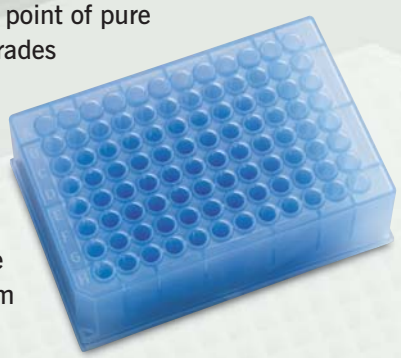
Deep-well plates selection guide

Porvair Sciences is a leading manufacturer of high quality polypropylene deep-well microplates for applications including compound storage, fraction collection, sample mixing and preparation. Using only virgin extractable-free grades of polymer in the production process ensures that you get reliable reproducible results free from contamination each time. This guide will suggest the best deep-well plate options for your particular area of research.

Polypropylene is a naturally-opaque white polymer which in its raw untreated state is intrinsically hydrophobic and offers a medium-low bind surface for proteins and peptides. In addition, it also acts as a low-attachment surface for adherent cells. These properties can be modified, or enhanced, by further treatment, for example, coating with very low binding compounds.

Polypropylene can be sterilised using gamma radiation, by treatment with ethylene oxide or by autoclaving at 121°C. However, as the melting point of pure homopolymer is 171°C, and the commercially available grades 160 – 166°C, autoclaving of polypropylene deep-well plates is not recommended. This is because some softening of the polymer will be observed and this can lead to distortion of the plate structure and consequent deviation from the strict ANSI/SLAS microplate dimensions. Ethylene oxide sterilisation can also be problematic due to the oxidative nature of the process which can transform the natural hydrophobic surface into a strongly hydrophilic surface.



Deep-well plates can have various geometries depending on the shape of the well and also the profile of the well bottom. The most common geometries are square-well plate with pyramid, or V-shape, bottoms and round-well plates with round bottoms. The advantage of the square V-well is very high recovery of compounds from these low-dead volume plates. Whilst round-well plates exhibit higher dead volumes, they do allow for excellent mixing and are useful in bead-beating applications where beads might otherwise get stuck in the tight bottom of a V-well.

The height of a deep-well plate will normally determine the maximum volume, but in recent years space has been saved through the use of 'common wall' designs in round-well format that use larger diameter wells to reduce height and maximise volume. These designs can also allow more plates to be fitted into equipment such as HPLC autosamplers, incubators and the like.

When selecting round-well plates, it is important to consider whether sealing will be accomplished by an adhesive seal, a friction seal (or cap mat) or through thermal sealing with a welded foil. In the case of adhesive seals, rimless plates with a completely smooth top surface are preferable. For friction seals, either rimmed or rimless work best, whereas for heat weld sealing, a raised rim is essential. This does not really apply to square-well plates as the divisions between wells act like rims anyway.

The flow chart on the following pages is designed to help you select the correct plate for your application.

CHOOSE THE NUMBER OF WELLS, OR PLATE FORMAT YOU NEED

96-WELL MICROPLATES

<500 µl – use a 350 µl plate

CHOOSE THE WELL BOTTOM

- Round bottom – good mixing 14mm high **209003**
- Flat-well bottom – highest volume 14mm high **208003**
- 270 µl V-well – high recovery 14mm high **210003**
- 350 µl V-well – high recovery 45mm
  - **CHOOSE STERILITY**
    - Sterilsed by gamma radiation **219025**
    - Unsterilised **219006**

96-WELL MICROPLATES

OR >500 µl <1 ml – use a 1.1 ml plate

CHOOSE WELL SHAPE

- 1.1 ml round-well, round bottom – good mixing
  - **CHOOSE HEIGHT**
    - 27mm high
      - Common wall rimless, natural PP **219250**
    - 44mm high
      - **CHOOSE RIM**
        - Rimless, natural PP non-sterile **219037**
        - Rimmed
          - **CHOOSE STERILITY**
            - Sterilised by gamma radiation, natural PP **219012**
            - Unsterilised
- 1 ml square-well, V-bottom – good recovery
  - **CHOOSE STERILITY**
    - Sterilsed by gamma radiation **219026**
    - Unsterilised **219008**

CHOOSE COLOUR & TYPE

- Natural – **219002**
  - Red – for easy identification **219422**
- Black – for light sensitive operations **219412**
  - Blue – for easy identification **219422**

96-WELL MICROPLATES

OR >1 ml <2 ml - use a 2.2 ml plate

CHOOSE WELL SHAPE

- Round-well, round bottom – good mixing
  - **CHOOSE STERILITY**
    - Sterilsed by gamma radiation **219021**
    - Unsterilised **219020**
- Square-well, V-bottom – good recovery
  - **CHOOSE STERILITY**
    - Sterilsed by gamma radiation
      - **CHOOSE TYPE**
        - For everyday use **219027**
        - For bead-beating **219031**
    - Unsterilised
      - **CHOOSE TYPE**
        - For everyday use **219009**
        - For bead-beating **219030**

24/48-WELL MICROPLATES

OR >4.8 ml <10 ml

CHOOSE VOLUME OF RECTANGLE-WELL

- 48 x 4.8 ml square-well, non-sterile **360096**
- 48 x 5 ml rectangle-well non-sterile **360002**
- 24 x 10 ml square-well
  - **CHOOSE STERILITY**
    - Sterilsed by gamma radiation **360115**
    - Unsterilised **360013**

384-WELL MICROPLATES

CHOOSE VOLUME OF RECTANGLE-WELL

- 58 µl per well, not sterile **224001**
- 300 µl per well
  - **CHOOSE STERILITY**
    - Sterilsed by gamma radiation **219041**
    - Unsterilised **219040**

Storage plates: 96-well deep square

Description	Well volume	Sterile	Use cap mat	Qty/case	Cat. no.
Polypropylene, pyramid bottom	2.0 ml	×	219004	50	219009
Polypropylene, pyramid bottom, sterile, inner bag of 5	2.0 ml	✓	219019	50	219027
Polypropylene, round bottom	1.6 ml	×	219004	50	500066
Polypropylene, pyramid bottom	1.0 ml	×	219004	50	219008
Polypropylene, pyramid bottom, sterile, inner bag of 5	1.0 ml	✓	219019	50	219026
Polypropylene, pyramid bottom	350 µl	×	219004	50	219006
Polypropylene, pyramid bottom, sterile, inner bag of 5	350 µl	✓	219019	50	219025
Polypropylene, pyramid bottom, seed genomics	2.0 ml	×	219033	50	219030
Polypropylene, pyramid bottom, seed genomics, sterile, inner bag of 5	2.0 ml	✓	219019	50	219031

Storage plates: 96-well deep round

Rim and bottom well shape	Colour	Well volume	Sterile	Use cap mat	Qty/case	Cat. no.
Polypropylene, raised-round DNA/RNAase free, inner bag of 5	Natural	1 ml	×	219036	50	219002
Polypropylene, raised-round DNA/RNAase free, inner bag of 5	Natural	1 ml	✓	219042	50	219012
Polypropylene, rimless-round DNA/RNAase free, inner bag of 5	Natural	1 ml	×	219036	50	219037
Polypropylene, raised-round DNA/RNAase free, inner bag of 5	Blue	1 ml	×	219036	50	219432
Polypropylene, raised-round DNA/RNAase free, inner bag of 5	Red	1 ml	×	219036	50	219422
Polypropylene, raised-round DNA/RNAase free, inner bag of 5	Black	1 ml	×	219036	50	219412
Polypropylene, rimless-round DNA/RNAase free, inner bag of 5	Natural	2 ml	×	219020	50	219020
Polypropylene, rimless-round DNA/RNAase free, inner bag of 5	Natural	2 ml	✓	219021	50	219021

Storage plates: 96-well deep round 'common wall'

Description	Qty/pack	Part No.
96 Deep well, 2 ml/well, Polypropylene round well rimless, DNA/RNAase free, inner bag of 5	50	219020
96 Deep well, 2 ml/well, Sterile, Polypropylene round well rimless, DNA/RNAase free, inner bag of 5	50	219021

Storage plates: 96-well shallow round

Rim and bottom well shape	Material	Well volume	Sterile	Qty/case	Cat. no.
No rim, flat	Polypropylene	350 µl	×	100	208003
Raised-round	Polypropylene	270 µl	×	100	209003
Raised-V	Polypropylene	220 µl	×	100	210003

Storage plates: Large volume microplates

Well shape, bottom shape	No of wells	Working well volume	Sterile	Lid	Qty/case	Cat. no.
Rectangle, V-bottom	24	10 ml	×	–	25	360013
Rectangle, V-bottom (bulk pack)	24	10 ml	✓	–	25	360115
Rectangle, V-bottom	24	10 ml	×	✓	25	360077
Rectangle, V-bottom (single pack)	24	10 ml	✓	✓	25	360079
Rectangle, V-bottom (with bar code)	24	10 ml	✓	✓	25	360080
Rectangle, round-bottom	24	10 ml	×	–	25	360117
Rectangle, V-bottom	48	5 ml	×		25	360002
Rectangle, V-bottom	48	7 ml	×		30	360004
Polystyrene Universal SLAS Lid	24/48/96	–	×	✓	100	229125

Storage plates: 384-well

Well shape, top & bottom	Working well volume	Sterile	Qty/case	Cat. no.
Square-round	58 µl	×	60	224001
Square-V	300 µl	×	48	219040
Square-V	300 µl	✓	48	219041

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