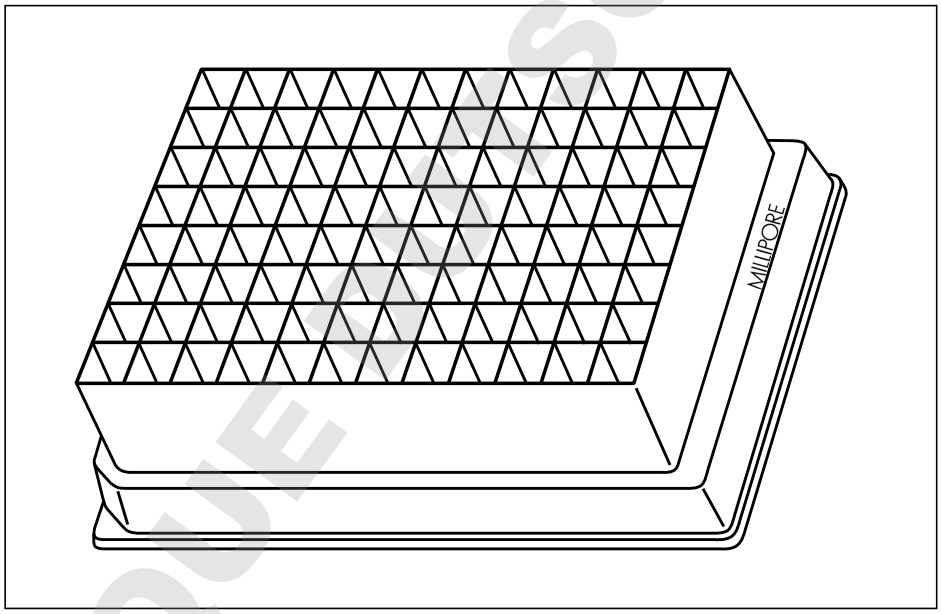
MultiScreen® Deep Well Solvinert Filter Plate

User Guide



- For research use only
- Single use only

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Introduction

The MultiScreen Deep Well Solvinert Filter Plate is a single-use, automation compatible 96-well device using chemically-resistant 0.45 µm polytetrafluoroethylene (PTFE) membrane to process up to 1.8 mL of aqueous and organic solutions. The design of this filter plate allows for discrete and quantitative filtrate transfer to a standard 96-well deep well collection plate using either a vacuum manifold or a centrifuge equipped with a plate carrier. The MultiScreen Deep Well Solvinert Filter Plate is intended for a wide range of applications including total drug analysis, bead cleavage (solid phase combinatorial chemistry and peptide synthesis), and sample preparation prior to HPLC/UV and LC/MS/MS. The MultiScreen Deep Well Solvinert Filter Plate is fully automation compatible.

The PTFE membrane used in the MultiScreen Deep Well Solvinert Filter Plate offers high flow and exhibits low nonspecific binding of small molecules and proteins as well as low extractables as measured by HPLC/UV. The MultiScreen Deep Well Solvinert Filter Plate is available with either a hydrophilic membrane for use with aqueous solutions (Millipore cat. no. MDRL N04 10) or a hydrophobic membrane for nonaqueous applications (Millipore cat. no. MDRP N04 10). The hydrophobic version of the MultiScreen Deep Well Solvinert Filter Plate is also available with a polypropylene pre-filter to avoid membrane clogging when used for high particle load applications such as in-plate protein precipitation (Millipore cat. no. MDRP NP4 10).

Usage Guidelines

- For research use only.
- Care must be taken to minimize evaporation when performing extended incubations with volatile solvents by covering the plate with a lid, mat cap, or sealing tape.
- The MultiScreen Deep Well Solvinert Filter Plate can be operated in either a vacuum or centrifugal pressure mode.
- The MultiScreen Deep Well Solvinert Filter Plate, when mounted on top of a standard receiver plate, will fit into standard microtiter plate swinging bucket rotors.
- The maximum recommended centrifugal force is 3000 × g. Appropriate receiver plates must be selected to withstand centrifugal forces.

  NOTE: Ensure that the receiver plate is supported from below by rubber mat supplied by centrifuge manufacturer and follow the plate manufacturer's guidelines for maximum centrifugal forces.

Materials Required

Included

MultiScreen Deep Well Solvinert Filter Plate

Additional Equipment Required

The user must supply the following equipment in order to use the MultiScreen Deep Well Solvinert Filter Plate. See the Product Ordering Information section for more details about obtaining these items.

- 96-well deep well receiver plates (solvent compatible when necessary)
- Vacuum manifold suitable for use with 96-well plates or centrifuge capable of centrifugal forces between 500–3000 × g with a swinging bucket rotor and 96-well plate carrier
- Pipettors and/or robotic liquid handlers for handling aqueous and organic samples
- Portable vacuum pump or uniform vacuum source

Chemical Compatibility

The PTFE membrane, polypropylene pre-filter and polyolefin polymer used in the construction of the MultiScreen Deep Well Solvinert Filter Plate feature broad chemical compatibility, very low levels of extractables (when exposed to aqueous buffers and acetonitrile for one hour, as analyzed by HPLC/UV) and exhibit low nonspecific binding of small molecules and proteins. However, to ensure compatibility in your application, it is recommended to test the MultiScreen Deep Well Solvinert Filter Plate with the specific chemicals and under the specific conditions required by the particular application.

The data presented in Table 1 is a compilation of testing by Millipore with certain chemicals and manufacturer's compatibility data. These data are intended to provide expected results when filtration devices are exposed to chemicals under static conditions for 24 hours at 25 °C (77 °F), unless otherwise noted.

Table 1. Chemical Compatibility for MultiScreen Deep Well Solvinert Filter Plate

R = Recommended; no significant change was observed in flow rate, nor was there any visible indication of chemical attack

L = Limited Recommendation; compatible only when small volumes are used for short periods of time. The plate shows some physical change when incubated longer than one hour.

TST = Testing Recommended

Acids	
Acetic acid, glacial	R
Hydrochloric acid (37%)	R
Nitric acid (30%)	R
Sulfuric acid (96%)	R
Trifluoroacetic acid	R
Alcohols	
Ethanol	R
Isopropanol	R
Methanol	R
Aromatic Hydrocarbons	
Toluene	TST
Benzene	TST
Bases	
Sodium hydroxide (70%)	R
Ammonium hydroxide conc.	R
Glycols	
Glycerol	R
Ketones	
Acetone	R
Cyclohexanone	R
Oils	
Cottonseed oil	R
Miscellaneous	
Acetonitrile	R
Dimethyl formamide	R
Dimethyl sulfoxide	R
Dioxane	TST
Formaldehyde (35%)	R
Hexane	TST
Methylene chloride	L
Pyridine	R
Tetrahydrofuran	L

General Operating Procedure

The MultiScreen Deep Well Solvinert Filter Plate can be used with either a vacuum manifold or centrifuge. In general, vacuum filtration is not recommended in an application that requires extremely volatile solvents (e.g., TFA).

Manual Vacuum Filtration

1. If filtrate collection is desired, place a chemically compatible receiver plate into the base of the manifold.
2. Remove the stainless steel support grid and place the Multi-Screen Deep Well Solvinert Filter Plate on the vacuum manifold collar.
3. Add samples to the filter plate.
4. Apply vacuum.
5. Release vacuum slowly, and remove the plate carefully to minimize the chance of cross-talk resulting from any hanging drops.

NOTE: When using vacuum filtration with volatile solvents (e.g., acetonitrile), vacuum should be released as soon as filtration is complete to minimize evaporation.

Centrifugal Filtration

1. Place MultiScreen Deep Well Solvinert Filter Plate on top of a chemically compatible receiver plate prior to solution addition.
2. Add samples to the filter plate.
3. Insert filter and receiver plates together into a standard swinging bucket microtiter plate rotor assembly.
4. Centrifuge.

NOTE: As a general guideline, centrifugation at 500 × g for 1–2 minutes is sufficient to effect complete filtration of most solutions. Speed and/or times will vary depending on solution viscosity.

Optional Pre-rinsing

For maximal sample recovery, the MultiScreen Deep Well Solvinert Filter Plate may be pre-screened and pre-rinsed. This is an optional procedure.

1. Pre-wet each well with 100 µL of the desired reaction buffer (e.g., synthesis or cleavage buffer) or solvent.
2. Filter through the plate into a chemically compatible receiver plate following the steps below for either manual vacuum or centrifugal filtration.

Solvent Incubation Data

The MultiScreen Deep Well Solvinert Filter Plate provides the ability to perform extended incubations with a high volume of solvent without drip-out as shown in Table 2. Despite the measured hold up volume, many low surface tension solvents present a small risk of drip-out. It is recommended that incubations be conducted on top of a collection plate.

Table 2. Holdup Data for MultiScreen Deep Well Solvinert Filter Plate

		Max. Volume — No Drip-Outs (mL)	
Membrane	**Solutions**	**Static (1 hr)**	**Shaking* (10 min)**
Philic	5% DMSO	1.5	1.5
	PBS	1.5	1.5
	4:1 ACN/H2O	0.7	0.7
Phobic	5% DMSO	1.9	1.5
	PBS	1.9	1.5
	4:1 ACN/H2O	1.9	1.5
Phobic with pre-filter	5% DMSO	1.9	1.5
	PBS	1.9	1.5
	4:1 ACN/H2O	1.9	1.5

**1.5 mL is the highest volume tested for drip-outs during the 10-minute shaking period. Above this volume, spilling out of the wells may occur.*

Specifications

Materials of Construction:

Base Plate	Polyolefin/ Cyclic Olefin Copolymer
Membrane	PTFE
Pre-filter (optional)	PP

Dimensions:

Plate Length	127.8 mm
Plate Width	85.5 mm
Plate Depth	40.7 mm
Membrane Area	0.28 cm^2

Sample Volume per Well:

Recommended (with shaking)	1.5 mL
Recommended (without shaking)	1.8 mL
Maximum	1.9 mL

Filtration Parameters:

Maximum Relative Centrifugal Force (RCF)	3000 × g
Maximum Vacuum	24" Hg

Product Ordering Information

This section lists the catalogue numbers for MultiScreen Deep Well Solvinert Filter Plates and accessories. See the Technical Assistance section for information about contacting Millipore. You can also buy Millipore products on-line at www.millipore.com/purecommerce.

Filter Plates

Description	Qty/Pk	Catalogue No.
MultiScreen Deep Well Solvinert 0.45 µm, philic, non-sterile	10/pk	MDRL N04 10
MultiScreen Deep Well Solvinert 0.45 µm, phobic, non-sterile	10/pk	MDRP N04 10
MultiScreen Deep Well Solvinert 0.45 µm, phobic with pre-filter, non-sterile	10/pk	MDRP NP4 10

Accessories

Description	Catalogue No.
MultiScreen Vacuum Manifold	MAVM 096 0R
MultiScreen Vacuum Manifold Deep Well Collar	MAVM 096 OT
MultiScreen Vacuum/Pressure Pump, 115 Volts, 60 Hz	WP61 115 60
MultiScreen Vacuum/Pressure Pump, 220 Volts, 50 Hz	WP61 220 50
MultiScreen Column Loader, 25 µL	MACL 096 25
MultiScreen Column Loader, 45 µL	MACL 096 45
MultiScreen Column Loader, 80 µL	MACL 096 80
MultiScreen Column Loader, 100 µL	MACL 096 00
MultiScreen Deep Well Plate Lid	MALI DPP 05
Plate Sealing Tape	MATA HCL 00
Vacuum Flask, 1L	XX10 047 05

Third Party Products

Description	Catalogue No.
Greiner Deep Well Receiver Plate, go to www.greinerbioone.com	780285
Mat Cap for 96 2.2 mL Deep Well Plates, go to www.marshbio.com	AB-0662

Technical Assistance

For more information, contact the Millipore office nearest you. In the U.S., call **1-800-MILLIPORE** (1-800-645-5476). Outside the U.S., see your Millipore catalogue for the phone number of the office nearest you or go to our web site at www.millipore.com/offices for up-to-date worldwide contact information. You can also visit the tech service page on our web site at www.millipore.com/techservice.

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