Grace® GC Capillary Column Families


5382

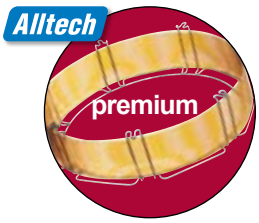
- Alltech® Heliflex®—High-Performance, Widest Selection of Phases
- Alltech® Econo-Cap™—Best Value, Popular Phases

Grace offers two lines of capillary columns to suit every application and budget; Alltech® Heliflex® and Alltech® Econo-Cap™. Heliflex® Columns are Grace's premium line of individually tested capillary columns. Econo-Cap™ Columns are batch tested to dramatically reduce the price without sacrificing quality. Both the Heliflex® and Econo-Cap™ lines are manufactured under identical conditions using the same high-quality polyimide coated fused silica and immobilized stationary phases. In addition each are mounted on a rugged cage.

Regardless of the capillary line you choose, every Grace manufactured capillary column has a guarantee of column performance.

Alltech® Heliflex® Capillary Columns

- High-performance individually tested columns
- 7" rugged cage
- Most complete selection of phases
- Custom columns available to suit your specific application

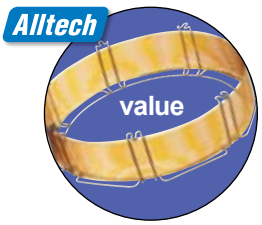


Heliflex® Capillary Columns are manufactured from the highest quality polyimide coated synthetic fused silica. They are mounted on a rugged wear-resistant cage. Each Heliflex® Column is individually tested to guarantee column performance and comes with a test chromatogram, instruction manual, capillary end caps, and a free ceramic column cutter.

Note: Column nuts and ferrules are not included. If the column you need is not available in our standard offering, request a custom Heliflex® Column made to your individual specifications.

Alltech® Econo-Cap™ Capillary Columns

- Best value in capillary columns anywhere
- Batch tested to dramatically reduce price
- Ideal for aggressive applications
- Available in the most popular phases



We've taken our most popular capillary columns and perfected the manufacturing procedure to the point that reproducibility is assured. This allows us to test these columns in batches instead of individually, while still offering a guarantee. Batch testing significantly reduces cost in production without sacrificing quality.

Each Econo-Cap™ Capillary Column comes with a copy of the batch test results, an instruction manual, and capillary end caps. If you are not completely satisfied with the quality of your Econo-Cap™ Capillary Column it will be replaced at no charge.

Note: Column nuts and ferrules are not included.

Available Alltech® Heliflex® Phases	
Phase	**Page**
AT™-1ms	216
AT™-1ht	216
AT™-1	217
AT™-5ms	218
AT™-5	218
AT™-20	219
AT™-35ms	220
AT™-35	220
AT™-50	221
AT™-624	226
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AT™-1701	222
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AT™-AquaWax	224
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AT™-1000	225
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Drug 1, Drug 2, and Drug 3	228
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Available Alltech® Econo-Cap™ Phases	
Phase	**Page**
EC™-1	217
EC™-5	219
EC™-20	219
EC™-WAX	224
EC™-1000	225

tech tip

Temperature limits

Our GC capillary columns are temperature rated. In some cases, we list two maximum operating temperatures, the lower one is for isothermal condition and the higher one for temperature-programmed condition.

Capillary Column Phase Cross Reference

Use the chart below to cross reference manufacturers' stationary phases as well as USP method designations to Alltech equivalent columns. Slight variations in selectivity may result between different manufacturers' columns.

Alltech® Standard Phase Cross Reference

Standard Phase Cross Reference			
Composition	**Alltech Brand**	**USP Designation**	**Similiar Phases**
100% Dimethylpolysiloxane	AT™-1ms	G1, G2, G38	DB-1ms, HP-1ms, Rtx®-1ms, CP-Sil 5CB low-bleed/ms
100% Dimethylpolysiloxane	AT™-1ht, AT™-1, EC™-1	G1, G2, G38	007-1, CP-Sil 5CB, DB-1, DB-1ht, HP-1, HP-101, OV™-1, RSL-150, RSL-160, Rtx®-1, SE-30™, SPB™-1, SPB™-Sulfur, ULTRA-1, SP-2100, BP-1, DC-200, PE-1, ZB-1
5% Phenyl equivalent Polysilphenylene-Siloxane	AT™-5ms		DB-5ms, Rtx®-5 Sil ms, BPX™-5, 007-5ms, HP-5ms
(5% Phenyl)-95% methylpolysiloxane	AT™-5, EC™-5	G27, G36	007-2, CP-Sil 8CB, DB-5, DB-5.625, DB-5ht, HP-5, HP-5ms, OV™-5, PTE-5, PTE-5QTM, PAS-5, RSL-200, Rtx®-5, Rtx®-5ms, SAC-5, SE™-54, SPB™-5, ULTRA-2, XTI-5, SE™-52, BP-5, PE-2, ZB-5
(20% Phenyl)-80% methylpolysiloxane	AT™-20, EC™-20	G28, G32	007-7, Rtx®-20, SPB™-20, VOCOL™, PE-7
(35 Phenyl)-65% Methylpolysiloxane	AT™-35ms AT™-35	G42	DB-35ms, Rtx®-35, SPB™-35, SUP-HERB™, MDN-35, BPX™-35 007-11, DB-35, DB-35ms, HP-35, RSL-300, Rtx®-35, SPB™-35, SPB™-608, OV™-11, PE-35, SUP-HERB™
(50 Phenyl)-50% methylpolysiloxane	AT™-50	G3	DB-17ms, H5-50+, Rtx®-50, SP-2250, SPB™-50, SPB™-17, BPX™-50 DB-17ht, Rtx®-65TG, BPX™-50, CP-TAB-CB, 007-17, DB-17, DB-17ht, HP-17, HP-50+, Rtx®-50 SP-50, SP-2250, SPB™-50, CP-Sil 24CB, PE-17, ZB-50
(6% Cyanopropylphenyl)-94% methylpolysiloxane	AT™-624 AT™-1301	G43	007-1301, DB-624, DB-1301, HP-1301, HP-624, Rtx®-1301, Rtx®-624, SPB™-1301, SPB™-624, 007-624, ZB-624
(14% Cyanopropylphenyl)-86% methylpolysiloxane	AT™-1701		007-1701, CP-Sil 19CB, DB-1701, HP-1701, OV™-1701, PAS-1701, Rtx®-1701, SPB™-1701, BP-10, ZB-1701
Trifluoropropylmethyl polysiloxane	AT™-210	G6	DB-210, RSL-400, Rtx®-200, OV™-202, OV™-210, OV™-215, QF-1, SP-2401
(50% Cyanopropylphenyl)-50% methylpolysiloxane	AT™-225	G7	007-225, CP-Sil 43CB, DB-225, HP-225, OV™-225, RSL-500, Rtx®-225, BP-225, PE-225
Poly(80% biscyanopropyl)-20% cyanoproylphenyl siloxane	AT™-SILAR-90	G8	DB-23, CP-Sil 84, Rtx®-2330, SP-2330
Poly(biscyanopropyl siloxane)	AT™-SILAR-100	G5	CP-Sil 88, Rtx®-2330, SP-2340
Polyethyleneglycol	AT™-WAXms AT™-WAX AT™-AquaWax EC™-WAX	G14, G15 G16, G20, G39	DB-WAX, Rtx®-WAX, Supelcowax™-10 007-CW, Carbowax® 20M, CP-Wax 52CB, DB-WAXetr, DB-WAX, Rtx®-WAX, HP-20M, HP-Wax, Innowax™, Omegawax™, Stabilwax®, Supelcowax®-10, Superox® II, BP-20, ZB-WAX
Polyethyleneglycol Acid Modified	AT™-1000, EC™-1000, AT™-AquaWax-DA	G25, G35	007-FFAP, CP-Wax 58CB, DB™-FFAP, HP™-FFAP, Nukol™, OV™-351, SP-1000, Stabilwax®-DA, Superox®-FA, BP-21
Polyethyleneglycol Base Modified	AT™-CAM		Stabilwax®-DB, CAM, Carbowax® Amine, CP Wax 51
PONA Analysis	AT™-Petro		007-1-100-0.5F, CP-Sil PONA CB, DB-Petro100, Petrocol™ DH, PONA, Ttx-1PONA, HP-PONA
ASTM Method 2887	AT™-2887		007-1-10V-1.0F, DB-2887, Petrocol™ 2887, Petrocol™ EX2887, Rtx®-2887, Sim-Dist-CB
ASTM Method 3710	AT™-3710		Petrocol™ 3710

Alltech® Specialty Columns Cross Reference

Specialty Phases Cross Reference		
EPA Method 608	AT™-Pesticide	007-608, DB-608, HP-608, SPB™-608
EPA Method 502.2	AT™-502.2	007-624, 007-502, DB-502.2, DB-VRX, HP-624, HP-VOC, MST-502.2, MXT-624, MXT-Volatiles, OV™-624, Rtx®-502.2, Rtx®-624, Rtx™-Volatiles, VOCOL™
Sulfur Analysis	AT™-Sulfur	SPB™-1 Sulfur
FAME Analysis	AT™-FAME	FAMEWAX™, OmegaWAX™

Alltech® Custom Capillary Columns

- A wide selection of stationary phases
- Lengths from 1 to 105 meters
- Wide selection of i.d. tubing
- Every column individually tested

Custom Capillary Column Instructions

1. **Stationary Phase:** Choose a Phase in "Table 1: Custom Phase."
2. **Length & Internal Diameter:** Choose any length (1–105 meters) and internal diameter (0.10mm–0.53mm) in "Table 2: Custom Dimensions."
3. **Film Thickness:** Choose a film thickness; 0.01µm tolerance.
4. See Coiling and Guard Information for additional options.
5. Call Customer Service and they will confirm your order and provide exact prices.

Table 1: Custom Phases

Phases Available for Custom Capillary Columns

- Aquawax
- Aquawax-DA
- AT™-1
- AT™-5
- AT™-20
- AT™-35
- AT™-1000
- AT™-1301
- AT™-1701
- AT™-WAX
- AT™-Amine
- Apiezon® phases
- Apolane™-87
- Butanediol succinate (Craig's polyester)
- Carbowax® phases
- DC-550
- Dexsil® 300
- Dexsil® 400
- Dexsil® 410
- Di (2ethylhexyl phthalate
- Diisodecyl phthalate
- FFAP
- Hi-EFF™-1AP
- Hi-EFF™-1BP
- Hi-EFF™-2AP
- Hi-EFF™-2BP
- Hi-EFF™-3AP
- Hi-EFF™-3BP
- Hi-EFF™-4BP
- Hi-EFF™-8BP
- Igepal CO-880
- OV™-1
- OV™-11
- OV™-17
- OV™-1701
- OV™-61
- OV™-101
- OV™-105
- OV™-210
- OV™-351
- Polyvinylpyrrolidone
- Reoplex 400
- SE-30
- Squalane
- Superox®-FA
- XE-60

technical assistance

Contact Tech Support: Phone: 1.800.255.8324 (North America)
Email: contact.alltech@grace.com
Online: www.discoverysciences.com

Table 2: Custom Dimensions

Alltech® Heliflex® Custom Capillary Columns

Length	i.d.	Description	Part No.
1–5m	0.10mm	Specify Phase and Film	**971001**
	0.18mm	Specify Phase and Film	**971005**
	0.25mm	Specify Phase and Film	**972010**
	0.32mm	Specify Phase and Film	**973010**
	0.45mm	Specify Phase and Film	**974010**
	0.53mm	Specify Phase and Film	**975010**
6–15m	0.10mm	Specify Phase and Film	**971011**
	0.18mm	Specify Phase and Film	**971014**
	0.25mm	Specify Phase and Film	**972015**
	0.32mm	Specify Phase and Film	**973015**
	0.45mm	Specify Phase and Film	**974015**
	0.53mm	Specify Phase and Film	**975015**
16–30m	0.10mm	Specify Phase and Film	**971028**
	0.18mm	Specify Phase and Film	**971029**
	0.25mm	Specify Phase and Film	**972030**
	0.32mm	Specify Phase and Film	**973030**
	0.45mm	Specify Phase and Film	**974030**
	0.53mm	Specify Phase and Film	**975030**
31–60m	0.18mm	Specify Phase and Film	**971050**
	0.25mm	Specify Phase and Film	**972060**
	0.32mm	Specify Phase and Film	**973060**
	0.45mm	Specify Phase and Film	**974060**
	0.53mm	Specify Phase and Film	**975060**
61–105m	0.25mm	Specify Phase and Film	**972105**
	0.32mm	Specify Phase and Film	**973105**
	0.45mm	Specify Phase and Film	**974105**
	0.53mm	Specify Phase and Film	**975105**
Custom Capillary			
	All other Dimensions not specified		**970123**

Custom Capillary Coiling

Custom Coiling

Description	Part No.
Custom Capillary on 4" Cage	**970124**

Custom Capillary Column with Integral Guard

Custom Capillary Column with Integral Guard

Description	Part No.
Custom 0.25mm i.d. with Integral 5m Guard	**C-5400**
Custom 0.32mm i.d. with Integral 5m Guard	**C-5500**
Custom 0.53mm i.d. with Integral 5m Guard	**C-5600**

Heliflex® AT™-1ms

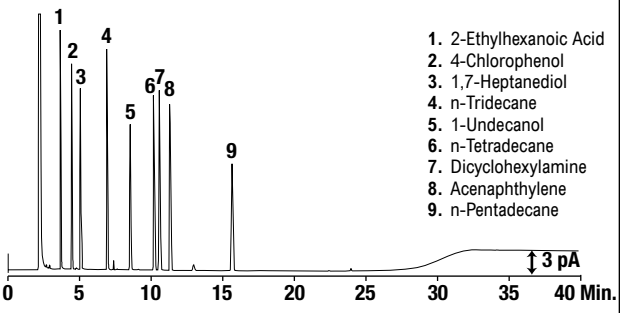
- Guaranteed low-bleed characteristics
- Specifically designed for mass spec analysis
- Highly inert
- Similar to DB-1ms, HP-1ms, Rtx®-1ms, CP-Sil 5CB low-bleed/MS, MDN-1

AT™-1ms is a line of high-performance low bleed non-polar columns designed specifically for use with mass spectrometers. They are ideal for pharmaceutical, environmental, petrochemical, and food and fragrance analysis, or any GC/MS analysis requiring a 100% dimethylpolysiloxane-type polarity capillary column.

Heliflex® AT™-1ms Specifications	
Phase:	100% Dimethylpolysiloxane
Polarity:	Non-polar
Max. Temp.:	340/360°C
USP Designation:	G1, G2, G38
Ideal For:	Mass Spec Analysis for Environmental, PAH, CLP Pesticides, Steroids, and Drugs

Figure 1 – AT™-1ms Low Bleed

CHROM 2578



1. 2-Ethylhexanoic Acid
2. 4-Chlorophenol
3. 1,7-Heptanediol
4. n-Tridecane
5. 1-Undecanol
6. n-Tetradecane
7. Dicyclohexylamine
8. Acenaphthylene
9. n-Pentadecane

Column:	Heliflex® AT™-1ms, 30m x 0.25mm x 0.25µm (Part No. **15897**)
Temp:	135°C (20min hold) to 320°C (10min hold) at 20°C/min
Carrier Gas:	Helium at 0.65mL/min (23.1cm/sec)
Detector:	FID

Heliflex® AT™-1ms Capillary Columns

Length	i.d.	Film	Temp. Limits min.–max.	Part No.
30m	0.25mm	0.10µm	-60–360°C	**15884**
	0.25mm	0.25µm	-60–360°C	**15897**
	0.32mm	0.25µm	-60–360°C	**15938**
60m	0.25mm	0.25µm	-60–360°C	**15941**
	0.32mm	0.25µm	-60–360°C	**15944**

Heliflex® AT™-1ht

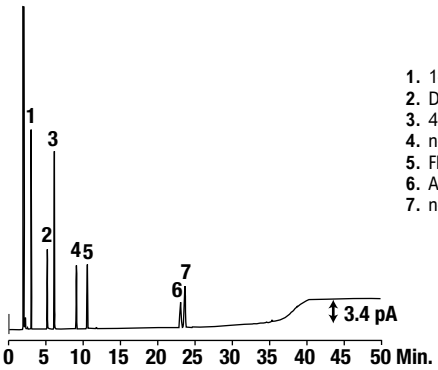
Shorten Your Analysis Time with High-Temperature/Low-Bleed Columns

- Faster analysis time for high boiling compounds
- Better peak detection at lower concentrations
- Individually bleed tested at 380ºC
- Similar to 007-1, CP-Sil 5CB, DB-1, DB-1ht, HP-1, HP-101, OV™-1, RSL-150, RSL-160, Rtx®-1, SE-30™, SPB™-1, SPB™-Sulfur, ULTRA-1, SP-2100, BP-1, DC-200, PE-1, ZB-1

Heliflex® AT™-1ht Specifications	
Phase:	100% Dimethylpolysiloxane
Polarity:	Non-polar
Max. Temp.:	380/400°C
USP Designation:	G1, G2, G38
Ideal For:	High Boiling Compounds Waxes, Crude Oils, and Trigylcerides

QC Test Chromatogram – Bleed Profile

CHROM 2634



1. 1-Undecanol
2. Dicyclohexylamine
3. 4-Chlorophenol
4. n-Pentadecane
5. Fluorene
6. Anthracene
7. n-Heptadecane

Column:	Heliflex® AT™-1ht, 30m x 0.25mm x 0.10µm (Part No. **16368**)
Column Temp:	125ºC (25min hold) to 380ºC at 20ºC/min
Carrier Gas:	Helium at 26.3cm/sec
Detector:	FID at 390ºC

Heliflex® AT™-1ht GC Capillary Columns

Length	i.d.	Film	Temp. Limits* min.–max.	Part No.
15m	0.25mm	0.1µm	-60–380/400°C	**16367**
30m	0.25mm	0.1µm	-60–380/400°C	**16368**
60m	0.25mm	0.1µm	-60–380/400°C	**16369**

*Isothermal/Temp. program.

more info

For more Capillary GC Applications, See the GC Applications Section pages 462–493.

more applications

To view our complete searchable chromatogram database visit www.discoverysciences.com/chromdb/

Heliflex® AT™-1

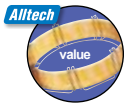
- Excellent general purpose columns
- Similar to DB-1, Rtx®-1, SPB™-1, SPB™-Sulfur, SP-2100, HP-1, HP-101, ULTRA-1, BP-1, CP-Sil 5CB, 007-1, OV-1, SE™-30, DC-200, RSL-150, RSL-160, PE-1, ZB-1

Heliflex® AT™-1 Specifications	
Phase:	100% Dimethylpolysiloxane
Polarity:	Non-polar General Purpose Column
USP Designation:	G1, G2, G38
Ideal For:	General Purpose

Heliflex® AT™-1 Capillary Columns

Length	i.d.	Film	Temp. Limits min.–max.	Part No.
10m	0.25mm	0.20µm	-60–350°C	**932510**
	0.32mm	0.10µm	-60–350°C	**16868**
	0.32mm	0.25µm	-60–350°C	**13755**
	0.32mm	0.30µm	-60–350°C	**933210**
	0.53mm	0.25µm	-60–350°C	**16840**
	0.53mm	1.20µm	-60–350°C	**935110**
	0.53mm	2.65µm	-60–300°C	**16849**
	0.53mm	5.00µm	-60–300°C	**16842**
15m	0.25mm	0.10µm	-60–350°C	**13649**
	0.25mm	0.25µm	-60–350°C	**13753**
	0.25mm	1.00µm	-60–350°C	**13653**
	0.32mm	0.10µm	-60–350°C	**13673**
	0.32mm	0.25µm	-60–350°C	**13757**
	0.32mm	1.00µm	-60–350°C	**13698**
	0.32mm	5.00µm	-60–300°C	**16836**
	0.53mm	0.15µm	-60–350°C	**13945**
	0.53mm	1.20µm	-60–350°C	**935115**
	0.53mm	1.50µm	-60–330°C	**13905**
	0.53mm	3.00µm	-60–300°C	**13893**
	0.53mm	5.00µm	-60–300°C	**16851**
25m	0.25mm	0.20µm	-60–350°C	**932525**
	0.32mm	0.30µm	-60–350°C	**933225**
30m	0.25mm	0.10µm	-60–350°C	**13663**
	0.25mm	0.25µm	-60–350°C	**13638**
	0.25mm	1.00µm	-60–350°C	**13639**
	0.32mm	0.25µm	-60–350°C	**13640**
	0.32mm	0.30µm	-60–350°C	**933230**
	0.32mm	1.00µm	-60–350°C	**13641**
	0.32mm	3.00µm	-60–300°C	**13702**
	0.32mm	5.00µm	-60–300°C	**16838**
	0.53mm	0.50µm	-60–350°C	**14038**
	0.53mm	1.00µm	-60–350°C	**13515**
	0.53mm	1.20µm	-60–350°C	**935130**
	0.53mm	1.50µm	-60–330°C	**13908**
30m	0.53mm	2.65µm	-60–300°C	**16876**
	0.53mm	3.00µm	-60–300°C	**13897**
	0.53mm	5.00µm	-60–300°C	**16843**
50m	0.25mm	0.20µm	-60–350°C	**932550**
60m	0.25mm	0.25µm	-60–350°C	**13666**
	0.25mm	1.00µm	-60–350°C	**13667**
	0.32mm	0.10µm	-60–350°C	**13700**
	0.32mm	1.00µm	-60–350°C	**13669**
	0.32mm	3.00µm	-60–300°C	**13703**
	0.32mm	5.00µm	-60–300°C	**13704**
	0.53mm	3.00µm	-60–300°C	**13902**
	0.53mm	5.00µm	-60–300°C	**13810**
100m	0.25mm	0.25µm	-60–350°C	**13972**

Econo-Cap™ EC™-1



- Batch tested to dramatically reduce price

Econo-Cap™ EC™-1 Capillary Columns

Length	i.d.	Film	Temp. Limits min.–max.	Part No.
30m	0.25mm	0.25µm	-60–350°C	**19652**
	0.32mm	0.25µm	-60–350°C	**19651**
	0.32mm	1.00µm	-60–350°C	**19660**
	0.53mm	1.20µm	-60–350°C	**19656**

Econo-Cap™ EC™-1 Capillary Columns, Six Pack

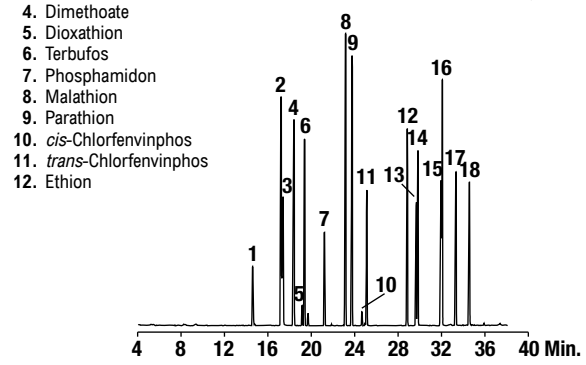
Length	i.d.	Film	Temp. Limits min.–max.	Part No.
30m	0.25mm	0.25µm	-60–350°C	**196526**
30m	0.32mm	0.25µm	-60–350°C	**196516**
30m	0.53mm	1.20µm	-60–350°C	**196566**

Heliflex® AT™-5ms

- Similar to DB-5ms, Rtx®-5 Sil ms, HP-5TA, BPX™-5, 007-5ms

The AT™-5ms capillaries are ideal for environmental, pharmaceutical, and petrochemical analysis, or any GC/MS analysis requiring a 5% phenyl-type polarity capillary column.

Heliflex® AT™-5ms Specifications	
Phase:	(5% Phenyl)-95% Methoxpolysiloxane
Polarity:	Non-polar
USP Designation:	G27, G36
Ideal For:	Mass Spec Analysis—General Application



Column: Heliflex® AT™-5ms, 30m x 0.25mm x 0.25µm (Part No. **15807**)
Temp: 120°C (3min hold) to 285°C at 5°C/min (4min hold)
Carrier Gas: Helium, 26cm/sec
Detector: MSD

Heliflex® AT™-5ms Capillary Columns

Length	i.d.	Film	Temp. Limits* min.–max.	Part No.
15m	0.25mm	0.25µm	-60–325/350°C	**15801**
30m	0.25mm	0.10µm	-60–325/350°C	**15806**
	0.25mm	0.25µm	-60–325/350°C	**15807**
	0.25mm	0.25µm	-60–325/350°C	**15881***
	0.25mm	0.50µm	-60–325/350°C	**15808**
	0.25mm	0.50µm	-60–325/350°C	**15889***
	0.25mm	1.00µm	-60–325/350°C	**15809**
	0.32mm	0.25µm	-60–325/350°C	**15894**
	0.32mm	0.25µm	-60–325/350°C	**15883***
	0.32mm	1.00µm	-60–325/350°C	**15895**
60m	0.25mm	0.10µm	-60–325/350°C	**15879**
	0.25mm	0.25µm	-60–325/350°C	**15891**
	0.25mm	1.00µm	-60–325/350°C	**15892**
	0.32mm	0.25µm	-60–325/350°C	**15896**

*Isothermal/Temp. program.

Heliflex® AT™-5

- Excellent general purpose columns
- Similar to DB-5, Rtx®-5, SPB™-5, HP-5, ULTRA-2, BP-5, CP-Sil 8CB, 007-2, OV™-5, SE™-52, SE™-54, RSL-200, ZB-5

Heliflex® AT™-5 Specifications	
Phase:	(5% Phenyl)-95% Methylpolysiloxane
Polarity:	Non-polar
Max. Temp.:	380/400°C
USP Designation:	G27, G36
Ideal For:	General Applications

Heliflex® AT™-5 Capillary Columns

Length	i.d.	Film	Temp. Limits min.–max.	Part No.
10m	0.53mm	2.65µm	-60–300°C	**16853**
15m	0.25mm	0.25µm	-60–350°C	**13758**
	0.25mm	1.00µm	-60–350°C	**13706**
	0.32mm	0.25µm	-60–350°C	**13887**
	0.32mm	1.00µm	-60–350°C	**13710**
	0.53mm	1.20µm	-60–350°C	**955115**
	0.53mm	1.50µm	-60–330°C	**13906**
25m	0.25mm	0.20µm	-60–350°C	**952525**
30m	0.25mm	0.10µm	-60–350°C	**13707**
	0.25mm	0.25µm	-60–350°C	**13656**
	0.25mm	0.50µm	-60–330°C	**13309**
	0.25mm	1.00µm	-60–350°C	**13657**
	0.32mm	0.25µm	-60–350°C	**13658**
	0.32mm	1.00µm	-60–350°C	**13659**
	0.53mm	0.50µm	-60–300°C	**14045**
	0.53mm	1.00µm	-60–350°C	**13798**
	0.53mm	1.20µm	-60–350°C	**955130**
	0.53mm	1.50µm	-60–330°C	**13909**
	0.53mm	2.65µm	-60–300°C	**16857**
	0.53mm	5.00µm	-60–300°C	**16859**
60m	0.25mm	0.25µm	-60–350°C	**13676**
	0.32mm	0.25µm	-60–350°C	**13678**
	0.32mm	1.00µm	-60–350°C	**13679**
	0.53mm	1.00µm	-60–350°C	**14076**
	0.53mm	1.20µm	-60–350°C	**13820**
	0.53mm	5.00µm	-60–300°C	**13829**
100m	0.32mm	0.25µm	-60–350°C	**14011**

Heliflex® AT™-20

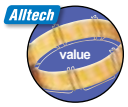
- Unique polarity between non-polar and mid-range
- Similar to 007-7, Rtx®-20, SPB™-20, VOCOL™, PE-7

Heliflex® AT™-20 Specifications	
Phase:	(20% Phenyl)-80% Methylpolysiloxane
Polarity:	Intermediate Polarity
USP Designation:	G28, G32
Ideal For:	Volatile Compounds and Solvents

Heliflex® AT™-20 Capillary Columns

Length	i.d.	Film	Temp. Limits min.–max.	Part No.
15m	0.25mm	0.25µm	-20–320°C	**13838**
30m	0.25mm	0.25µm	-20–320°C	**13857**
	0.53mm	1.00µm	-20–300°C	**13882**
	0.53mm	1.20µm	-20–300°C	**13932**

Econo-Cap™ EC™-5



- Batch tested to dramatically reduce price

Econo-Cap™ EC™-5 Capillary Columns

Length	i.d.	Film	Temp. Limits min.–max.	Part No.
15m	0.53mm	1.20µm	-60–350°C	**19645**
30m	0.25mm	0.25µm	-60–350°C	**19647**
	0.32mm	0.25µm	-60–350°C	**19646**
	0.53mm	1.00µm	-60–350°C	**19671**
	0.53mm	1.20µm	-60–350°C	**19657**

Econo-Cap™ EC™-5 Capillary Columns, Six Pack

Length	i.d.	Film	Temp. Limits min.–max.	Part No.
30m	0.25mm	0.25µm	-60–350°C	**196476**
	0.32mm	0.25µm	-60–350°C	**196466**
	0.53mm	1.20µm	-60–350°C	**196576**

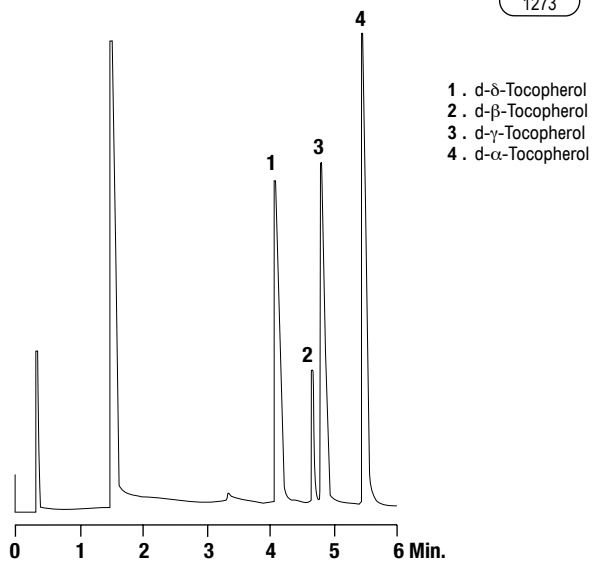
Heliflex® AT™-35ms

- Guaranteed low-bleed
- Specifically designed for mass spec analysis
- Similar to DB-35ms, Rtx®-35, SPB™-35, SUP-HERB™, MDN-35, BPX™-35

Heliflex® AT™-35ms Specifications	
Phase:	(35% Phenyl)-65% Methylpolysiloxane
Polarity:	Intermediate Polarity
USP Designation:	G42
Ideal For:	Pesticides, Herbicides, Drugs, Aromatics

Heliflex® AT™-35ms Capillary Column

Length	i.d.	Film	Temp. Limits min.–max.	Part No.
30m	0.25mm	0.25µm	-40–340°C	**12589**
60m	0.25mm	0.25µm	-40–340°C	**12590**



Column: Heliflex® AT™-35, 25m x 0.25mm x 0.20µm (Part No. **962525**)
Temp: 310°C
Carrier: Hydrogen at 40cm/sec
Detector: FID

Heliflex® AT™-35

- Ideal column for conformational analysis
- Similar to DB-35, DB-35ms, Rtx®-35, BPX™-35, SPB™-35, SPB™-608, HP-35, 007-11, OV™-11, RSL-300, PE-35, SUP-HERB™, ZB-35

Heliflex® AT™-35 Specifications	
Phase:	(35% Phenyl)-65% Methylpolysiloxane
Polarity:	Intermediate Polarity
USP Designation:	G42
Ideal For:	Pesticides, Herbicides, Drugs, Aromatics

Heliflex® AT™-35 Capillary Columns

Length	i.d.	Film	Temp. Limits min.–max.	Part No.
10m	0.53mm	1.20µm	-20–300°C	**965110**
	0.53mm	2.65µm	-20–280°C	**16877**
15m	0.53mm	1.20µm	-20–300°C	**965115**
25m	0.53mm	1.20µm	-20–300°C	**965125**
30m	0.25mm	0.25µm	-20–320°C	**13642**
	0.25mm	1.00µm	-20–300°C	**13796**
	0.32mm	0.25µm	-20–320°C	**13644**
	0.32mm	0.50µm	-20–320°C	**13645**
	0.53mm	1.00µm	-20–300°C	**14001**
	0.53mm	1.20µm	-20–300°C	**965130**
	0.53mm	2.65µm	-20–280°C	**16878**
60m	0.25mm	0.25µm	-20–320°C	**13682**
	0.53mm	1.00µm	-20–320°C	**14070**

more info
For more Capillary GC Applications, See the GC Applications Section pages 462–493.

Heliflex® AT™-50

- General purpose column
- Similar to DB-17, DB-17ht, Rtx®-50, BPX™-50, SPB™-50, SP-2250, HP-50+, HP-17, 007-17, OV™-17, CP-Sil 24CB, PE-17, ZB-50

Heliflex® AT™-50 Specifications	
Phase:	(50% Phenyl)-Methylpolysiloxane
Polarity:	Intermediate Polarity
USP Code:	G3
Ideal For:	Pesticides, Herbicides, Phthalate Esters, Free Phenols, and Basic Drugs

Heliflex® AT™-50 Capillary Columns

Length	i.d.	Film	Temp. Limits min.–max.	Part No.
15m	0.25mm	0.25µm	40–325°C	**13837**
	0.53mm	1.00µm	40–280°C	**13876**
30m	0.25mm	0.25µm	40–325°C	**13839**
	0.32mm	0.25µm	40–325°C	**13858**
	0.53mm	0.50µm	40–300°C	**13991**
	0.53mm	1.00µm	40–280°C	**13878**

Heliflex® AT™-1301

- Unique polarity makes it ideal for a range of applications
- Similar to BP624, DB-1301, Rtx®-1301, Rtx®-624, HP-1301, HP-624, DB-624, 007-624, 007-1301, SPB™-1301, SPB™-624, ZB-624

Heliflex® AT™-1301 Specifications	
Phase:	(6% Cyanopropylpenyl)-Methylpolysiloxane
Polarity:	Intermediate Polarity
USP Code:	G43
Ideal For:	Volatile Organics, Pharmaceuticals, and EPA Method 612

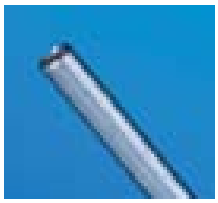
Heliflex® AT™-1301 Capillary Columns

Length	i.d.	Film	Temp. Limits min.–max.	Part No.
30m	0.53mm	1.00µm	-20–260°C	**13970**
	0.53mm	3.00µm	-20–260°C	**15562**

related product

Stainless steel tubing

We offer a full selection of lengths, IDs, and coating types to meet all of your GC tubing needs. See pages 386, 388–389.



5096

related product

GC fittings

For a full selection of stainless steel GC fittings, reducing unions, and other connectors, see pages 282–285.

5130

related product

Vials

We have one of the largest selections of vials for all types of chromatography, including headspace vials, autosampler vials, and much more. See pages 348–378.

4715

more info

For Capillary GC Applications, see the GC Applications Section, pages 462–493.

technical assistance

Contact Tech Support: Phone: 1.800.255.8324 (North America)
Email: contact.alltech@grace.com
Online: www.discoverysciences.com

more applications

To view our complete searchable chromatogram database visit www.discoverysciences.com/chromdb/

Heliflex® AT™-210

- Similar to DB- 210, Rtx®-200, OV™- 202, OV™-210, OV™-215, QF-1, SP-2401, RSL-400

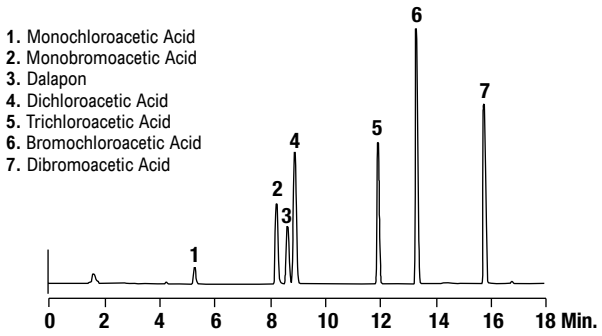
Heliflex® AT™-210 Specifications	
Phase:	Trifluoropropyl Methylpolysiloxane
Polarity:	Polar
USB Code:	G6
Ideal For:	Ketones, Aldehydes, Silanes, Glycols, Nitro Aromatics, Herbicides, and Method 8140 and 609

Heliflex® AT™-210 Capillary Columns

Length	i.d.	Film	Temp. Limits min.–max.	Part No.
15m	0.53mm	1.00µm	45–240°C	**13127**
	0.53mm	1.20µm	45–240°C	**985115**
30m	0.53mm	1.00µm	45–240°C	**13136**
	0.53mm	1.20µm	45–240°C	**985130**

EPA Method 552.1: Haloacetic Acids

CHROM 2105



Column:	Heliflex® AT™-1701, 30m x 0.32mm x 0.25µm (Part No. **13690**)
Temp:	50°C (10min hold) to 120°C at 10°C/min
Carrier Gas:	Helium at 35cm/sec
Detector:	ECD

Heliflex® AT™-1701

- Similar to DB-1701, OV™-1701, SPB™-1701, Rtx®-1701, 007-1701, PAS-1701, CP-Sil 19CB, HP-1701, BP-10, ZB-1701

Heliflex® AT™-1701 Specifications	
Phase:	(14% Cyanopropylphenyl)-86% Methylpolysiloxane
Polarity:	Intermediate Polarity
USB Code:	n/a
Ideal For:	Pesticides, PCB's, Drugs, Herbicides, and TMS Sugars

Heliflex® AT™-1701 Capillary Columns

Length	i.d.	Film	Temp. Limits min.–max.	Part No.
15m	0.25mm	0.25µm	-20–280°C	**13881**
	0.32mm	0.25µm	-20–280°C	**13762**
30m	0.25mm	0.25µm	-20–280°C	**13686**
	0.25mm	1.00µm	-20–280°C	**13687**
	0.32mm	0.25µm	-20–280°C	**13690**
	0.32mm	1.00µm	-20–280°C	**13691**
	0.53mm	1.00µm	-20–280°C	**13795**
	0.53mm	1.20µm	-20–280°C	**13830**
60m	0.25mm	0.25µm	-20–280°C	**13688**
	0.25mm	1.00µm	-20–280°C	**13689**
	0.32mm	0.25µm	-20–280°C	**13692**
	0.32mm	1.00µm	-20–280°C	**13693**
	0.53mm	1.00µm	-20–280°C	**14131**

Heliflex® AT™-WAXms

- Designed to provide low MS bleed
- Similar to DB-WAX, Rtx®-WAX, Supelcowax™-10

Heliflex® AT™-WAXms Specifications	
Phase:	100% Polyethylene Glycol
Polarity:	Polar
USP Code:	G14, G15, G16, G39
Ideal For:	Mass Spec Analysis

Heliflex® AT™-WAXms Capillary Columns

Length	i.d.	Film	Temp. Limits min.–max.	Part No.
30m	0.25mm	0.25µm	40–260°C	**12604**
	0.32mm	0.25µm	40–260°C	**12607**
60m	0.25mm	0.25µm	40–260°C	**12605**

Heliflex® AT™-WAX

- Similar to DB-WAX, DB-WAXetr, Rtx®-WAX, Stabilwax®, Carbowax® 20M, Supelcowax™-10, Innowax™, HP-20M, HP-Wax, BP-20, CP-Wax 52-CB, 007-CW, Superox® II, OmegaWAX™, ZB-WAX

Heliflex® AT™-WAX Specifications	
Phase:	100% Polyethylene Glycol
Polarity:	Polar
USP Code:	G14, G15, G16, G39
Ideal For:	FAMEs, Polar Solvents, BTEX, Flavor and Fragrances, Glycols, Alcohols, and Aromatics

Heliflex® AT™-WAX Capillary Columns

Length	i.d.	Film	Temp. Limits min.–max.	Part No.
10m	0.53mm	1.20µm	40–260°C	**9951102**
15m	0.25mm	0.50µm	40–260°C	**137302**
	0.32mm	0.50µm	40–260°C	**137352**
	0.32mm	1.00µm	40–260°C	**137362**
15m	0.53mm	0.50µm	40–260°C	**14109**
	0.53mm	1.00µm	40–260°C	**13904**
	0.53mm	1.20µm	40–260°C	**9951152**
25m	0.25mm	0.20µm	40–280°C	**9925252**
	0.32mm	0.30µm	40–280°C	**9932252**
	0.53mm	1.20µm	40–260°C	**9951252**
30m	0.25mm	0.20µm	40–280°C	**9925302**
	0.25mm	0.25µm	40–280°C	**136462**
	0.25mm	0.50µm	40–260°C	**136472**
	0.32mm	0.25µm	40–280°C	**136482**
	0.32mm	0.30µm	40–280°C	**9932302**
	0.32mm	0.50µm	40–260°C	**136522**
	0.32mm	1.00µm	40–260°C	**137382**
	0.53mm	0.50µm	40–260°C	**14111**
	0.53mm	1.00µm	40–260°C	**13907**
	0.53mm	1.20µm	40–260°C	**9951302**
50m	0.32mm	0.30µm	40–280°C	**9932502**
	0.53mm	1.20µm	40–260°C	**13946**
60m	0.25mm	0.20µm	40–280°C	**9925602**
	0.25mm	0.25µm	40–280°C	**136942**
	0.32mm	0.25µm	40–280°C	**136962**
	0.32mm	0.30µm	40–280°C	**9932602**
	0.32mm	0.50µm	40–260°C	**136972**
	0.53mm	1.00µm	40–260°C	**13929**
	0.53mm	1.20µm	40–260°C	**13850**

more applications

To view our complete searchable chromatogram database visit www.discoverysciences.com/chromdb/

Econo-Cap™ EC™-WAX

- Batch tested to dramatically reduce price
- For phase specifications, see Heliflex® AT™ version

Econo-Cap™ EC™-WAX Capillary Columns

Length	i.d.	Film	Temp. Limits min.–max.	Part No.
15m	0.53mm	1.20µm	40–260°C	**19653**
30m	0.25mm	0.25µm	40–280°C	**19655**
	0.32mm	0.25µm	40–280°C	**19654**
	0.53mm	1.20µm	40–260°C	**19659**

Econo-Cap™ EC™-WAX Six-Pack Capillary Columns

best value

Length	i.d.	Film	Temp. Limits min.–max.	Part No.
30m	0.25mm	0.25µm	40–260°C	**196556**
	0.32mm	0.25µm	40–260°C	**196546**
	0.53mm	1.20µm	40–260°C	**196596**

more info

For more information on the Econo-Cap™ Capillary Line, refer to page 213.

Heliflex® AT™-AquaWax

- Designed and tested for aqueous injections
- Similar to DB-Wax, DB-Waxer, Rtx®-WAX, Stabilwax®, HP-Wax, HP-20M, HP-Innowax, ZB-Wax, and Supelcowax™-10

Heliflex® AT™-AquaWax Specifications	
Phase:	100% Polyethylene Glycol
Polarity:	Polar
USP Code:	N/A
Ideal For:	Food and Beverage Analysis

Heliflex® AT™-AquaWax Capillary Columns

Length	i.d.	Film	Temp. Limits min.–max.	Part No.
30m	0.25mm	0.25µm	40–260°C	**12437**
	0.32mm	0.25µm	40–260°C	**12439**
60m	0.25mm	0.25µm	40–260°C	**12447**
	0.32mm	0.25µm	40–260°C	**12449**

more applications

To view our complete searchable chromatogram database visit www.discoverysciences.com/chromdb/

Heliflex® AT™-AquaWax-DA

- Designed and tested for aqueous injections
- Eliminates the need for derivatization of acidic organic compounds
- Similar to DB-FFAP, Stabilwax®, HP-FFAP-DA, ZB-FFAP, SPB™-1000, and Nukol™

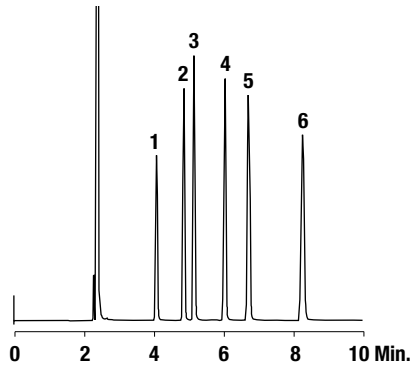
Heliflex® AT™-AquaWax-DA Specifications	
Phase:	100% Polyethylene Glycol—Nitroterephthal Acid Modified
Polarity:	Polar
USP Code:	N/A
Ideal For:	Analysis of Acidic Organic Compounds and Free Fatty Acids

Heliflex® AT™-AquaWax-DA Capillary Columns

Length	i.d.	Film	Temp. Limits min.–max.	Part No.
30m	0.25mm	0.25µm	40–250°C	**14537**
	0.32mm	0.25µm	40–250°C	**14539**
	0.53mm	1.00µm	40–250°C	**14543**
60m	0.25mm	0.25µm	40–250°C	**14547**

Free Fatty Acids

CHROM 2528



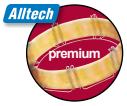
1. Propionic Acid
2. Butyric Acid
3. Valeric Acid
4. Caproic Acid
5. Heptanoic Acid
6. Caprylic Acid

Column: Heliflex® AT™-AquaWax-DA, 30m x 0.25mm x 0.25µm (Part No. **14537**)
Temp: 180°C
Carrier Gas: Helium at 22cm/sec
Detector: FID

more info

For Capillary GC Applications, see the GC Applications Section, pages 462–493.

Heliflex® AT™-1000



- Similar to DB™-FFAP, Stabilwax®-DA, SPB™-1000, Nukol™, HP-FFAP, BP-21, CP-Wax-58-CB, 007-FFAP, OV™-351, FFAP, Superox®-FA, ZB-FFAP

Heliflex® AT™-1000 Specifications	
Phase:	100% Polyethylene Glycol—Acid Modified
Polarity:	High Polarity
USP Code:	G25, G35
Ideal For:	Free Fatty Acids

Heliflex® AT™-1000 Capillary Columns

Length	i.d.	Film	Temp. Limits min.–max.	Part No.
10m	0.53mm	1.20µm	40–250°C	**975110**
15m	0.53mm	1.00µm	40–250°C	**13873**
	0.53mm	1.20µm	40–250°C	**975115**
25m	0.25mm	0.20µm	40–250°C	**972525**
	0.32mm	0.30µm	40–250°C	**973225**
30m	0.25mm	0.25µm	40–250°C	**13783**
	0.32mm	0.25µm	40–250°C	**13785**
	0.32mm	0.30µm	40–250°C	**973230**
	0.53mm	1.00µm	40–250°C	**13877**
	0.53mm	1.20µm	40–250°C	**975130**
	0.53mm	2.00µm	40–250°C	**13017**
50m	0.25mm	0.20µm	40–250°C	**972550**
	0.32mm	0.30µm	40–250°C	**973250**
60m	0.25mm	0.25µm	40–250°C	**13784**
	0.32mm	0.25µm	40–250°C	**13786**
	0.32mm	0.30µm	40–250°C	**973260**
	0.32mm	1.00µm	40–250°C	**13276**
	0.53mm	1.00µm	40–250°C	**13879**

Heliflex® AT™-FAME

- Similar to FAMEWAX™ and OmegaWAX™

Heliflex® AT™-FAME Specifications	
Phase:	Stable Bonded Polyethylene Glycol
Polarity:	High Polarity
USP Code:	G25, G35
Ideal For:	Fatty Acid Methyl Esters

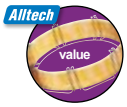
Heliflex® AT™-FAME Capillary Columns

Length	i.d.	Film	Temp. Limits min.–max.	Part No.
30m	0.25mm	0.25µm	40–280°C	**12436**
	0.32mm	0.25µm	40–280°C	**12438**

more applications

To view our complete searchable chromatogram database visit www.discoverysciences.com/chromdb/

Econo-Cap™ EC™-1000



- Batch tested to dramatically reduce price
- For phase specifications, see Heliflex® AT™ version

Econo-Cap™ EC™-1000 Capillary Columns

Length	i.d.	Film	Temp. Limits min.–max.	Part No.
15m	0.53mm	1.20µm	40–250°C	**19684**
30m	0.25mm	0.25µm	40–250°C	**19686**
	0.32mm	0.25µm	40–250°C	**19685**
	0.53mm	1.20µm	40–250°C	**19688**

best value

Econo-Cap™ EC™-1000 Six-Pack Capillary Columns

Length	i.d.	Film	Temp. Limits min.–max.	Part No.
30m	0.32mm	0.25µm	40–250°C	**196856**
	0.53mm	1.20µm	40–250°C	**196886**

Heliflex® AT™-624

- Specially tested for EPA Method 624
- Similar to DB™-1301, Rtx®-1301, Rtx®-624, HP-1301, HP-624, DB™-624, 007™-624, 007™-1301, SPB™-1301, SPB™-624, ZB-624

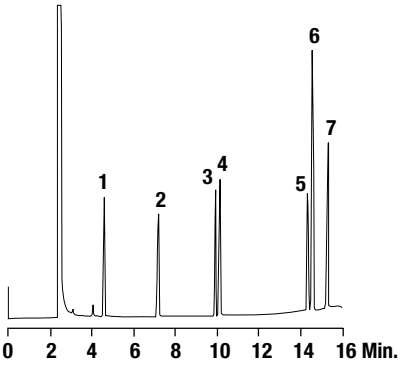
Heliflex® AT™-624 Specifications	
Phase:	6% Cyanopropylphenyl-94% Methylpolysiloxane
Polarity:	Intermediate Polarity
USP Code:	G43
Ideal For:	EPA Methods 524, 601, 602, 624, 8240 and 8260, and Solvent Analysis

Heliflex® AT™-624 Capillary Columns

Length	i.d.	Film	Temp. Limits min.–max.	Part No.
30m	0.25mm	1.40µm	-20–260°C	**13754**
	0.32mm	1.80µm	-20–260°C	**13756**
	0.32mm	3.00µm	-20–260°C	**13780**
	0.53mm	3.00µm	-20–260°C	**16889**
60m	0.25mm	1.40µm	-20–260°C	**13503**
	0.32mm	1.80µm	-20–260°C	**13799**
	0.53mm	3.00µm	-20–260°C	**13800**
75m	0.53mm	3.00µm	-20–260°C	**13937**

EPA Method 602—Purgeable Aromatics

CHROM 1233



1. Benzene
2. Toluene
3. Chlorobenzene
4. Ethylbenzene
5. 1,3-Dichlorobenzene
6. 1,4-Dichlorobenzene
7. 1,2-Dichlorobenzene

Column:	Heliflex® AT™-624, 30m x 0.32mm x 1.80µm (Part No. **13756**)
Temp:	90°C (7min hold) to 180°C at 10°C/min
Carrier Gas:	Helium at 1.1mL/min
Detector:	FID

Heliflex® AT™-225

- Similar to DB™-225, HP-225, Rtx®-225, OV™-225, RSL-500, 007-225, CP-Sil 43CB, BP-225, PE-225

Heliflex® AT™-225 Specifications	
Phase:	(50% Cyanopropylphenyl)-50% Methylpolysiloxane
Polarity:	Mid to High Polarity
USP Code:	G19
Ideal For:	Carbohydrates and Solvents

Heliflex® AT™-225 Capillary Columns

Length	i.d.	Film	Temp. Limits min.–max.	Part No.
15m	0.25mm	0.25µm	40–240°C	**13883**
25m	0.25mm	0.20µm	40–240°C	**912525**
30m	0.25mm	0.25µm	40–240°C	**13773**
	0.32mm	0.25µm	40–240°C	**13775**
	0.32mm	0.30µm	40–240°C	**913230**
	0.53mm	1.20µm	40–220°C	**915130**

6515

related products

Parker Balston® FID gas station

The Parker Balston® FID gas station combines Parker's zero air and hydrogen generation technologies into a single unit, eliminating the inconveniences and cost of hydrogen and gas cylinders. See page 208.

technical assistance

Contact Tech Support: Phone: 1.800.255.8324 (North America)
Email: contact.alltech@grace.com
Online: www.discoverysciences.com

more applications

To view our complete searchable chromatogram database visit www.discoverysciences.com/chromdb/

Heliflex® AT™-Silar-90

- Designed and tested for FAME
- Similar to DB™-23, CP-Sil 84, Rtx®-2330, SP-2330

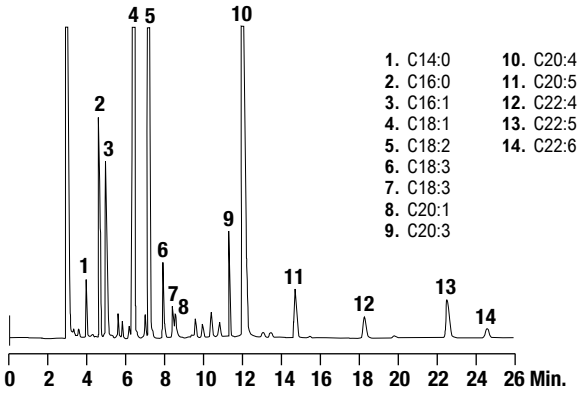
Heliflex® AT™-Silar-90 Specifications	
Phase:	Poly (90% bis Cyanopropyl)-10% Cyanopropyphenyl Siloxane
Polarity:	High Polarity
USP Code:	G8
Ideal For:	Analysis of FAMEs

Heliflex® AT™-Silar-90 Capillary Columns

Length	i.d.	Film	Temp. Limits min.–max.	Part No.
15m	0.25mm	0.20µm	0–250°C	**12627**
30m	0.25mm	0.20µm	0–250°C	**12628**
	0.32mm	0.20µm	0–250°C	**12630**

Fatty Acid Methyl Esters

CHROM 2678



1. C14:0
2. C16:0
3. C16:1
4. C18:1
5. C18:2
6. C18:3
7. C18:3
8. C20:1
9. C20:3
10. C20:4
11. C20:5
12. C22:4
13. C22:5
14. C22:6

Column: Heliflex® AT™-Silar-90, 30m x 0.25mm x 0.20µm (Part No. **24019**)
Temp: 200°C
Carrier Gas: Helium at 20cm/sec
Detector: FID

Heliflex® AT™-Silar-100

- Ideal for high and low temperature separation of samples containing geometric isomers of FAMEs
- Similar to CO-Sil 88, Rtx®-2330, SP-2340

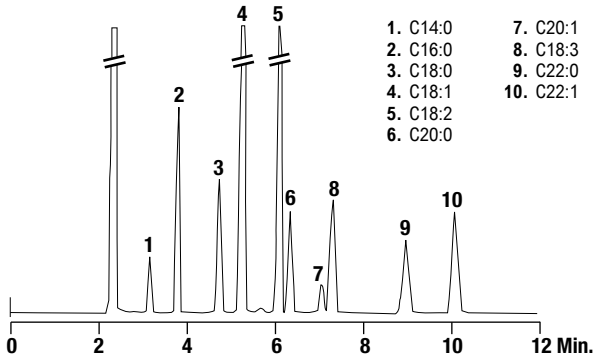
Heliflex® AT™-Silar-100 Specifications	
Phase:	Poly bis Cyanopropyl
Polarity:	High Polarity Available
USP Code:	G8
Ideal For:	*cis/trans* Isomers of FAMEs, Dioxins, and Furans

Heliflex® AT™-Silar-100 Capillary Columns

Length	i.d.	Film	Temp. Limits min.–max.	Part No.
15m	0.25mm	0.20µm	0–250°C	**12631**
30m	0.25mm	0.20µm	0–250°C	**12632**
	0.32mm	0.20µm	0–250°C	**12634**

Fatty Acid Methyl Esters in Rapeseed Oil

CHROM 2679



1. C14:0
2. C16:0
3. C18:0
4. C18:1
5. C18:2
6. C20:0
7. C20:1
8. C18:3
9. C22:0
10. C22:1

Column: Heliflex® AT™-Silar-100, 30m x 0.25mm x 0.20µm (Part No. **24022**)
Temp: 190°C
Carrier Gas: Helium at 20cm/sec
Detector: FID

tech tip

Tips for Heliflex® AT™-Silar-90 and Silar-100
Silar-90 and Silar-100 are more susceptible to damage by oxygen, moisture, and HCL than other silicone phases. Avoid solvents such as water and methanol when using on-column injection techniques. Columns should not be rinsed.

more info

For Capillary GC Applications, see the GC Applications Section, pages 462–493.

Heliflex® AT™-Amino Acid

- Separates all 20 essential amino acids

Heliflex® AT™-Amino Acid Specifications	
Phase:	Proprietary
Polarity:	Intermediate
USP Code:	n/a
Ideal For:	Amino Acids

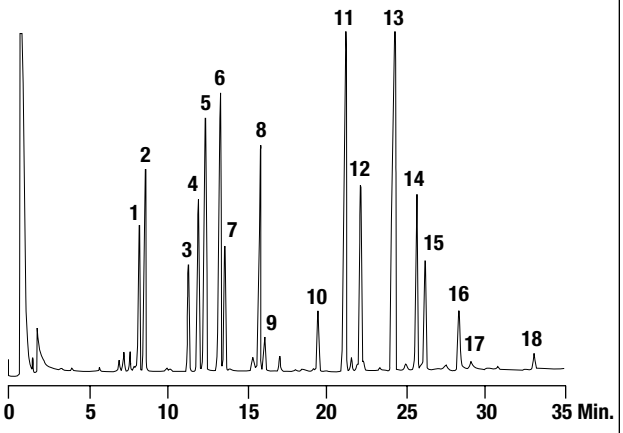
Heliflex® AT™-Amino Acid Capillary Column

Length	i.d.	Film	Temp. Limits min.–max.	Part No.
25m	0.53mm	1.20µm	-20–350°C	**16864**

N(O,S)-Heptafluorobutyl-isobutyl Esters of Amino Acids from Soy Protein Hydrolysate

CHROM 1288

1. Alanine
2. Glycine
3. Valine
4. Threonine
5. Serine
6. Leucine
7. Isoleucine
8. Proline
9. Cystine
10. Methionine
11. Aspartic Acid
12. Phenylalanine
13. Glutamic Acid
14. Lysine
15. Tyrosine
16. Arginine
17. Histidine
18. Tryptophan



Column: Heliflex® AT™-Amino Acid, 25m x 0.53mm x 1.20µm (Part No. **16864**)
Temp: 80°C (2min hold) to 230°C at 4°C/min
Carrier Gas: Helium at 10mL/min
Detector: FID

more info

For Capillary GC Applications, see the GC Applications Section, pages 462–493.

more applications

To view our complete searchable chromatogram database visit www.discoverysciences.com/chromdb/

Heliflex® AT™-502.2

- Separates early eluting gases at above ambient temperature
- Useful for volatile organics analysis, including EPA Methods 502.2, 524.2, 8260

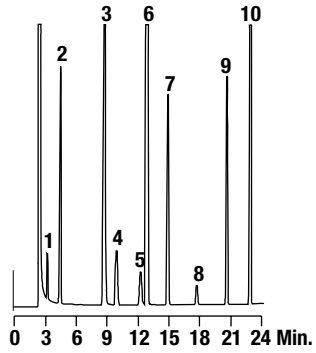
Heliflex® AT™-502.2 Specifications	
Phase:	Proprietary
Polarity:	Intermediate
USP Code:	n/a
Ideal For:	Volatile Organics and EPA Methods 502.2, 524.2, and 8260

Heliflex® AT™-502.2 Capillary Columns

Length	i.d.	Film	Temp. Limit max.	Part No.
60m	0.25mm	1.40µm	270°C	**13788**
	0.32mm	1.80µm	270°C	**13790**
	0.53mm	3.00µm	270°C	**13793**
105m	0.32mm	1.80µm	270°C	**13791**
	0.53mm	3.00µm	270°C	**13794**

TCLP Volatiles Mix

CHROM 2064



1. Vinyl Chloride
2. 1,1-Dichloroethene
3. 2-Butanone
4. Chloroform
5. Carbon Tetrachloride
6. Benzene + 1,2-Dichloroethene
7. Trichloroethene
8. Tetrachloroethene
9. Chlorobenzene
10. 1,4-Dichlorobenzene

Column:	Heliflex® AT™-502.2, 30m x 0.53mm x 3.00µm (Part No. **13792**)
Temp:	40°C (10min hold) to 120°C at 4°C/min
Carrier Gas:	Helium at 22cm/sec
Detector:	FID

more info

For Capillary GC Applications, see the GC Applications Section, pages 462–493.

related products

Need sample prep for your pesticide analysis?

Florisil®-PR is pretested specifically chlorinated pesticides, see page 309.

Heliflex® AT™-Sulfur

- Designed for the analysis of volatile sulfur-containing compounds in petroleum distillates

Heliflex® AT™-Sulfur Specifications	
Phase:	100% Methylpolysiloxane
Polarity:	Non-Polar
USP Code:	n/a
Ideal For:	Volatile Sulfur Compounds

Heliflex® AT™-Sulfur Capillary Columns

Length	i.d.	Film	Temp. Limit min.–max.	Part No.
30m	0.32mm	4.00µm	-20–350°C	**14029**

Heliflex® AT™-3710

- For boiling range of gasoline samples

Heliflex® AT™-3710 Specifications	
Phase:	100% Methylpolysiloxane
Polarity:	Non-Polar
USP Code:	n/a
Ideal For:	Boiling Point of Gasoline

Heliflex® AT™-3710 Capillary Column

Length	i.d.	Film	Temp. Limit max.	Part No.
15m	0.53mm	5.00µm	300°C	**13949**

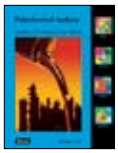
Heliflex® AT™-Petro

- For high resolution of complex hydrocarbon mixtures

Heliflex® AT™-Petro Specifications	
Phase:	100% Methylpolysiloxane
Polarity:	Non-Polar
USP Code:	n/a
Ideal For:	hydrocarbon Mixtures

Heliflex® AT™-Petro Capillary Column

Length	i.d.	Film	Temp. Limit max.	Part No.
100m	0.25mm	0.50µm	350°C	**13948**



more info

For more information about Petrochemical analysis, request brochure #478.

more info

For Capillary GC Applications, see the GC Applications Section, pages 462–493.

more applications

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Alltech Column Guide to EPA Methods

Alltech Guide to Capillary Columns for Environmental Analysis

Method Description and Recommended Columns	Comments	Part No.
501.3—Trihalomethanes in Drinking Water		
Heliflex® AT™-624, 30m x 0.53mm x 3.00µm		**16889**
502.1—Volatile Halogenated Organics by Purge and Trap GC/ELCD		
Heliflex® AT™-624, 30m x 0.53mm x 3.00µm	Subambient	**16889**
Heliflex® AT™-624, 60m x 0.53mm x 3.00µm	Ambient	**13800**
502.2—Volatile Organics in Water by Purge and Trap GC/PID/ELCD		
Heliflex® AT™-502.2, 105m x 0.53mm x 3.00µm		**13794**
Heliflex® AT™-624, 60m x 0.53mm x 3.00µm		**13800**
504—DBE and DBCP by Microextraction GC/ECD		
Econo-Cap™ EC™-1, 30m x 0.32mm x 1.00µm	(Inexpensive, Batch QC'ed Column)	**19660**
505—Organohalide Pesticides and PCBs by Microextraction and GC/ECD		
Heliflex® AT™-1, 30m x 0.32mm x 1.00µm	Primary Column	**13641**
506—Phthalate and Adipate Esters in Water (GC/PID)		
Heliflex® AT™-1, 30m x 0.32mm x 0.25µm		**13640**
Heliflex® AT™-5, 30m x 0.32mm x 0.25µm		**13658**
507—Nitrogen and Phosphorus Containing Pesticides by GC/NPD		
Heliflex® AT™-5, 30m x 0.25mm x 0.25µm	Primary Column	**13656**
Econo-Cap™ EC™-5, 30m x 0.25mm x 0.25µm	(Inexpensive, Batch QC'ed Column)	**19647**
Heliflex® AT™-1701, 30m x 0.25mm x 0.25µm	Confirmation Column	**13686**
508—Chlorinated Pesticides by GC/ECD		
Heliflex® AT™-5, 30m x 0.25mm x 0.25µm	Primary Column	**13656**
Econo-Cap™ EC™-5, 30m x 0.25mm x 0.25µm	(Inexpensive, Batch QC'ed Column)	**19647**
Heliflex® AT™-1701, 30m x 0.25mm x 0.25µm	Alternate Column	**13686**
515.1—Chlorinated Acids by GC/ECD		
Heliflex® AT™-5, 30m x 0.25mm x 0.25µm	Primary Column	**13656**
Econo-Cap™ EC™-5 Econo-Cap, 30m x 0.25mm x 0.25µm	(Inexpensive, batch QC'ed column)	**19647**
Heliflex® AT™-1701, 30m x 0.25mm x 0.25µm	Confirmation Column	**13686**
524.2—Purgeables by Purge and Trap GC/MS		
Heliflex® AT™-624, 30m x 0.53mm x 3.00µm	Subambient (10°C)	**16889**
Heliflex® AT™-624, 60m x 0.53mm x 3.00µm	Ambient	**13800**
Heliflex® AT™-5, 30m x 0.32mm x 1.00µm	Subambient, Cryofocusing	**13659**
Heliflex® AT™-5, 30m x 0.25mm x 1.00µm	Subambient, Cryofocusing	**13657**
525—Organic Compounds in Water by Liquid-Solid Extraction and Capillary GC/MS		
Heliflex® AT™-5ms, 30m x 0.32mm x 0.25µm		**15894**
Heliflex® AT™-5ms, 30m x 0.25mm x 0.25µm		**15807**
548—Endothall in Drinking Water		
Heliflex® AT™-1, 30m x 0.25mm x 0.25µm		**13638**
Heliflex® AT™-5, 30m x 0.25mm x 0.25µm		**13656**
551—Chlorination Disinfection By-products and Chlorinated Solvents in Drinking Water		
Heliflex® AT™-1, 30m x 0.32mm x 1.00µm		**13641**
Econo-Cap™ EC™-1, 30m x 0.32mm x 1.00µm	(Inexpensive, Batch QC'ed Column)	**19660**
552.1—Haloacetic Acids in Drinking Water		
Heliflex® AT™-1701, 30m x 0.32mm x 0.25µm		**13690**

Alltech Column Guide to EPA Methods (continued)

Alltech Guide to Capillary Columns for Environmental Analysis (continued)

Method Description and Recommended Columns	Comments	Part No.
601—Purgeable Halocarbons by Purge and Trap ELCD		
Heliflex® AT™-624, 30m x 0.53mm x 3.00µm	Subambient	**16889**
Heliflex® AT™-624, 60m x 0.53mm x 3.00µm	Ambient	**13800**
602—Purgeable Aromatics by Purge and Trap GC/PID		
Heliflex® AT™-624, 30m x 0.53mm x 3.00µm		**16889**
Econo-Cap™ EC™-WAX, 30m x 0.53mm x 1.20µm	(Inexpensive, Batch QC'ed Column)	**19659**
603—Acrolein and Acrylonitrile by GC/FID		
Heliflex® AT™-624, 30m x 0.53mm x 3.00µm		**16889**
604—Phenols by GC/FID and GC/ECD		
Heliflex® AT™-5, 30m x 0.53mm x 1.20µm		**955130**
Econo-Cap™ EC™-5, 30m x 0.53mm x 1.20µm	(Inexpensive, Batch QC'ed Column)	**19657**
Heliflex® AT™-5, 30m x 0.32mm x 0.25µm		**13658**
Econo-Cap™ EC™-5, 30m x 0.32mm x 0.25µm	(Inexpensive, Batch QC'ed Column)	**19646**
Heliflex® AT™-5, 30m x 0.25mm x 0.25µm		**13656**
Econo-Cap™ EC™-5, 30m x 0.25mm x 0.25µm	(Inexpensive, Batch QC'ed Column)	**19647**
606—Phthalate Esters by GC/ECD		
Heliflex® AT™-5, 15m x 0.53mm x 1.20µm		**955115**
Econo-Cap™ EC™-5, 15m x 0.53mm x 1.20µm	(Inexpensive, Batch QC'ed Column)	**19645**
607—Nitrosamines		
Heliflex® AT™-5, 15m x 0.53mm x 1.20µm		**955115**
Econo-Cap™ EC™-5, 15m x 0.53mm x 1.20µm	(Inexpensive, Batch QC'ed Column)	**19645**
609—Nitroaromatics and Isophorone by GC/FID and GC/ECD		
Heliflex® AT™-5, 15m x 0.53mm x 1.20µm	(Capillary GC)	**955115**
610—Polynuclear Aromatic Hydrocarbons by GC/FID		
Heliflex® AT™-5, 30m x 0.53mm x 1.20µm		**955130**
Econo-Cap™ EC™-5, 30m x 0.53mm x 1.20µm	(Inexpensive, Batch QC'ed Column)	**19657**
Heliflex® AT™-5, 30m x 0.32mm x 0.25µm		**13658**
610—Polynuclear Aromatic Hydrocarbons by HPLC and GC/FID		
Heliflex® AT™-5, 30m x 0.32mm x 0.25µm		**13658**
Econo-Cap™ EC™-5, 30m x 0.32mm x 0.25µm	(Inexpensive, Batch QC'ed Column)	**19646**
Heliflex® AT™-5, 30m x 0.25mm x 0.25µm		**13656**
Econo-Cap™ EC™-5, 30m x 0.25mm x 0.25µm	(Inexpensive, Batch QC'ed Column)	**19647**
611—Haloethers by GC/HSD		
Heliflex® AT™-5, 15m x 0.53mm x 1.20µm		**955115**
Econo-Cap™ EC™-5, 15m x 0.53mm x 1.20µm	(Inexpensive, Batch QC'ed Column)	**19645**
612—Chlorinated Hydrocarbons by GC/ECD		
Heliflex® AT™-5, 15m x 0.53mm x 1.20µm		**955115**
Econo-Cap™ EC™-5, 15m x 0.53mm x 1.20µm	(Inexpensive, Batch QC'ed Column)	**19645**
615—Chlorinated Herbicides by GC/ECD/ELCD		
Heliflex® AT™-1, 30m x 0.32mm x 0.25µm		**13640**
Econo-Cap™ EC™-1, 30m x 0.32mm x 0.25µm	(Inexpensive, Batch QC'ed Column)	**19651**
619—Triazine Herbicides		
Heliflex® AT™-50, 30m x 0.53mm x 1.00µm		**13878**
624—Purgeables by Purge and Trap GC/MS		
Heliflex® AT™-624, 30m x 0.53mm x 3.00µm	Subambient (10°C)	**16889**
Heliflex® AT™-624, 60m x 0.53mm x 3.00µm	Ambient	**13800**
Heliflex® AT™-5, 30m x 0.32mm x 1.00µm	Subambient, Cryofocusing	**13659**
Heliflex® AT™-5, 30m x 0.25mm x 1.00µm	Subambient, Cryofocusing	**13657**
625—Base/Neutral and Acids by GC/MS	See Method 8270	**—**
680—Pesticides and PCBs in Water and Soil/Sediment by GC/MS		
Heliflex® AT™-5ms, 30m x 0.32mm x 0.25µm		**15894**
8011- EDB and DBCP by Microextraction Using GC		
Heliflex® AT™-1, 30m x 0.32mm x 0.25µm		**13640**

Alltech Column Guide to EPA Methods (continued)

Alltech Guide to Capillary Columns for Environmental Analysis (continued)

Method Description and Recommended Columns	Comments	Part No.
8015—Nonhalogenated Volatile Organics		
Heliflex® AT™-WAX, 30m x 0.53mm x 1.00µm		**13907**
Heliflex® AT™-5, 30m x 0.53mm x 1.50µm		**13909**
8032—Acrylamide by GC/ECD		
Heliflex® AT™-1000, 15m x 0.53mm x 1.20µm		**975115**
8033—Acetonitrile by GC/NPD		
Heliflex® AT™-WAX, 15m x 0.53mm x 1.00µm		**13904**
8041—Phenols by GC/FID/(ECD)		
Heliflex® AT™-5, 30m x 0.53mm x 1.50µm		**13909**
Heliflex® AT™-1701, 30m x 0.53mm x 1.00µm		**13795**
8070—Nitrosamines		
Heliflex® AT™-5, 15m x 0.53mm x 1.20µm		**955115**
Econo-Cap™ EC™-5, 15m x 0.53mm x 1.20µm	(Inexpensive, Batch QC'ed Column)	**19645**
8081—Organochlorine Pesticides by GC/ECD		
Heliflex® AT™-5, 30m x 0.25mm x 1.00µm		**13657**
Heliflex® AT™-35, 30m x 0.25mm x 1.00µm		**13796**
Heliflex® AT™-1701, 30m x 0.53mm x 1.00µm		**13795**
Heliflex® AT™-5, 30m x 0.53mm x 1.50µm		**13909**
8082—Polychlorinated Biphenyls (PCBs) by GC/ECD or GC/ELCD		
Heliflex® AT™-5, 30m x 0.25mm x 1.00µm		**13657**
Heliflex® AT™-35, 30m x 0.25mm x 1.00µm		**13796**
Heliflex® AT™-1701, 30m x 0.53mm x 1.00µm		**13795**
Heliflex® AT™-5, 30m x 0.53mm x 1.50µm		**13909**
8091—Nitroaromatics and Cyclic Ketones by GC/ECD or GC/NPD		
Heliflex® AT™-5, 30m x 0.53mm x 1.50µm		**13909**
Heliflex® AT™-1701, 30m x 0.53mm x 1.00µm		**13795**
8100—Polynuclear Aromatic Hydrocarbons by GC/FID		
Heliflex® AT™-5, 30m x 0.53mm x 1.20µm		**955130**
Econo-Cap™ EC™-5, 30m x 0.53mm x 1.20µm	(Inexpensive, Batch QC'ed Column)	**19657**
Heliflex® AT™-5, 30m x 0.32mm x 0.25µm		**13658**
Econo-Cap™ EC™-5, 30m x 0.32mm x 0.25µm	(Inexpensive, Batch QC'ed Column)	**19646**
Heliflex® AT™-5, 30m x 0.25mm x 0.25µm		**13656**
Econo-Cap™ EC™-5, 30m x 0.25mm x 0.25µm	(Inexpensive, Batch QC'ed Column)	**19647**
8111—Haloethers by GC/ECD		
Heliflex® AT™-5, 30m x 0.53mm x 1.50µm		**13909**
Heliflex® AT™-1701, 30m x 0.53mm x 1.20µm		**13830**
8141—Organophosphorus Pesticides by GC/NPD/FPD/ELCD		
Heliflex® AT™-210, 15m x 0.53mm x 1.20µm	Column 1	**985115**
Heliflex® AT™-5, 15m x 0.53mm x 1.20µm	Column 2	**955115**
Econo-Cap™ EC™-5, 15m x 0.53mm x 1.20µm	(Inexpensive, Batch QC'ed Column)	**19645**
8151—Chlorinated Herbicides by GC/ECD Using Methylation and Pentafluorobenzylation Derivatization		
Heliflex® AT™-5, 30m x 0.25mm x 0.25µm		**13656**
Heliflex® AT™-5, 30m x 0.32mm x 1.00µm		**13659**
Heliflex® AT™-35, 30m x 0.25mm x 0.25µm		**13642**
Heliflex® AT™-1701, 30m x 0.25mm x 0.25µm		**13686**
Heliflex® AT™-1701, 30m x 0.53mm x 1.00µm		**13795**
8260—Volatile Organics by GC/MS: Capillary Column Technique		
Heliflex® AT™-624, 30m x 0.53mm x 3.00µm	Subambient (10°C)	**16889**
Heliflex® AT™-624, 60m x 0.53mm x 3.00µm	Ambient	**13800**
Heliflex® AT™-5, 30m x 0.32mm x 1.00µm	Subambient, Cryofocusing	**13659**
Heliflex® AT™-5, 30m x 0.25mm x 1.00µm	Subambient, Cryofocusing	**13657**
Heliflex® AT™-502.2, 60m x 0.53mm x 3.00µm	Ambient	**13793**
Heliflex® AT™-502.2, 105m x 0.53mm x 3.00µm	Ambient	**13794**

Astec Chiraldex® GC Capillary Columns

- Resolve aromatic and nonaromatic enantiomers
- Pure cyclodextrin derivative coating
- No racemization of chiral stationary phase at elevated temperatures

Chiraldex® capillaries are based on derivatized cyclodextrins, which are chiral in nature formed by the α-1,4 linkage of glucose units into toroidal shaped structures. The enzyme cyclodextrin glucosyl transferance (CGT) cleaves partially digested starch and links the glucose units into predominantly three forms, referred to as alpha, beta, and gamma; 6, 7, and 8 glucose units, respectively. These cyclodextrins are thermally stable, highly crystalline and virtually insoluble in most organic solvents. Using the three forms of cyclodextrin, Astec has manufactured derivatives that exhibit properties allowing them to be used as GC phases. They are:

– Permethylated Hydroxypropyl (PH)
– Dialkylated (DA)
– Trifluoroacetylated (TA)
– Propionylated (PN)
– Butyrylated (BP)
– Permethylated (PM)
– Dimethylated (DM)

The prefix A, B, G describes the cyclodextrins alpha, beta, and gamma, respectively. The suffix describes the nature of the derivatization i.e., G-TA refers to Gamma Trifluororacetylated phase.

The most striking characteristic of these phases is that they separate nonaromatic enantiomers including saturated alcohols, amines, carboxylic acids, epoxides, diols, polyols, cyclic, bicyclic, heterocyclic compounds, lactones, amino alcohols, amino acids, halohydrocarbons, α-halocarboxylic esters, pyrans, and furans. Little functionality is required for chiral recognition (**Table 1**). Also, there can be reversals of elution order from one series to the next as well as from one cavity size (beta) to another (gamma). The acylating reagent also can contribute to stereo-selectivity.

technical assistance

Contact Tech Support: Phone: 1.800.255.8324 (North America)
Email: contact.alltech@grace.com
Online: www.discoverysciences.com

Table 1—General Classes of Compounds Separated on Chiraldex™ Capillary Columns

Chiraldex® B-PH:	Most structural types of compounds including linear and cyclic amines and alcohols, carboxylic acids, lactones, amino alcohols, sugars, bicyclics, epoxides, haloalkanes, and more
Chiraldex® B-DA:	Nitrogen heterocyclics, heterocyclics, some bicyclics, and epoxides, lactones, aromatic amines, sugars, amino acid derivatives
Chiraldex® A-TA:	Smaller alcohols, amino alcohols, amino alkanes, and diols
Chiraldex® B-TA:	Broad range alkyl alcohols, halo acid esters, amino alkanes, halocycloalkanes, certain lactones, diols, alkyl halides, furan and pyran derivatives
Chiraldex® G-TA:	>350 pairs chiral alcohols, diols, polyols, hydrocarbons, lactones, amine alcohols, halocarboxylic acid esters, homologous series, furan and pyran derivatives, epoxides, glycidyl analogs, and haloepihydrins
Chiraldex® G-PN:	Epoxides, higher alcohols >C4, lactones
Chiraldex® G-BP:	Amino acids, certain primary amines and furans
Chiraldex® B-PM:	Acids, alcohols, barbitals, diols, epoxides, esters, hydrocarbons, ketones, lactones, and terpenes
Chiraldex® B-DM:	Selectivity similar to PM and PH, but with shorter retention times, and greater resolution. Especially applicable to aliphatic, olefenic, and aromatic enantiomers

Astec Chiraldex® GC Capillary Columns

Chiraldex® Capillary Columns

Phase	Length	i.d.	Film	Temp. Limits*	Part No.
B-PM	30m	0.25mm	0.125µm	230/250°C	**4711**
A-TA	30m	0.25mm	0.125µm	180/180°C	**4127**
B-TA	30m	0.25mm	0.125µm	180/180°C	**4133**
G-TA	20m	0.25mm	0.125µm	180/180°C	**4137**
	30m	0.25mm	0.125µm	180/180°C	**4139**
	50m	0.25mm	0.125µm	180/180°C	**4639**
B-PH	30m	0.25mm	0.125µm	200/220°C	**4094**

*Isothermal/Temp. program.

Chiraldex® Capillary Columns

Phase	Length	i.d.	Film	Temp. Limits*	Part No.
B-DA	20m	0.25mm	0.125µm	200/220°C	**4113**
G-PN	30m	0.25mm	0.125µm	200/220°C	**4668**
G-BP	30m	0.25mm	0.125µm	200/220°C	**4670**
B-DM	30m	0.25mm	0.125µm	230/250°C	**4727**

*Isothermal/Temp. program.

tech tip

Temperature Limits

Our GC capillary columns are temperature rated. In some cases, we list two maximum operating temperatures, the lower one is for isothermal condition and the higher one for temperature-programmed condition.

SGE® BPX Capillary Columns

- Extended temperature range
- Low bleed ideal for GC/MS applications

SGE® uses silphenylene-siloxane chemistry to manufacture BPX stationary phases, resulting in extremely low bleed, thermally stable capillary columns.

BPX Specifications	
Phase	**Phase Composition**
BPX5	5% Phenyl, 95% Methylpolysiloxane
BPX35	35% Phenyl, 65% Methylpolysiloxane
BPX50	50% Phenyl, 50% Methylpolysiloxane
BPX70	70% Cyanopropyl
BPX90	90% Cyanopropyl Polysilphenylene-siloxane
BPX 608	35% Phenyl Polysilphenylene-siloxane
BPX Volatiles	Cyanopropylphenyl Polysiloxane

BPX50 Capillary Columns

Length	i.d.	Film	Temp. Limits* min.–max.	Part No.
30m	0.25mm	0.25µm	40–360/370°C	**54751**
	0.32mm	0.25µm	40–360/370°C	**54761**

*Isothermal/Temp. program.

BPX5 Capillary Columns

Length	i.d.	Film	Temp. Limits* min.–max.	Part No.
30m	0.25mm	0.25µm	-40–360/370°C	**54101**
	0.32mm	0.50µm	-40–360/370°C	**541205**

*Isothermal/Temp. program.

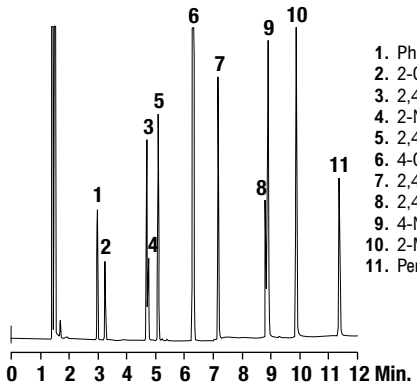
BPX70 Capillary Columns

Length	i.d.	Film	Temp. Limits* min.–max.	Part No.
30m	0.32mm	0.25µm	50–260/290°C	**54616**
	0.53mm	0.50µm	50–260/290°C	**54620**
60m	0.25mm	0.25µm	50–260/290°C	**54623**
	0.32mm	0.25µm	50–260/290°C	**54617**
120m	0.25mm	0.25µm	50–260/290°C	**54624**

*Isothermal/Temp. program.

EPA Method 625—Phenols

CHROM 1871



1. Phenol
2. 2-Chlorophenol
3. 2,4-Dinitrophenol
4. 2-Nitrophenol
5. 2,4-Dichlorophenol
6. 4-Chloro-3-methylphenol
7. 2,4,6-Trichlorophenol
8. 2,4-Dinitrophenol
9. 4-Nitrophenol
10. 2-Methyl-4,6-dinitrophenol
11. Pentachlorphenol

Column: SGE® BPX-5, 25m x 0.32mm x 0.50µm (Part No. **52318**)
Temp: 125°C to 250°C (5min hold) at 15°C/min
Carrier Gas: Hydrogen at 1.4mL/min
Detector: FID

more info

This is a partial listing of SGE® Capillary Columns available from Grace. To view Grace's complete chromatogram library, visit www.discoverysciences.com/chromdb/.

SGE® SolGeL Capillary Columns

- Unique technology encapsulates phase in synthetic glass
- Greater inertness and thermal stability than “coated” phases

SolGeL-WAX™ Capillary Columns

- Highest temperature polyethylene glycol column
- Maximum temperature 300°C
- Ideal for: essential oils, food additives, industrial solvents, unreacted latex monomers, mixtures of aromatic hydrocarbons (e.g., BTEX), FAMEs, and mixtures of alcohols, esters, aldehydes, and ketones

SolGeL-WAX™ is a bonded polyethylene glycol stationary phase. It is unique technology because the phase is encapsulated in synthetic glass (SolGeL material) and the whole matrix is itself bonded to the surface of the fused silica. This process leads to a very inert high-temperature column.

SolGeL-WAX™ Capillary Columns

Length	i.d.	Film	Temp. Limits min.–max.	Part No.
30m	0.25mm	0.25µm	0–300°C	**54706**

SolGeL-1ms™ Capillary Columns

- MS-grade capillary columns
- Maximum temperature 380°C
- Ideal for: essential oils, pharmaceuticals, food additives, industrial solvents, and hydrocarbons

SolGeL-1ms™ is a low bleed bonded polydimethylsiloxane (100% methyl) stationary phase encapsulated in synthetic glass (SolGeL material) and the whole matrix is itself bonded to the surface of the fused silica capillary. The anchoring of the matrix to the glass surface using this unique technology leads to a very inert, high-temperature column.

SolGeL-1ms™ Capillary Columns

Length	i.d.	Film	Temp. Limits min.–max.	Part No.
30m	0.25mm	0.25µm	0–380°C	**54715**
	0.32mm	0.25µm	0–380°C	**54718**