-Free Gels, Any kD, IPG+1-well		7200005	UNO Q12 Column, 15 x 68 mm	
678122	Criterion TGX Stain-Free Gels, Any kD, prep+2-well		7200009	UNO Q Polishing Column, 4.6 x 10 mm	
678123	Criterion TGX Stain-Free Gels, Any kD, 12+2-well		7200011	UNO Q1R Column, 7 x 35 mm	
678124	Criterion TGX Stain-Free Gels, Any kD, 18-well.		7200013	UNO Q6R Column, 12 x 53 mm	
678125	Criterion TGX Stain-Free Gels, Any kD, 26-well.		7200015	UNO Q12R Column, 15 x 68 mm	
200205	2x Native IMAC Lysis/Bind Buffer, 125 ml	77	7200021	UNO S1 Column, 7 x 35 mm	
200206	2x Native IMAC Equilibration/Wash Buffer 1, 125 ml		7200023	UNO S6 Column, 12 x 53 mm	
200207	2x Native IMAC Wash Buffer 2, 100 ml		7200025	UNO S12 Column, 15 x 68 mm	
200208	2x Native IMAC Elution Buffer, 100 ml.		7200029	UNO S Polishing Column	1
200213	2x GST Lysis/Bind Buffer, 100 ml		7200031	UNO SR1 Column	1(
200215	2x GST Elution Buffer, 100 ml		7200033	UNO S6R Column, 12 x 53 mm	10
200216	5x Desalting Buffer, 200 ml		7200035	UNO S12R Column, 15 x 68 mm	10
200217	2x Cleaning Solution, 125 ml.		7310003	Econo-Column Funnels, 250 ml, 5	
200218	4x Cleaning Solution 2, 125 ml		7311550	Poly-Prep Chromatography Columns, empty, 50	
200219	2x Storage Solution. 200 ml		7311553	Poly-Prep Chromatography Columns, empty, 1,000	
200221	Profinia Native IMAC Buffer Kit		7311555	Poly-Prep Column Stack Cap, 50.	
200221	Profinia GST Buffer Kit.		7311660	End Caps, for Micro Bio-Spin columns, 1,000	
200223	Desalting and Cartridge Cleaning Buffer Kit.		7316211	Poly-Prep Columns, AG 1-X8 resin, 100–200 mesh, 50.	
200225	Profinia Native IMAC Purification Kit, 1 ml		7316212	Poly-Prep Columns, AG 1-X8 resin, 200–400 mesh, 50.	
200226	Profinia GST Purification Kit, 1 ml		7316213	Poly-Prep Columns, AG 50W-X8 resin, 100–200 mesh, 50	
200228	Profinia Desalting Purification Kit, 10 ml		7316214	Poly-Prep Columns, AG 50W-X8 resin, 200–400 mesh, 50	
200229	Profinia Native IMAC Starter Kit.		7316221	Poly-Prep Columns, AG 1-X8 resin, formate, 100–200 mesh, 50	
6200230	Profinia GST Starter Kit		7317005	Poly Column Rack, 20-place	1(
6200235	Profinia Native IMAC Purification Kit, 5 ml.		7318120	Model 2110 Fraction Collector, 220/240 V	

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7318122	Model 2110 Fraction Collector, 110/120 V	131	7319032	Econo Gradient Pump Combo 1, 220/240 V	1
318130	Carousel, 80-tube capacity	131	7319034	Econo Gradient Pump Combo 2, 100/120 V	1
318131	Replacement Drop Formers, 2		7319036	Econo Gradient Pump Combo 2, 220/240 V	1
18135	Micro Tube Adaptor, 80-microtube capacity		7319038	Econo Gradient Pump Combo 3, 100/120 V	1,
18136	Instrument Dust Cover		7319040	Econo Gradient Pump Combo 3, 220/240 V	
18155	Conductivity Flow Cell		7320111	Luer to M6 Adaptor Fittings Kit	
18160	Model EM-1 Econo UV Monitor, 100/120 V		7320112	Luer to 10-32 Adaptor Fittings Kit	
18162	Model EM-1 Econo UV Monitor, 220/240 V		7320113	Luer to BioLogic System Fittings Kit	
18165	UV Flow Cell		7321010	Econo-Pac Chromatography Columns, empty, 50	
318166	Lamp, for BioLogic LP system		7321011	Econo-Pac Chromatography Columns, empty, 500	
318167	Filter Assembly		7322010	Econo-Pac 10DG Desalting Columns, 30.	
318207	PharMed Tubing, 0.8 mm ID/1.0 mm wall, 10 m		7322020	Econo-Pac Protein A Kit, 3 buffers	
318208	PharMed Tubing, 1.6 mm ID/1.0 mm wall, 10 m		7322022	Econo-Pac Protein A Columns, 5	
318209	PharMed Tubing, 3.2 mm ID/1.0 mm wall, 10 m		7322026	Econo-Pac Serum IgG Purification Columns, 5	
318210	Silicone Tubing, 0.8 mm ID/0.8 mm wall, 10 m	136	7322027	Econo-Pac Serum IgG Purification Kit	1
318211	Silicone Tubing, 1.6 mm ID/0.8 mm wall, 10 m	136	7323245	Luer Tubing Adaptors, 5	1
318212	Silicone Tubing, 3.2 mm ID/0.8 mm wall, 10 m	136	7324100	Bio-Scale Mini UNOsphere Q Cartridges, 5 x 1 ml	
318213	Tygon Tubing, 0.51 mm ID/0.8 mm wall, 10 m	136	7324102	Bio-Scale Mini UNOsphere Q Cartridge, 1 x 5 ml	
318214	Tygon Tubing, 0.8 mm ID/0.8 mm wall, 10 m		7324104	Bio-Scale Mini UNOsphere Q Cartridges, 5 x 5 ml	
318215	Tygon Tubing, 1.6 mm ID/0.8 mm wall, 10 m		7324110	Bio-Scale Mini UNOsphere S Cartridges, 5 x 1 ml	
318220	Low-Pressure System Fittings Kit		7324112	Bio-Scale Mini UNOsphere S Cartridge, 1 x 5 ml	
318221	0.8 mm Barb to Female Luer Fittings, 25		7324112	Bio-Scale Mini UNOsphere S Cartridges, 5 x 5 ml	
318221	1.6 mm Barb to Female Luer Fittings, 25		7324114		
				Bio-Scale Mini Macro-Prep High Q Cartridges, 5 x 1 ml	
318223	3.2 mm Barb to Female Luer Fittings, 25		7324122	Bio-Scale Mini Macro-Prep High Q Cartridge, 1 x 5 ml.	
318224	0.8 mm Barb to Male Luer Fittings, 25		7324124	Bio-Scale Mini Macro-Prep High Q Cartridges, 5 x 5 ml	
318225	1.6 mm Barb to Male Luer Fittings, 25		7324130	Bio-Scale Mini Macro-Prep High S Cartridges, 5 x 1 ml	
318226	3.2 mm Barb to Male Luer Fittings, 25		7324132	Bio-Scale Mini Macro-Prep High S Cartridge, 1 x 5 ml	
318228	Female Luer to Female Luer Fittings, 10	138	7324134	Bio-Scale Mini Macro-Prep High S Cartridges, 5 x 5 ml	
318229	Female Luer T-Connectors, 10	138	7324140	Bio-Scale Mini Macro-Prep DEAE Cartridges, 5 x 1 ml	
318230	Male Luer to Male Luer Fittings, 10	138	7324142	Bio-Scale Mini Macro-Prep DEAE Cartridge, 1 x 5 ml	
318232	Female Luer Plugs, 25	104	7324144	Bio-Scale Mini Macro-Prep DEAE Cartridges, 5 x 5 ml	
318233	Male Luer Plugs, 25		7324200	Bio-Scale Mini UNOsphere SUPrA Cartridge, 1 x 1 ml	
318240	Pump Tubing Kit, 0.8 mm ID silicone.		7324201	Bio-Scale Mini UNOsphere SUPrA Cartridges, 5 x 1 ml	
318241	Pump Tubing Kit, 1.6 mm ID silicone.		7324202	Bio-Scale Mini UNOsphere SUPrA Cartridge, 1 x 5 ml	
318242	Pump Tubing Kit, 3.2 mm ID silicone.		7324322	Bio-Scale Mini CHT Type I Cartridge, 1 x 5 ml.	
318247	Pump Tubing Kit, 0.8 mm ID PharMed		7324324	Bio-Scale Mini CHT Type I Cartridges, 5 x 5 ml.	
318248	Pump Tubing Kit, 1.6 mm ID PharMed		7324332	Bio-Scale Mini CHT Type II Cartridge, 1 x 5 ml	
318249	Pump Tubing Kit, 3.2 mm ID PharMed		7324334	Bio-Scale Mini CHT Type II Cartridges, 5 x 5 ml	
318261	System Cable 1		7324405	Bio-Scale Mini CFT Type II Cartridge, 1 x 5 ml	
318262	System Cable 2		7324406	Bio-Scale Mini CFT Type II Cartridges, 5 x 5 ml	
318263	System Cable 3	133	7324407	Bio-Scale Mini Cartridge Apatite Purification Kit	
318264	System Cable 4	134	7324408	Bio-Scale Mini Cartridge mAb Purification Kit	
318265	System Cable 5		7324420	Bio-Scale Mini Nuvia S Cartridge, 1 x 1 ml	
318267	System Cable 7	134	7324421	Bio-Scale Mini Nuvia S Cartridges, 5 x 1 ml	
318268	System Cable 8		7324422	Bio-Scale Mini Nuvia S Cartridge, 1 x 5 ml	
318286	System Cable 15.		7324423	Bio-Scale Mini Nuvia S Cartridges, 5 x 5 ml	
318287	System Cable 16.		7324502	Bio-Scale Mini Bio-Gel P-6 Desalting Cartridges, 1 x 5 ml	
	- ,			Bio-Scale Mini Bio-Gel P-6 Desalting Cartridges, 5 x 5 ml	
318290	BioFrac Accessory Cable		7324504	o o .	
318300	Standard BioLogic LP System, 100/120 V		7324600	Bio-Scale Mini Affi-Prep Protein A Cartridges, 5 x 1 ml	
318301	Standard BioLogic LP System, 220/240 V		7324602	Bio-Scale Mini Affi-Prep Protein A Cartridge, 1 x 5 ml.	
318302	BioLogic LP/Model 2110 System, 100/120 V		7324610	Bio-Scale Mini IMAC Cartridges, 5 x 1 ml	
318303	BioLogic LP/Model 2110 System, 220/240 V		7324612	Bio-Scale Mini IMAC Cartridge, 1 x 5 ml	
318304	BioLogic LP/BioFrac System, 100/120 V		7324614	Bio-Scale Mini IMAC Cartridges, 5 x 5 ml	
318305	BioLogic LP/BioFrac System, 220/240 V		7324620	Bio-Scale Mini Profinity GST Cartridges, 5 x 1 ml	
318320	MV-6 Sample Inject Valve		7324622	Bio-Scale Mini Profinity GST Cartridge, 1 x 5 ml	
318321	SV-5 Buffer Select Valve		7324624	Bio-Scale Mini Profinity GST Cartridges, 5 x 5 ml	
318322	SV-3 Diverter/Bypass Valve	140	7324632	Bio-Scale Mini DEAE Affi-Gel Blue Cartridge, 1 x 5 ml	
318323	Gradient Mixer		7324634	Bio-Scale Mini DEAE Affi-Gel Blue Cartridges, 5 x 5 ml	
18324	BioLogic LP Optics Module.		7324642	Bio-Scale Mini Affi-Gel Blue Cartridge, 1 x 5 ml	
318336	BioLogic LP/Model 2110/LP Data View System, 110/120 V		7324644	Bio-Scale Mini Affi-Gel Blue Cartridges, 5 x 5 ml.	
18337	BioLogic LP/Model 2110/LP Data View System, 220/240 V BioLogic LP/Model 2110/LP Data View System, 220/240 V		7324646	Bio-Scale Mini Profinity eXact Cartridges, 2 x 1 ml	
	BioLogic LP/Model 2 110/LP Data View System, 220/240 V BioLogic LP/BioFrac/LP Data View System, 110/120 V				
18338			7324647	Bio-Scale Mini Profinity eXact Cartridges, 4 x 1 ml	
18339	BioLogic LP/BioFrac/LP Data View System, 220/240 V		7324648	Bio-Scale Mini Profinity eXact Cartridge, 1 x 5 ml	
18350	BioLogic LP Starter Kit		7324650	Bio-Scale Mini Ion Exchange Sampler Pack	
318365	LP Data View Software for BioLogic LP System		7324651	Bio-Scale Mini Affinity Sampler Pack	
19001	Econo Gradient Pump, 100/120 V		7324701	Foresight Nuvia S, 20 µl, 2	
319002	Econo Gradient Pump, 220/240 V	142	7324703	Foresight Nuvia Q, 20 µl, 2	
319004	Econo Gradient Pump Rack, preassembled		7324705	Foresight Nuvia cPrime, 20 µl, 2	
319006	Econo Gradient Pump Fittings Kit		7324707	Foresight Nuvia HR-S Plates, 20 µl	
319007	Econo Gradient Pump Tubing Kit		7324709	Foresight UNOsphere SUPrA, 20 µl	
	System Cable 22.		7324710	Foresight UNOsphere S, 20 µl, 2.	
319010	Svsiem Gable ZZ				

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324716	Foresight CHT Type I, 40 µm 20 µl, 2	66	7326400	Aurum Plasmid Mini Kit, 100 preps	
324718	Foresight CHT Type II, 40 µm, 20 µl, 8	66	7326400EDU	Aurum Plasmid Mini Purification Module	
324720	Foresight Nuvia S, 1 ml	58	7326701	Aurum Serum Protein Mini Kit, 10 pack	
324721	Foresight Nuvia Q, 1 ml	58	7326703	Aurum CEX Mini Columns, 25.	
324722	Foresight Nuvia cPrime, 1 ml.	65	7326706	Aurum AEX Mini Columns, 25	
324723	Foresight Nuvia HR-S Column, 1 ml	58	7326708	Aurum Affi-Gel Blue Mini Columns, 25	
324729	Foresight UNOsphere SUPrA, 1 ml		7326800	Aurum Total RNA 96 Kit.	
324730	Foresight UNOsphere S, 1 ml		7326801	Aurum Total RNA Elution Solution	
324732	Foresight UNOsphere Q, 1 ml.		7326802	Aurum Total RNA Lysis Solution	
324735	Foresight CHT Type I, 40 µm, 1 ml		7326803	Aurum Total RNA Wash High-Stringency Solution	
324736	Foresight CHT Type II, 40 µm, 1 ml.		7326804	Aurum Total RNA Wash Low-Stringency Solution	
324737	Foresight MPC Type I Column, 40 µm, 1 ml		7326805	Aurum DNase Dilution Solution	
324740	Foresight Nuvia S, 5 ml		7326820	Aurum Total RNA Mini Kit	
324740 324741	Foresight Nuvia Q, 5 ml.		7326826	Aurum RNA Binding Mini Columns	
24741			7326828	DNase I	
	Foresight Nuvia cPrime, 5 ml.				
24743	Foresight Nuvia HR-S Column, 5 ml		7326830	Aurum Total RNA Fatty and Fibrous Tissue Kit	
24749	Foresight UNOsphere SUPrA, 5 ml.		7326870	Aurum Total RNA Fatty and Fibrous Tissue Module	
24750	Foresight UNOsphere S, 5 ml		7326880	PureZOL RNA Reagent, 50 ml	
24752	Foresight UNOsphere Q, 5 ml.		7326890	PureZOL RNA Isolation Reagent, 100 ml	
24755	Foresight CHT Type I, 40 µm, 5 ml		7328102	2-Way Stopcocks, 10	
24756	Foresight CHT Type II, 40 µm, 5 ml		7328103	3-Way Stopcocks, 2 female luer to male luer, 10	
24757	Foresight MPC Type I Column, 40 µm, 5 ml		7328107	3-Way Stopcocks, nylon, 10	
24785	Foresight MPC Type I Plates, 40 µm, 20 µl	67	7328202	Double Luer Tubing Adaptor	
24801	Foresight Nuvia S RoboColumn, 8, 200 µl	58	7328300	0.8 mm Barb to Barb Connectors, 25	
24802	Foresight Nuvia S RoboColumn, 8, 600 µl	58	7328302	0.8 mm Barb T-Connectors, 25	
24804	Foresight Nuvia Q RoboColumn, 8, 200 µl		7370507	Econo-Column Chrom. Columns, 0.5 x 5 cm, 2	
24805	Foresight Nuvia Q RoboColumn, 8, 600 µl		7370512	Econo-Column Chrom. Columns, 0.5 x 10 cm, 2	
24807	Foresight Nuvia cPrime RoboColumn, 8, 200 µl		7370517	Econo-Column Chrom. Columns, 0.5 x 15 cm, 2	
24808	Foresight Nuvia cPrime RoboColumn, 8, 600 µl		7370522	Econo-Column Chrom, Columns, 0.5 x 20 cm, 2,	
24813	Foresight UNOsphere S RoboColumn, 8, 200 µl		7370707	Econo-Column Chrom. Columns, 0.7 x 5 cm, 2.	
24814	Foresight UNOsphere S RoboColumn, 8, 600 µl		7370712	Econo-Column Chrom. Columns, 0.7 x 10 cm, 2	
24819	Foresight UNOsphere Q RoboColumn, 8, 200 µl		7370717	Econo-Column Chrom. Columns. 0.7 x 15 cm. 2	
24820	Foresight UNOsphere Q RoboColumn, 8, 600 µl		7370722	Econo-Column Chrom. Columns, 0.7 x 10 cm, 2	
24820 24822			7370732	Econo-Column Chrom. Columns, 0.7 x 20 cm, 2.	
	Foresight CHT Type-I RoboColumn, 40 µm, 8, 200 µl				
24823	Foresight CHT Type-I RoboColumn, 40 µm, 8, 600 µl		7370752	Econo-Column Chrom. Columns, 0.7 x 50 cm, 2	
24825	Foresight CHT Type-II RoboColumn, 40 µm, 8, 200 µl		7371007	Econo-Column Chrom. Columns, 1 x 5 cm, 2	
24826	Foresight CHT Type-II RoboColumn, 40 µm, 8, 600 µl		7371012	Econo-Column Chrom. Columns, 1 x 10 cm, 2	
24828	Foresight MPC Type I RoboColumn Units, 40 µm, 200 µl		7371022	Econo-Column Chrom. Columns, 1 x 20 cm, 2	
24829	Foresight MPC Type I RoboColumn Units, 40 µm, 600 µl		7371032	Econo-Column Chrom. Columns, 1 x 30 cm, 2	
24831	Foresight Nuvia HR-S RoboColumn Units, 200 µl	58	7371052	Econo-Column Chrom. Columns, 1 x 50 cm, 2	
24832	Foresight Nuvia HR-S RoboColumn Units, 600 µl	58	7371091	Econo-Column Chrom. Columns, 1 x 100 cm, 2	
24834	Foresight UNOsphere SUPrA RoboColumn Units, 200 µl	95	7371093	Econo-Column Chrom. Columns, 1 x 120 cm, 2	
24835	Foresight UNOsphere SUPrA RoboColumn Units, 600 µl	95	7371507	Econo-Column Chrom. Columns, 1.5 x 5 cm, 2	
25304	Bio-Scale Mini Bio-Gel P-6 Desalting Cartridges, 5 x 10 ml		7371512	Econo-Column Chrom. Columns, 1.5 x 10 cm, 2	
25312	Bio-Scale Mini Bio-Gel P-6 Desalting Cartridge, 1 x 50 ml		7371517	Econo-Column Chrom. Columns, 1.5 x 15 cm, 2	
25314	Bio-Scale Mini Bio-Gel P-6 Desalting Cartridges, 5 x 50 ml		7371522	Econo-Column Chrom. Columns, 1.5 x 20 cm, 2	
26002	Bio-Spin 6 Columns, in SSC buffer, 25		7371532	Econo-Column Chrom. Columns, 1.5 x 20 cm, 2.	
26002			7371552	Econo-Column Chrom. Columns, 1.5 x 50 cm, 2	
	Bio-Spin 30 Columns, in SSC buffer, 25				
26008	Bio-Spin Chromatography Columns, empty, 100		7371576	Econo-Column Chrom. Columns, 1.5 x 75 cm, 2.	
26025	Bio-Spin Chromatography Columns, empty, 1,000		7371591	Econo-Column Chrom. Columns, 1.5 x 100 cm, 2.	
26030	InstaGene Matrix, 20 ml		7371593	Econo-Column Chrom. Columns, 1.5 x 120 cm, 2.	
26100	Quantum Prep Plasmid Miniprep Kit		7371598	Econo-Column Chrom. Columns, 1.5 x 170 cm, 2	
26120	Quantum Prep Plasmid Midiprep Kit		7372507	Econo-Column Chrom. Columns, 2.5 x 5 cm, 2	
26165	Freeze 'N Squeeze DNA Gel Extraction Spin Columns, pkg 25	15	7372512	Econo-Column Chrom. Columns, 2.5 x 10 cm, 2	
26166	Freeze 'N Squeeze DNA Gel Extraction Spin Columns, pkg 100		7372522	Econo-Column Chrom. Columns, 2.5 x 20 cm, 2	
26200	Micro Bio-Spin 6 Columns, in SSC buffer, 25	17	7372532	Econo-Column Chrom. Columns, 2.5 x 30 cm, 2	
26201	Micro Bio-Spin 6 Columns, in SSC buffer, 100		7372551	Econo-Column Chrom. Columns, 2.5 x 50 cm, 2	
26202	Micro Bio-Spin 30 Columns, in SSC buffer, 25		7372576	Econo-Column Chrom. Columns, 2.5 x 75 cm, 2	
26203	Micro Bio-Spin 30 Columns, in SSC buffer, 100		7372591	Econo-Column Chrom. Columns, 2.5 x 100 cm, 2	
26204	Micro Bio-Spin Chromatography Columns, empty, 100		7372593	Econo-Column Chrom. Columns, 2.5 x 120 cm, 2	
26221	Micro Bio-Spin 6 Columns, in Tris buffer, 25		7374006	Econo-Column Chrom. Columns, 1 x 5 cm, 4	
26222	Micro Bio-Spin 6 Columns, in Tris buffer, 100		7374011	Econo-Column Chrom. Columns, 1 x 10 cm, 4	
26223	Micro Bio-Spin 30 Columns, in Tris buffer, 25		7374021	Econo-Column Chrom. Columns, 1 x 20 cm, 4	
20223 26224	Micro Bio-Spin 30 Columns, in Tris buffer, 100			Econo-Column Chrom. Columns, 1 x 30 cm, 4	
	•		7374031		
26227	Bio-Spin 6 Columns, in Tris buffer, 25		7374051	Econo-Column Chrom. Columns, 1 x 50 cm, 4	
26228	Bio-Spin 6 Columns, in Tris buffer, 100		7374150	Econo-Column Chrom. Columns, 1.5 x 5 cm, 4	
26231	Bio-Spin 30 Columns, in Tris buffer, 25		7374151	Econo-Column Chrom. Columns, 1.5 x 10 cm, 4	
326232	Bio-Spin 30 Columns, in Tris buffer, 100		7374152	Econo-Column Chrom. Columns, 1.5 x 20 cm, 4	
326250	Micro Bio-Spin 30 Columns, RNase-free, 25		7374153	Econo-Column Chrom. Columns, 1.5 x 30 cm, 4	
26251	Micro Bio-Spin 30 Columns, RNase-free, 100	17	7374155	Econo-Column Chrom. Columns, 1.5 x 50 cm, 4	
00000	PCR Kleen Spin Columns, 25	17	7374156	Econo-Column Chrom. Columns, 1.5 x 15 cm, 4	
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7374251	Econo-Column Chrom. Columns, 2.5 x 10 cm, 4	106	7500415	SV5-4 Select Valve	12
374252	Econo-Column Chrom. Columns, 2.5 x 20 cm, 4	106	7500450	DynaLoop Parts Kit	12
374253	Econo-Column Chrom. Columns, 2.5 x 30 cm, 4	106	7500451	DynaLoop 25 Kit	12
374506	Econo-Column Chrom. Columns, 0.5 x 5 cm, 4	106	7500452	DynaLoop 90 Kit	12
374511	Econo-Column Chrom. Columns, 0.5 x 10 cm, 4	106	7500471	Sample Injection Port	12
374516	Econo-Column Chrom. Columns, 0.5 x 15 cm, 4	106	7500475	DynaLoop 25 Sample Loop, 25 ml, replacement	1
374521	Econo-Column Chrom. Columns, 0.5 x 20 cm, 4	106	7500476	DynaLoop 90 Sample Loop, 90 ml, replacement	1
374706	Econo-Column Chrom. Columns, 0.7 x 5 cm, 4		7500482	25 µl Tefzel Sample Loop,	
374711	Econo-Column Chrom. Columns, 0.7 x 10 cm, 4		7500483	50 µl Tefzel Sample Loop	
374716	Econo-Column Chrom. Columns, 0.7 x 15 cm, 4		7500490	Small-Volume Sample Loop Kit	
374721	Econo-Column Chrom. Columns, 0.7 x 20 cm, 4		7500491	Large-Volume Sample Loop Kit.	
374731	Econo-Column Chrom. Columns, 0.7 x 30 cm, 4.		7500492	100 µl PEEK Sample Loop	
374751	Econo-Column Chrom. Columns, 0.7 x 50 cm, 4		7500493	250 ul PEEK Sample Loop	
375011	Econo-Column Chrom. Column. 5 x 10 cm. 1		7500494	500 µl PEEK Sample Loop	
375021	Econo-Column Chrom. Column, 5 x 20 cm, 1		7500495	1 ml PEEK Sample Loop.	
375031	Econo-Column Chrom. Column, 5 x 30 cm, 1		7500495	2 ml PEEK Sample Loop.	
375051				5 ml PEEK Sample Loop	
	Econo-Column Chrom. Column, 5 x 50 cm, 1		7500497		
375071	Econo-Column Chrom. Column, 5 x 70 cm, 1		7500502	Signal Import Module	
376108	Econo-Column Jacketed Column, 0.7 x 15 cm, 1		7500553	1/8" OD (3.2 mm) Pre-Pump Fittings, 5	
376116	Econo-Column Jacketed Column, 1.0 x 15 cm, 1		7500554	1/16" (1.6 mm) OD Post-Pump Fittings, 10	
376131	Econo-Column Jacketed Column, 1 x 30 cm.		7500556	Ferrule and Lock Rings, for 1/16" OD tubing, 10	
376151	Econo-Column Jacketed Column, 1.5 x 50 cm		7500559	Tefzel Caps, for 1/4–28 nut, 5	
376201	Econo-Column Open-Ended Jacketed Column, 1 x 30 cm		7500560	BioLogic Fittings Tool.	
376601	Econo-Column Selection Pack A, 7 columns		7500561	Tefzel Union Adaptors, 1/4–28 to M6, 2	
376607	Econo-Column Selection Pack B, 6 columns		7500562	Tefzel Unions, 1/4–28 to 1/4–28, 5	
379112	Econo-Column Reservoir, 500 ml	109	7500563	Tefzel Plugs, 1/4–28 male connection, 5	
379113	Econo-Column Reservoir, 1 L	109	7500564	1/4–28 Female to 10–32 Male Fittings	
380014	Econo-Column Flow Adaptor, 1.0 cm ID x 1–7 cm long	108	7500565	Econo-Column to BioLogic System Fittings Kit	1
380015	Econo-Column Flow Adaptor, 1.0 cm ID x 1–14 cm long	108	7500566	Bottle Cap Kit, 2 caps and 2 plugs	1
380016	Econo-Column Flow Adaptor, 1.5 cm ID x 1-14 cm long		7500567	UNO M6 Fittings Kit, 2 nuts and 4 ferrules	10
380017	Econo-Column Flow Adaptor, 2.5 cm ID x 1–14 cm long		7500568	ENrich 10–32 Fittings Kit	
380018	Econo-Column Flow Adaptor, 5.0 cm ID x 1–14 cm long		7500569	Delrin Nuts, for 1/16" OD Tubing, 10	1
380019	Econo-Pac Flow Adaptor, 1.5 cm.		7500570	Delrin Nuts, for 1/8" OD Tubing, 5	
380022	Flow Adaptor Maintenance Kit, for 5.0 cm adaptor		7500571	Ferrule and Lock Rings, for 1/8" OD tubing, 5	
380024	Flow Adaptor Maintenance Kit, for 1.0 cm adaptor		7500602	Tefzel Tubing, 1/16", 30'	
380025	Flow Adaptor Maintenance Kit, for 1.5 cm adaptor		7500603	FEP Tubing, 1/8" pre-pump connections, 15'	
380027	Flow Adaptor Maintenance Kit, for 2.5 cm adaptor		7500650	System Cable 17, 4'	
410002	BioFrac Fraction Collector		7500651	System Cable 18, 12'	
410007	BioFrac Fraction Collector Fittings Kit		7500652	System Cable 19, 9.2 m (30')	
410010	Rack Set F1		7500655	System Cable 21, 30 m (100')	
410011	Rack Set F2.		7500703	Inline Filter Kit.	
410012	Rack Set F3		7500704	Replacement Frits, for inline filter kit, 5	
410013	Rack Set H1		7510021	Bio-Scale CHT2-I Column	
410014	Rack Set H2	133	7510023	Bio-Scale CHT5-I Column	
410015	Rack Set H3	133	7510025	Bio-Scale CHT10-I Column	
410016	Rack Set H4	133	7510027	Bio-Scale CHT20-I Column	
410017	BioFrac Ice Bath/Microplate Rack		7510029	Top-off Resin Kit, CHT-I, 1 ml	
410018	BioFrac Prep-20 Preparative Rack		7510081	Bio-Scale MT2 Column, 7 x 52 mm	1
410020	BioFrac H4-High Rack Set, 4 x flatpack		7510083	Bio-Scale MT5 Column, 10 x 64 mm	
410088	BioFrac Microplate Drop Head Kit.		7510085	Bio-Scale MT10 Column, 12 x 88 mm	
500111	EZLogic Integration Software Package		7510087	Bio-Scale MT20 Column, 15 x 113 mm	
500162	Check Valve, for BioLogic DuoFlow system		7510091	Bio-Scale 2 Replacement Parts Kit	
500162	BioLogic DuoFlow Detector Kit		7510091	Bio-Scale 5 Replacement Parts Kit	
	=			Bio-Scale 5 Replacement Parts Kit	
500202	UV Optics Module, for BioLogic DuoFlow system.		7510095		
500210	Flow Cell, preparative, 2 mm.		7510097	Bio-Scale 20 Replacement Parts Kit	
500212	Flow Cell, analytical, 5 mm		7600036	BioLogic DuoFlow 10 System, 100/120 V, JP/KR	
500214	214 nm Conversion Kit, for serial #362BRXXXX detectors		7600037	BioLogic DuoFlow 10 System, 100/120 V	
500216	Mercury Lamp, for BioLogic DuoFlow system		7600038	BioLogic DuoFlow 10 System, 220/240 V	
500217	Zinc Lamp, for BioLogic DuoFlow system.		7600046	BioLogic DuoFlow 10/BioFrac System, 100/120 V, JP/KR	
500220	Detector Filters, 254 and 280 nm		7600047	BioLogic DuoFlow 10/BioFrac System, 100/120 V	
500221	Detector Filter, 214 nm		7600048	BioLogic DuoFlow 10/BioFrac System, 220/240 V	
500224	Detector Filter, 405 nm		7600110	F10 Pump Kit, for BioLogic DuoFlow system	1
500225	Detector Filter, 436 nm		7600135	BioLogic System Starter Kit.	1
500230	40 psi Backpressure Regulator		7600140	BioLogic DuoFlow F40 Workstation	
500240	Conductivity Monitor, for BioLogic DuoFlow system		7600150	BioLogic DuoFlow F10 Workstation	
500251	BioLogic Rack.		7600161	F10 Piston Seals, 2	
500260	Column Clamp Set		7600161	F10 Piston Kit	
500260 500262	Vertical Bars, long, 64 cm, 2		7600162	F10 Pump Maintenance Kit.	
500263	Vertical Bars, short, 10 cm, 2		7600170	Model MX-1 Mixer.	
500264	Horizontal Bar Kit.		7600171	Mixer Barrel Extender	
500265	Bar Clamps, 5		7600172	F40 Piston Seals, 2	
500268	BioLogic Rack Expansion Kit		7600173	F40 Piston Kit	

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600180	F40 Pump Kit		7880008	NGC Scout 100 Plus System, 100 ml/min, multi-wave	
0184	F40 Pump Maintenance Kit		7880009	NGC Discover 10 System. 10 ml/min	
00401	AVR7-3 Valve Rebuild Kit.		7880010	NGC Discover 100 System, 100 ml/min	
00403	AVR9-8 Valve Rebuild Kit.		7880011	NGC Discover Pro 10 Chromatography System.	
0406	AVR7-3 Automated Sample Injection Valve.		7880012		
				NGC Discover Pro 100 Chromatography System.	
00408	AVR9-8 Stream-Select Valve			NGC Quest/Quest Plus IQ/OQ	
00410	SVT3-2 Diverter Valve			NGC Scout/Discover/Discover Pro IQ/OQ	
00411	SVT3-2 Valve Rebuild Kit		7884000	NGC Expansion Bay, tier 3	
00550	BioLogic DuoFlow Fittings Kit		7884001	NGC Expansion Bay, tier 4	
00604	PEEK Tubing, flow rates <10 ml/min, 1/16" OD, 30'		7884002	NGC F10 Pump Module, with 10 ml/min pump kit	
00605	PEEK Tubing, flow rates >10 ml/min, 1/16" OD, 30'		7884003	NGC F100 Pump Module, with 100 ml/min pump kit	
00650	F10 Tubing Kit		7884004	NGC Sample Pump 100 Module, with 100 ml/min pump kit	
00652	F40 Tubing Kit		7884006	NGC Inlet Valve Module.	
01300	BioLogic QuadTec Detector Kit		7884007	NGC Sample Inject Valve.	
01306	Standard Flow Cell, BioLogic QuadTec system.		7884008	NGC Single-Wavelength Detector Module	
01307	System Cable 25 (QuadTec RS-232)		7884009	NGC Multi-Wavelength Detector Module	
01308	Long Fingertight Fittings, 10-32 x 0.82", 4	137	7884010	NGC Buffer Blending Valve Module.	
01311	Long Fingertight Fittings, 10-32 x 1.03", 4		7884011	NGC pH Valve Module	
01320	Instrument Control Module (ICM) Kit		7884012	NGC Column Switching Valve Module	
01321	System Cable 26 (ICM power).		7884013	NGC Outlet Valve Module	
01330	Deuterium Lamp, for BioLogic QuadTec system.		7884015	Computer, for use with NGC systems.	
01331	Halogen Lamp, for BioLogic QuadTec system, with holder		7884016	NGC Signal Import Module	
01332	Halogen Lamp, for BioLogic QuadTec system		7884017	NGC Air Sensor Module	
01406	High-Speed Flow Cell, for BioLogic QuadTec system		7884018	NGC Mixer Module, for use with all NGC systems	
02002	BioLogic Maximizer Tubing Kit.		7884019	NGC F100 Mixer, 750 µl base and top assembly	
02002	BioLogic Maximizer Interconnect Tubing		7884020	NGC F10 Mixer, 263 µl base and top assembly	
02003	System Cable 30.		7884021	NGC F10 Mixer, 200 µl base and top assembly	
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02005	Maximizer Mixer Barrel Extender, 5 ml.		7884022	NGC F10 Mixer Barrel Kit, 2 ml ext. for F10 mixer	
02010	BioLogic Maximizer Mixer		7884023	NGC F100 Mixer Barrel Kit, 5 ml ext. for F100 mixer	
)2012	Maximizer Mixer Barrel Extender, 12 ml		7884024	NGC F100 Mixer Barrel Kit, 12 ml ext.	
)2032	System Cable 31	135	7884025	NGC Communication Adaptor	
02034	Universal AC/DC Inline Adaptor for USB Bitbus Device		7884026	NGC Column Switching Valve Module, 100 ml	
)2046	pH Tubing Kit.		7884027	Monitor, 22", for use with NGC system computer.	
02050	BioLogic DuoFlow Software Version 5.2 Upgrade		7884028	NGC F100 Mixer Barrel Kit	
04036	BioLogic DuoFlow 40 System, 100/120 V, JP/KR		7885000	NGC LED Lamp Replacement	
04037	BioLogic DuoFlow 40 System, 100/120 V		7885001	NGC Deuterium Lamp Replacement	
04038	BioLogic DuoFlow 40 System, 220/240 V		7885002	NGC Tungsten Lamp Replacement	
04046	BioLogic DuoFlow 40/BioFrac System, 100/120 V, JP/KR		7885003	Pump Maintenance Kit, 10 ml.	
04047	BioLogic DuoFlow 40/BioFrac System, 100/120 V		7885004	Pump Maintenance Kit, 100 ml.	
05010	C-96 Autosampler with Cooling, 110–240 V.		7885005	F100 Pump Head Kit, 10 ml	
05011	C-96 Autosampler, 110–240 V		7885007	10-32 Peek union 1/16"	
05012			7885008		
	Prep Bio Kit			Fittings Tightener	
05013	Syringe.		7885010	Adaptor, FEM Slip Luer	
05014	Connector Kit		7885011	NGC Autosampler	
05017	Analytical Bio Kit	130	7885012	NGC Autosampler	
05024	Sample Tray.	130	7885013	NGC Autosampler Cables.	
05026	Fittings Kit		7885014	NGC Buffer Tray	
05027	Needle		7885015	PEEK nut 1/8"	
)5027)5028			7885016	NGC Drip Tray	
	Prep Kit Needle				
10001	BioLogic DuoFlow 10 Core with BioFrac System 100/120 V		7885017	NGC Air Sensor Module	
10002	BioLogic DuoFlow 10 Core with BioFrac System 200/240 V		7885018	NGC Air Sensor Extension Module	
00001	ENrich Q 5 x 50 Column		7885020	NGC Air Sensor, small	
00003	ENrich Q 10 x 100 Column		7885021	NGC Air Sensor, large	
80000	Fittings, 10-32 PEEK, Black, 2/PK		7885022	NGC UV Flow Cell, 2 mm prep	
00021	ENrich S 5 x 50 Column		7885023	NGC UV Flow Cell, 10 mm	
0021	ENrich S 10 x 100 Column		7885024	NGC UV Flow Cell, 5 mm	
	ENrich S Frit Kit			NGC 0V Flow Cell, Smith	
00091			7885026		
)0093	ENrich 10 Frit Kit		7885027	NGC Blank pH Probe	
00800	Nuvia IMAC Resin, 25 ml		7885031	NGC Fittings Kit.	
0801	Nuvia IMAC Resin, 100 ml.		7885035	NGC Tubing Retainers (large)	
0802	Nuvia IMAC Resin, 500 ml.		7885038	NGC Column Holder	
0811	Bio-Scale Mini Nuvia IMAC Cartridges, Pkg of 1		7885039	NGC Cartridge Holder.	
0812	Bio-Scale Mini Nuvia IMAC Cartridges, Pkg of 5		7885040	NGC Touch Screen Stand.	
01070	ENrich SEC 70 10 x 300 Column		7885041	NGC Sample/Wash Tube Holder, for use with NGC systems	
01650	ENrich SEC 650 10 x 300 Column		7885042	NGC Tubing Retainers (small)	
30001	NGC Quest 10 System, 10 ml/min, UV		7885056	NGc conductivity monitor	
80002	NGC Quest 100 System, 100 ml/min, UV		7885060	Touch screen bracket	
80003	NGC Quest 10 Plus System, 10 ml/min, multi-wave		7886000	ChromLab Software CD	
80004	NGC Quest 100 Plus System, 100 ml/min, multi-wave		7886001	ChromLab Software CD, Security Edition, 1 license	
80005	NGC Scout 10 System, 10 ml/min, UV.				
			7886003 7886005	ChromLab Software CD, Security Edition, 3 licenses ChromLab Software CD, Security Edition, 5 licenses	
80006	NGC Scout 100 System, 100 ml/min, UV				

Cat. #	Description Pag	e Cat. #	Description	Page
392018200001	xPONENT Extra Seat Licenses, 3 additional seats	0 M600003J7	Bio-Plex Pro Mouse Cytokine Th1/Th2 Panel	
92018500001	xPONENT CFR 21 Part 11 Software Module	0 M600007NY	Bio-Plex Pro Mouse Cytokine Th17 Panel A 6-Plex Group I	
	xPONENT LIS Software Module			
	xPONENT Automation Module		Bio-Plex Pro Magnetic COOH Beads, 1 ml, XX = bead region	
	Replacement Platinum Wire, cathode, 18"		Bio-Plex Pro Magnetic COOH Beads, 4 ml, XX = bead region	
0768024	Replacement Platinum Wire, anode, 24"		Bio-Plex Pro Mouse Cytokine 9-Plex Panel.	
	2-Way Stopcock		Bio-Plex Pro Human Cytokine 21-Plex Panel	
	GelAir Plastic Drying Frame, without metal square frame		Multiplate Low-Profile 48-Well Plates, natural, 50	
	Optical Compression Pad		Multiplate Low-Profile 48-Well Plates, white, 50	
	Pressure Pad.		Multiplate Low-Profile 96-Well Plates, natural, 25	
	Bio-Plex 3D System			
			Multiplate Low-Profile 96-Well Plates, white, 25	
	Chill-out Liquid Wax, red, 100 ml		Multiplate 48-Well Plates, natural, 50	
	Chill-out Liquid Wax, red, 1 L		Multiplate 96-Well Plates, natural, 25	
	Chill-out Liquid Wax, clear, optical grade, 100 ml		Multiplate 96-Well Plates, blue, 25	
	Chill-out Liquid Wax, clear, optical grade, 1 L		Multiplate 96-Well Plates, white, 25.	
CT1000	Easy Cap Tool		Microseal 'A' Film, 50 sheets.	
	Strip Cap Tool		Microseal 'B' Adhesive Seals, optical clarity, 100 seals	
	Bio-Plex 3D Calibration Kit		Microseal 'C' Optical Seals, 100 seals	
	Bio-Plex 3D Performance Verification Kit		Microseal 'F' Foil, 100	
	Hard-Shell Low-Profile 96-Well Semi-Skirted PCR Plates		Arched Auto-Sealing PCR Plate Lids, 5	
	Hard-Shell Low-Profile 96-Well Semi-Skirted PCR Plates		Arched Auto-Sealing PCR Plate Lids with Wide Tabs	
	Hard-Shell Low-Profile 96-Well Semi-Skirted PCR Plates	3 MSO1001	Optical Film Sealing Kit	
ISL9645	Hard-Shell Low-Profile 96-Well Semi-Skirted PCR Plates	3 MSP1001	Microseal 'P' Pads, for Power Bonnet lids, 10	400
ISL9901	Hard-Shell Low-Profile 96-Well Semi-Skirted PCR Plates	3 MSP1002	Microseal 'P+' Pads, for Moto Alpha lids, 10	400
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	Hard-Shell 384-Well Plates, clear well, clear shell, 500		Microseal 384-Well Skirted Plates, clear, barcoded, 50	
	Hard-Shell 384-Well Plates, white well, clear shell, 50.		Microseal 384-Well Skirted Plates, v. 2, white, 50	
	Hard-Shell 384-Well Plates, clear well, red shell, 50		Microseal 384-Well Skirted Plates, black, 50.	
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	Hard-Shell 384-Well Plates, clear well, yellow shell, 50		Microseal 96-Well Skirted Plates, natural, 50	
	Hard-Shell 384-Well Plates, clear well, blue shell, 50		Microseal 96-Well Skirted Plates with Bar Codes, natural, 50	
	Hard-Shell 384-Well Plates, clear well, green shell, 50		Sealing Roller, for film seals	
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	Hard-Shell 384-Well Plates with Bar Codes, clear well,		Frame-Seal Slide Chambers, 15 x 15 mm, 100	
	Hard-Shell 384-Well Plates, white well, clear shell, bar-coded, 50 39	95 SLF1201	Frame-Seal Slide Chambers, 17 x 28 mm, 100	
ISP9601	Hard-Shell 96-Well Plates, clear well, white shell, 50	2 SLF3001	Frame-Seal Slide Chambers, 19 x 60 mm, 100	401
ISP9601B	Hard-Shell 96-Well Plates with Bar Codes, white shell, 400	3 TBC0802	0.2 ml 8-Tube Strips and Domed Cap Strips, natural, 20 pkg of 12	
ISP9611	Hard-Shell 96-Well Plates, clear well, red shell, 50 39	3 TBC1202	0.2 ml 12-Tube Strips and Domed Cap Strips, natural, 20 pkg of 8	
ISP9621	Hard-Shell 96-Well Plates, clear well, yellow shell, 50	3 TBI0201	0.2 ml PCR Tubes without Caps, natural, 1,000	
ISP9631	Hard-Shell 96-Well Plates, clear well, blue shell, 50	3 TBI0501	0.5 ml PCR Tubes with Flat Caps, natural, 1,000	
ISP9635	Hard-Shell 96-Well Plates, white well, blue shell, 50	3 TBI0502	0.5 ml PCR Tubes with Flat Caps, natural, 800	
ISP9641	Hard-Shell 96-Well Plates, clear well, green shell, 50	3 TBS0201	0.2 ml 8-Tube Strips without Caps, natural, 125	
	Hard-Shell 96-Well Plates, white well, green shell, 50		0.2 ml 12-Tube Strips without Caps, natural, 100	
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	Hard-Shell 96-Well Plates, clear well, black shell, 50.		Optical Flat 8-Cap Strips, for 0.2 ml PCR tubes/plates, 120	
	Hard-Shell 96-Well Plates, white well, black shell, 50		Domed 12-Cap Strips, for 0.2 ml tubes/plates, 200	
	Hard-Shell 96-Well Plates, black well, black shell, 50		0.2 ml PCR Tubes with Flat Caps, natural, 1,000	
	Hard-Shell 96-Well Plates with Bar Codes, clear well,		Low-Profile 0.2 ml 8-Tube Strips, without caps, natural, 120	
	Hard-Shell 96-Well Plates with Bar Codes, white well,		Low-Profile 0.2 ml 8-Tube Strips, white, 120	
	Hard-Shell 384-Well 480 PCR Plates, clear well, clear shell, 50		96-Place Racks, with covers, 5.	
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	Hard-Shell 384-Well 480 PCR Plates, white well, clear shell, 50	6 TWI0201	0.2 ml PCR Tubes with Domed Caps, natural, 1,000	
ISR4805K	Hard-Shell 384-Well 480 PCR Plates, white well, clear shell, 100 39	6		
SR9901	Hard-Shell 96-Well 480 PCR Plates, clear shell, clear well, 25	13		
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