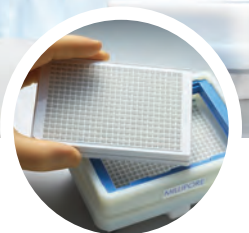
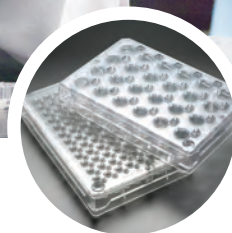
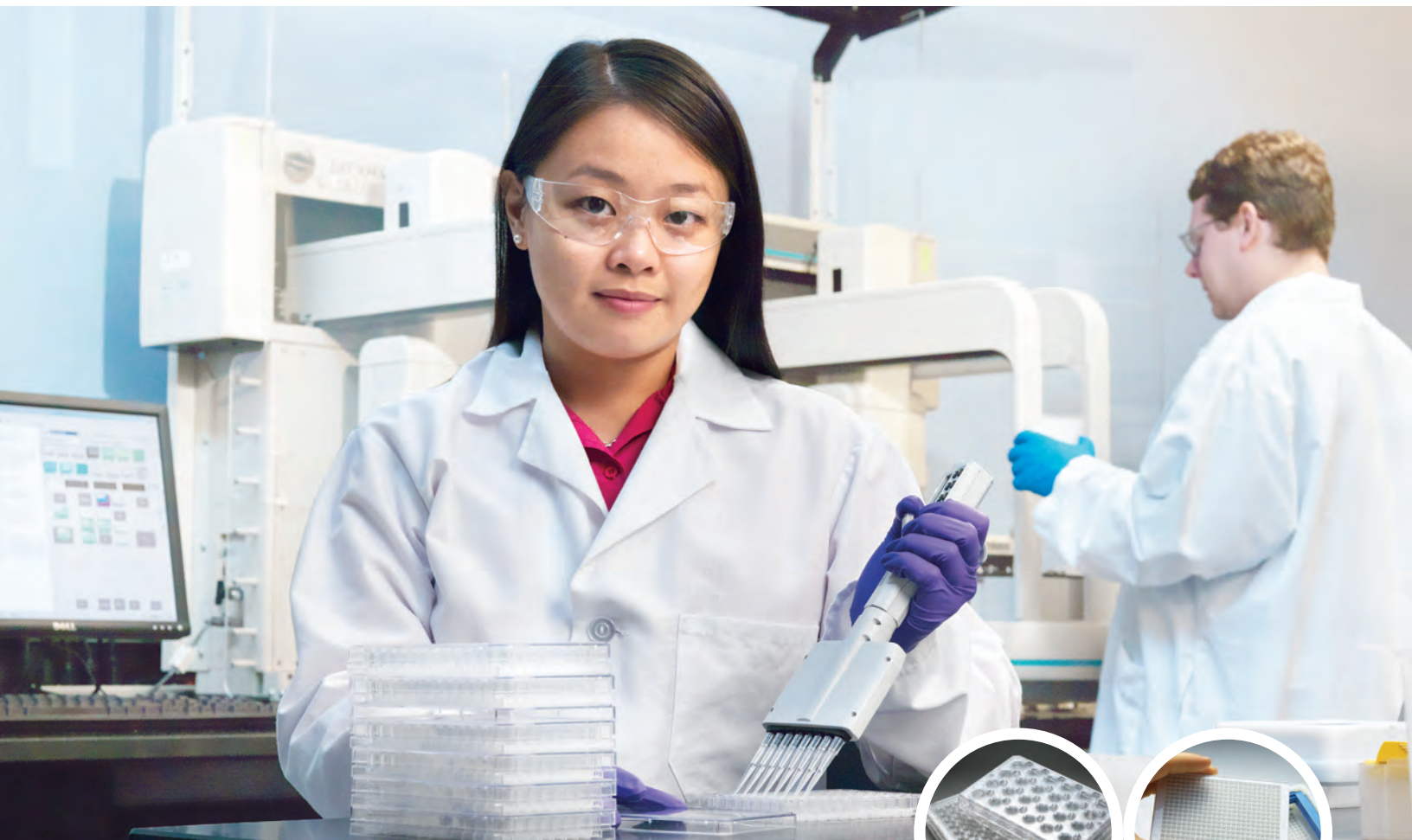




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MULTIWELL SOLUTIONS FOR DISCOVERY RESEARCH AND SAMPLE PREP

Multiwell Product Guide



ADVANCING LIFE SCIENCE TOGETHER™
Research. Development. Production.



ACCELERATING DISCOVERY THROUGH INNOVATION



Featured Products

- MultiScreen[®]_{HTS} + Hi Flow Filter Plates
- MultiScreen_{HTS} 96 and 384-well Filter Plates
- Millicell[®] 24 and 96-well Cell Culture Insert Plates
- MultiScreen_{HTS} Vacuum Manifold
- Milliccoat™ ECM Coated Plates

For more information on products and technical support, please visit www.millipore.com/multiscreen

As a tools provider and partner in research, Millipore is committed to the advancement of therapies and drugs.

This guide for drug discovery research, molecular biology, and sample preparation includes a number of new products for high-throughput screening and cell culture. These products provide proven solutions for a range of applications and are backed by extensive technical support.



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SAMPLE PREPARATION

MultiScreen filter plates are designed to meet specific performance criteria for sample preparation methodology requiring low protein and non-specific drug binding characteristics, solvent compatibility and sample throughput.

These pages introduce filter plate technology developed for reliable and robust sample handling, sample incubation and precision transfer of filtrate.

- MultiScreen solvintert filter plates
- 96 and 384-well MultiScreen_{HTS} filter plates
- Filter plates for genomic sample prep
- MultiScreen filter plate with Ultracel®-10 membrane

Microporous Sample Preparation

At every stage of the drug discovery process, samples must be isolated, purified, and prepared prior to testing.

Automation-compatible MultiScreen filter plates are used in a range of applications. Membranes and plastic are optimized for use in applications including sample cleanup prior to instrument analysis, removal of cellular debris, extraction of natural products, and bead washing for immunoassay procedures.

For general sample prep, protein precipitation assays with solvents, bead cleavage assays, and quantitative filtrate transfer suitable for instrumental analysis, MultiScreen solvintert filter plates are recommended. Hydrophobic or hydrophilic PTFE membranes are offered to provide low extractables, low binding and high recoveries. Other MultiScreen filter plates or Millipore membranes may be selected for specific attributes such as high or low protein binding and varying pore sizes depending on your application.

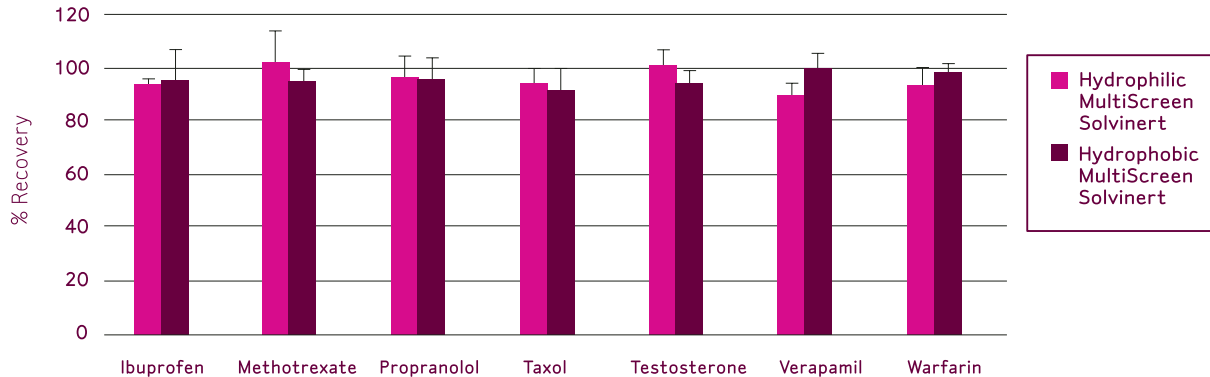
- Solvent-compatible plates
- High bead recovery
- Low non-specific reactivity



MULTISCREEN SOLVINERT FILTER PLATE PERFORMANCE

Total Drug Purified from Plasma by Acetonitrile Precipitation

High Drug Recovery

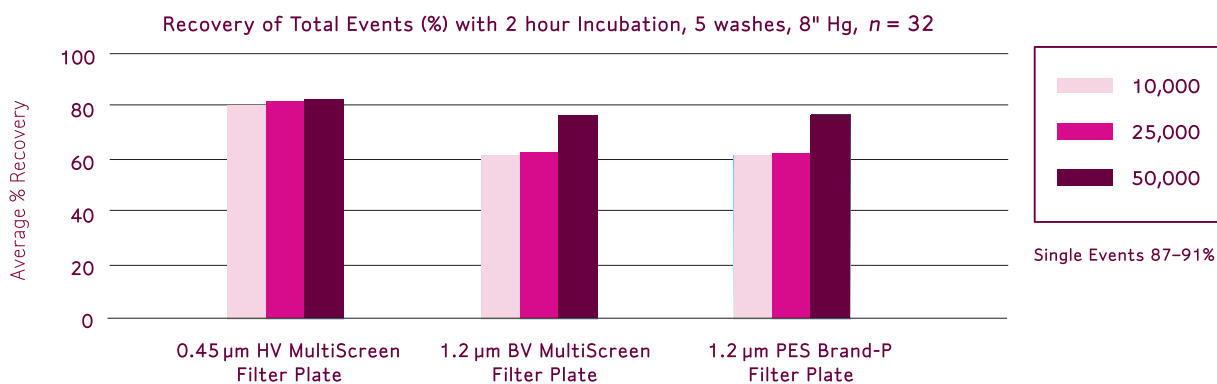


Seven drugs were tested for percent recovery by acetonitrile plasma precipitation. Plasma stock samples (5 mL) were spiked with ³H labeled drug to a final 5 μM drug concentration followed by 1-hour incubation. Protein was precipitated by the addition of acetonitrile (15 mL) and solution vortexed vigorously. An aliquot (300 μL) was added to each well using one plate per column per drug (n=8) and solution was then vacuum filtered (12" Hg). Percent recovery was determined using an aliquot (100 μL) of filtrate versus an aliquot of the precipitated stock (cpm filtrate/cpm precipitated stock). Results show that both hydrophilic and hydrophobic MultiScreen Solvinert filter plates have > 90% drug recovery.

MULTISCREEN_{HTS} FILTER PLATE PERFORMANCE

Luminex xMAP® Microsphere Recovery of Total Events (%)

High Bead Recovery



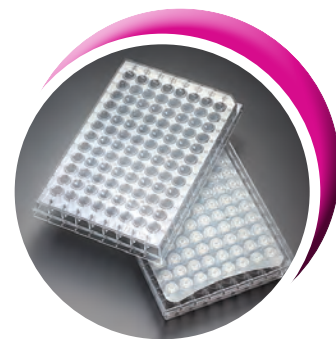
Filter plates were challenged with three microsphere levels (10K, 25K, & 50K) per well. Incubation time was 2 hours, with 5 washes at 8" Hg (n=32). The greatest microsphere recovery was achieved with the smaller pore sized filter plate. Total microsphere recovery is typically not an issue because in most assays only a fraction of the total microspheres are counted. In addition, when using the 0.45 μm MultiScreen_{HTS} filter plate, sample acquisition time is expected to be reduced.

ORDERING INFORMATION

MultiScreen filter plates with PTFE membrane

For filtration of organic solvents

Plate type	Pore size	Well volume	Qty/Pk	Catalogue No.
Hydrophilic	0.45 µm	0.5 mL	10	MSRL N04 10
			50	MSRL N04 50
Hydrophobic	0.45 µm	0.5 mL	10	MSRP N04 10
			50	MSRP N04 50
Hydrophilic	0.45 µm	1.8 mL	10	MDRL N04 10
			10	MDRP N04 10
Hydrophobic with pre-filter	0.45 µm	1.8 mL	10	MDRP NP4 10



MultiScreen_{HTS} filter plates with Durapore® membrane

For high bead recovery and low protein binding

Plate type	Pore size	Qty/Pk	Catalogue No.	
			96-well	384-well
MultiScreen _{HTS} -BV	1.2 µm	10	MSBV N12 10	—
			MSBV N12 50	—
MultiScreen _{HTS} -HV	0.45 µm	10	MSHV N45 10	MSHV NOW 10
			MSHV N45 50	MSHV NOW 50

MultiScreen_{HTS} filter plates with Polycarbonate membrane

For aqueous, small molecule filtration and sample prep

Plate type	Pore size	Qty/Pk	Catalogue No.
*MultiScreen _{HTS} -PCF	0.45 µm	10	MSSL BPC 10
*MultiScreen _{HTS} -PCF	0.45 µm	50	MSSL BPC 50

*Previously MultiScreen_{HTS}-Solubility

MultiScreen_{HTS} filter plates with glass fiber filter

Clarification of cellular debris or particulate-laden samples

Plate type	Pore size	Qty/Pk	Catalogue No.	
			96-well	384-well
MultiScreen _{HTS} -FB	1.0 µm	10	MSFB N6B 10	MZFB NOW 10
			MSFB N6B 50	MZFB NOW 50
MultiScreen _{HTS} -FC	1.2 µm	10	MSFC N6B 10	MZFC NOW 10
			MSFC N6B 50	MZFC NOW 50

MultiScreen_{HTS} filter plates for lysate clearing

Plate type	Pore size	Qty/Pk	Catalogue No.
MultiScreen _{HTS} -NA	—	10	MSNA NLY 10
		50	MSNA NLY 50
MultiScreen clearing plate, 384-well	—	50	LSKP 384 50

Further Information

- MultiScreen Solvinert and Deep Well Solvinert Filter Plate, Data Sheet PF2813EN00
- MultiScreen_{HTS} Glass Fiber Filter Plates, Data Sheet PF1150EN00
- MultiScreen_{HTS} Automation compatible Filter Plate, Data Sheet PF1544EN00
- Biomarker Immunoassays; Product Selection Guide PB1096EN00

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Resin-Based Separations

MultiScreen column loaders let you combine the cost savings of bulk media with the convenience of 96-well filtration plates. Ideal for economical high-throughput bioassays, four different sizes cover a wide range of assays. All 96 wells are loaded simultaneously and uniformly eliminating the need for pipetting slurries or using prepacked columns.

MultiScreen_{HTS} filter plates with Durapore PVDF membrane provide a low-binding, inert support for resin/bead-based separations. Plates are available in several pore sizes. Choose one that works for your resin.

- Make custom mini-columns
- Wide variety of membrane pore sizes and media compatibility
- Ideal for cleanup of DNA sequencing reactions

Further Information

- Guidelines for Centrifugal Filtration, tech note TN048
- Dye Terminator Removal and Sequencing Reaction Cleanup Using MultiScreen 96-Well Filtration Plates, tech note TN053

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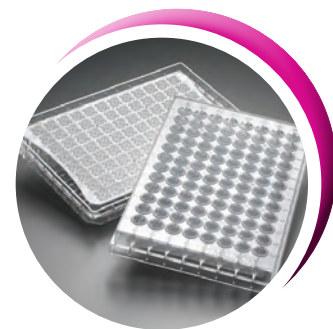
Column Loaders

Description	Qty/Pk	Catalogue No.
Column loader - 25 µL	1	MACL 096 25
Column loader - 45 µL	1	MACL 096 45
Column loader - 80 µL	1	MACL 096 80
Column loader - 100 µL	1	MACL 096 00
Scraper for column loader	3	MACL OSC 03
Centrifugal alignment frame	4	MACF 096 04

Filter plates	Pore size	Qty/Pk	Catalogue No.
MultiScreen-HV	0.45	10	MAHV N45 10
		50	MAHV N45 50
MultiScreen-BV	1.2	50	MABV N12 50



GENOMICS SAMPLE PREP



DNA TEMPLATE PREP AND SEQUENCING REACTION CLEANUP

Montage® genomics kits and MultiScreen filter plates incorporate size exclusion technology for high performance PCR, BAC, and plasmid template preparation, as well as 96 and 384-well sequencing reaction cleanup. Products for standard bind-wash-elute protocols are also available.

PCR Cleanup

Montage PCR filter plates offer fast, automatable solutions for high-throughput PCR purification. The plates are available in 96 and 384-well formats, including a micro 96-well format for small volume PCR product purification.

- High purity and high recovery
- Fast processing times
- > 99.5% primer removal
- MultiScreen PCR_{μ96} microwell filter plate recommended for small volumes (1 – 150 μL)

ORDERING INFORMATION

PCR Clean-Up

Description	Qty/Pk	Catalogue No.
MultiScreen PCR _{μ96} filter plates	10 50	LSKM PCR 10 LSKM PCR 50
MultiScreen PCR ₉₆ filter plates	10 50	MSNU 030 10 MSNU 030 50
MultiScreen PCR ₃₈₄ filter plates	10 50	S384 PCR 10 S384 PCR 50
MultiScreen-FB filter plates	50	MAFB NOB 50

Further Information

- DNA Template Prep and Sequencing Reaction Cleanup, brochure MC1005ENUS
- Montage PCR Cleanup Kit, datasheet PF1517EN00
- PCR Product Purification Using MultiScreen 96-Well Filter Plate, tech note TN063
- Small Volume Recovery of PCR Products Purified using Montage PCR_{μ96}, poster PS5276EN00

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Plasmid and BAC Minipreps

Montage kits are fast and easy-to-use. They yield clean and reproducible DNA in 50% less time than traditional methods. There are no bind-wash-elute or centrifugation steps.

The kit includes all the reagents and disposable materials needed to purify plasmid, BAC, fosmid, and cosmid DNA in a 96-well format.

- No centrifugation or precipitation
- Excellent purity, yields, and reproducibility
- Sequencing-grade quality DNA with no alcohol precipitation

ORDERING INFORMATION

Plasmid/BAC Minipreps

Description	Qty/Pk	Catalogue No.
*Montage Miniprep ₉₆ kit	4 24	LSKP 096 04 LSKP 096 24
MultiScreen _{HTS} -FB filter plate	10 50	MSFB N6B 10 MSFB N6B 50
MultiScreen _{HTS} -NA for lysate clearing	10 50	MSNA NLY 10 MSNA NLY 50
MultiScreen clearing plate, 384-well	50	LSKP 384 50

*The kit includes all the reagents and disposable materials you need to purify plasmid DNA in a 96-well format.

Further Information

- Montage Plasmid Miniprep₉₆ Kit, datasheet PF1027EN00
- Plasmid Minipreparation using MultiScreen 96-Well Filter Plates, tech note TN004
- Automating the Process of BAC DNA Purification and Sequencing, poster PS2747EN00
- Automating Montage BAC96 DNA Miniprep on Perkin-Elmer's Evolution™ P3 Platform, poster PS158EN00

Sequencing Reaction Cleanup

Montage and MultiScreen sequencing reaction cleanup products incorporate patented size exclusion membranes to yield highly purified sequencing reaction products. In addition to eliminating centrifugation steps, filter plates do not require filtrate collection or column packing. Available in 96- and 384-well formats, the plates use a vacuum-driven protocol, and are automation compatible.

Size-exclusion technology eliminates variability in sequencing reaction cleanup. Because there is no alcohol precipitation, there is no risk of salts or ethanol affecting final sequencing results. Pass rates are consistently high and results are reproducible.

The 96-well Montage kit includes all the reagents needed for sample processing.

- 10-minute vacuum-based protocol
- Compatible with a variety of templates
- Optimized for use with BigDye® chemistries

ORDERING INFORMATION

Sequencing Reaction Clean-Up

Description	Qty/Pk	Catalogue No.
*Montage SEQ ₉₆ Sequencing Reaction Cleanup Kit	1 4 24	LSKS 096 01 LSKS 096 04 LSKS 096 24
MultiScreen SEQ ₃₈₄ filter plates	10 50	S384 SEQ 10 S384 SEQ 50
MultiScreen-HV for gel-based cleanup	10 50	MAHV N45 10 MAHV N45 50

*Includes 96-well filter plates and injection solution

Accessories

Description	Catalogue No.
Montage wash solution, 500 mL	LSKS BW5 00
Montage injection solution, 500 mL	LSKS IS5 00

Further Information

- Dye Terminator Removal and Sequencing Reaction Cleanup Using MultiScreen 96-Well Filtration Plates, tech note TN053
- MultiScreen SEQ₃₈₄ Filter Plate, 384-well plate for dye terminator removal, datasheet PF1545EN00
- Montage Sequencing Reaction Cleanup, datasheet PF1700EN00
- Purification with MultiScreen SEQ₃₈₄ Plates on Beckman-Coulter's Biomek® FX for High Quality Direct Sequencing in High-Throughput Genomics, poster PS1030EN00
- Guidelines for Centrifugal Filtration, tech note TN048

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Protein Concentration and Desalting Prior to Screening Assays

The MultiScreen filter plate with Ultracel-10 ultrafiltration membrane provides a new method for high throughput sample prep. This centrifugal system allows for automation-compatible sample purification, concentration, and desalting of biological solutions, as well as protein concentration and desalting prior to validation or screening assays – all in a 96-well format.

The filter plate incorporates Ultracel-10 10,000 NMWL regenerated cellulose membrane for low protein binding and high protein retention. The system meets stringent manufacturing release specifications and is tested for >95% retention of cytochrome c (12,500 Daltons).

The MultiScreen filter plate with Ultracel-10 membrane allows for processing and collection of sample volumes from 50 μ L to 400 μ L. It is compatible with a range of standard 96-well microtiter receiver plates for easy sample processing by centrifugation.

- High throughput
- Low protein binding
- Tested for > 95% retention of cytochrome c

High Protein Retention

Protein Retention Characteristics

Membrane NMWL	Protein solute	Typical retention %
10,000	Cytochrome c 12,500 Daltons (1 mg/mL)	>95%
10,000	BSA 67,000 Daltons (1 mg/mL)	>99%

Performance of MultiScreen filter plate with Ultracel-10 membrane using a centrifuge at 2000 x g.

ORDERING INFORMATION

Description	Qty/Pk	Catalogue No.
MultiScreen filter plate with Ultracel-10 membrane	10	MAUF 010 10

Further Information

- MultiScreen Ultracel-10 Filter Plate, data sheet PF2050EN00
- Protein Retention, Recovery, Volume Recovery, and Guidelines for Concentration and Desalting, protocol note PC1025EN00
- Concentration of Cell Lysate, application note AN1424EN00

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BIOCHEMICAL ASSAYS

Biochemical assays are one of the primary techniques used in life science research and compound screening. Filter plate technology provides the basis for reliable, highly sensitive, and automation-compatible assay methods.

MultiScreen_{HTS} filter plates are intended for use in radiometric and chemiluminescent detection methods.

- MultiScreen_{HTS} 96 and 384-well filter plates
- MultiScreen_{HTS} + Hi Flow 96-well filter plates
- MultiScreen classic 96-well plates

Enzyme Assays

MultiScreen_{HTS} filter plates, available in a range of membrane and plate materials, set the standard for filtration-based enzyme assays. These versatile systems are widely used for kinase, phosphatase, protease and endonuclease assays, as well as second messenger assays such as cAMP, cGMP, phosphodiesterase (PDE), Nitric Oxide (NO), Ca²⁺ and inositols.

The filtration-based protocol produces specific, reliable results that are well referenced in the literature.

- Designed for in-plate radiometric analysis
- Liquid scintillation cocktail compatible
- Variety of filters available for a range of techniques
- Easy scale-up from 96 to 384-well assays

Recommended Filter Types for Enzyme Assays

- Low protein-binding Durapore
- High protein-binding mixed cellulose esters
- High protein-binding Immobilon®-P
- Negatively charged phosphocellulose
- Positively charged DEAE



OPTIMIZED DESIGN FOR HIGH QUALITY RESULTS

Plate Type	Plate Reader Mode	% Efficiency at 100K dpm	³³ P Ratio Signal/Noise
384-well MZPH	coincidence counting	35.6	2937:1
96-well MSPH	coincidence counting	62.4	2263:1
384-well MZPH	top PMT only	49.5	270:1
96-well MSPH	top PMT only	69.0	248:1

Radiometric counting efficiencies and signal to-background values for approximately 100,000 DPM ³³P labeled compounds as determined in the Wallac MicroBeta Trilux® Counting Instrument with 10 µL Wallac Optiphase™ Supermix scintillation cocktail in 96- and 384-well PH filter plates. 96-well filter plates were counted with the underdrain on. NOTE: MultiScreen_{HTS}-PH filter plates should not be dried prior to LSC addition.

ORDERING INFORMATION

MultiScreen_{HTS} + Hi Flow filter plates with negatively charged membrane (phosphocellulose)

Plate type	Pore size	Qty/Pk	Catalogue No.	
			96-well	384-well
MultiScreen _{HTS} -PH	—	10	—	MZPH NOW 10
		50	MSPH NXB 50	MZPH NOW 50

MultiScreen_{HTS} plates with low-binding membrane (hydrophilic Durapore PVDF membrane)

Plate type	Pore size	Qty/Pk	Catalogue No.	
			96-well	384-well
MultiScreen _{HTS} -HV	0.45 µm	10	MSHV N4B 10	MZHV NOW 10
		50	MSHV N4B 50	MZHV NOW 50
MultiScreen _{HTS} -DV	0.65 µm	50	MSDV N6B 50	—
MultiScreen _{HTS} -BV	1.2 µm	50	MSBV N1B 50	—

MultiScreen_{HTS} 96-well plates with high protein-binding membrane (hydrophobic Immobilon-P PVDF membrane)

Plate type	Pore size	Qty/Pk	Catalogue No.
MultiScreen _{HTS} -IP	0.45 µm	10	MSIP N4B 10
		50	MSIP N4B 50

MultiScreen_{HTS} 96-well plates with high protein-binding membrane (hydrophilic MCE)

Plate type	Pore size	Qty/Pk	Catalogue No.
MultiScreen _{HTS} -HA	0.45 µm	50	MSHA N4B 50

MultiScreen_{HTS} 96-well plates with positively charged membrane (DEAE)

Plate type	Pore size	Qty/Pk	Catalogue No.
MultiScreen _{HTS} -DE	—	50	MSDE N6B 50

MultiScreen Classic 96-well plates with easily removable underdrain for manual punch and count procedures

Plate type	Pore size	Qty/Pk	Catalogue No.
MultiScreen-BV	1.2 µm	50	MABV NOB 50
MultiScreen-IP	0.45 µm	50	MAIP NOB 50
MultiScreen-PH	—	50	MAPH NOB 50

Further Information

- MultiScreen_{HTS}-PH Phosphocellulose Filter Plates, data sheet PF2041EN00
- Case Study: Miniaturization of an Enzyme Inhibition Filtration Assay (Aventis), PRO443EN00
- Kinase Assays Performed Entirely in the MultiScreen_{HTS}-PH 384-well Phosphocellulose Filter Plate, data sheet AN1017EN00
- Integrated Signaling Solutions, brochure PB2030EN00

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Radiometric binding assay accessories on page 32

Receptor Binding Assays (GPCRs)

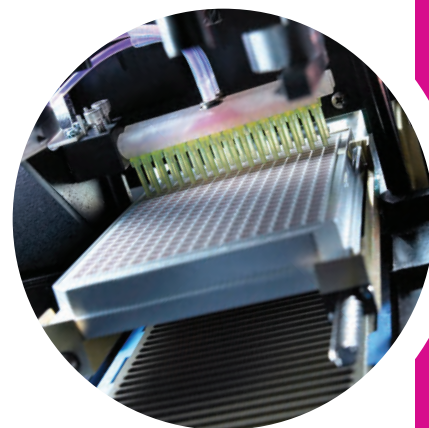
Receptor-binding assays are a critical component in lead identification and later lead characterization processes. Typically, they characterize most known drug targets with filter-based separation technology to obtain necessary “bound vs. free” fractions for assay validation. For sensitivity and specificity, radiolabeled known drugs are used in competitive binding assays. The assay is designed as a competitive inhibition assay using the radiolabeled known drug/ligand-receptor interaction to screen chemical or natural product libraries for more effective NCEs (new chemical entities). These quantitative binding parameter determinations indicate the minimal effective drug concentrations.

MultiScreen_{HTS} plates for quantitative binding parameters provide a more accurate and reliable alternative to homogeneous assays. They are widely used in high throughput screening campaigns and provide a reliable platform that incorporates a range of glass fiber filters to retain the receptor and “bound” ligand fraction.

Operation by vacuum manifold allows for more convenient characterizations since the bound fractions are easily collected from the top of the plate. In addition MultiScreen_{HTS} filter plates facilitate use with gripper arms and are compatible with microplate scintillation counters.

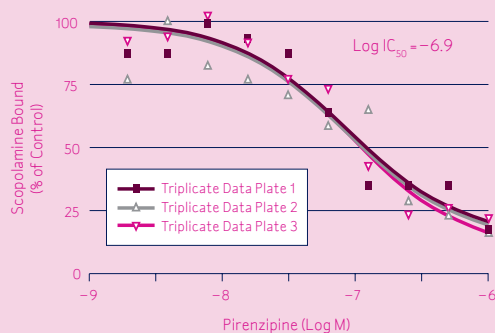
For cell harvest applications that require numerous washes and batch pretreatment with polyethylenimine (PEI), MultiScreen harvest plates are recommended.

- Highly sensitive and specific radiometric assays
- Compatible with liquid scintillation cocktail
- Easy scale-up from 96-well to 384-well assays
- Designed for use with automated equipment



OPTIMIZED DESIGN FOR QUALITY RESULTS

384-well Displacement Binding of Human Muscarinic M1 Receptor



Radioligand binding displacement binding assays were performed with a constant radiolabeled scopolamine concentration (0.6 nM) and serial dilutions of unlabelled pirenzepine as compared to a control binding experiment without unlabelled pirenzepine (% of Control). Here, displacement binding was done with 4.38 µg receptor preparation in 100 µL/well. Results presented are from three separate experiments each performed in triplicate wells. Relative affinity values (IC_{50}) were determined by fitting displacement binding inhibition values by non-linear regression using Prism™ data software. All data points are the average of triplicate experiments.

ORDERING INFORMATION

MultiScreen_{HTS} plates with low-binding membrane (hydrophilic Durapore PVDF membrane)

Plate type	Pore size	Qty/Pk	Catalogue No.	
			96-well	384-well
MultiScreen _{HTS} -HV	0.45 µm	10	MSHV N4B 10	MZHV NOW 10
		50	MSHV N4B 50	MZHV NOW 50
MultiScreen _{HTS} -DV	0.65 µm	10	MSDV N6B 10	—
		50	MSDV N6B 50	—
MultiScreen _{HTS} -BV	1.2 µm	10	MSBV N1B 10	—
		50	MSBV N1B 50	—

MultiScreen_{HTS} + Hi Flow plates with glass fiber filter

Plate type	Pore size	Qty/Pk	Catalogue No.	
			96-well	384-well
MultiScreen _{HTS} -FB	1.0 µm	10	MSFB NXB 50	MZFB NOW 10
		50	MSFB NXB 50	MZFB NOW 50
MultiScreen _{HTS} -FC	1.2 µm	10	MSFC NXB 50	MZFC NOW 10
		50	MSFC NXB 50	MZFC NOW 50

MultiScreen_{HTS} filter plates with high protein-binding membrane

Plate type	Pore size	Qty/Pk	Catalogue No.
MultiScreen _{HTS} -HA Hydrophilic	0.45 µm	50	MSHA N4B 50
MultiScreen _{HTS} -IP Hydrophobic	0.45 µm	50	MSIP N4B 50

MultiScreen classic filter plates with easily removable underdrain

Plate type	Pore size	Qty/Pk	Catalogue No.
MultiScreen-FB	1.0 µm	50	MAFB NOB 50
MultiScreen-FC	1.2 µm	50	MAFC NOB 50
MultiScreen-IP	0.45 µm	50	MAIP NOB 50

MultiScreen harvest plates

Plate type	Pore size	Qty/Pk	Catalogue No.
MultiScreen Harvest-FB	1.0 µm	60	MAHF B1H 60
MultiScreen Harvest-FC	1.2 µm	60	MAHF C1H 60

Further Information

- MultiScreen_{HTS} Glass Fiber Filter Plates, data sheet PF1150EN00
- High Throughput Method for In-plate Receptor-Ligand Binding Assays and Radioisotope Counting, protocol note PC1051EN00
- Optimizing Radioisotope Detection Using MultiScreen Plates with Packard TopCount Liquid Scintillation Counters technical note TN020
- MultiScreen_{HTS} 384-well Filter Plate with Glass Fiber Filter, High Throughput Method for In-Plate Receptor-Ligand Binding Assays and Radioisotope Counting, protocol note PC1051EN00

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Radiometric
binding assay
accessories on
page 32

CELL-BASED ASSAYS

The use of cell-based assays in life science and drug discovery research is important in the determination of cellular function and the understanding of disease mechanisms. Cell-based assays play an important role in both primary and secondary screening studies of promising drug compounds.

Millipore's filter-based technology provides reliable, high precision assay methodology for suspension or adherent cell lines, as well as whole organism models.

We provide filter plates and inserts developed to work effectively with sensitive detection and imaging systems. These products are optimized for a range of applications including transport assays, migration-invasion chemotaxis assays, and whole organism screening.

- Millicell standing and hanging inserts
- Millicell 24 and 96-well filter plates for drug transport assays
- Tissue culture plates
- MultiScreen-MIC filter plate
- MultiScreen-MESH filter plate
- MultiScreen_{HTS} filter plates for Elispot

Membrane-Based Cell Assay

Suspension and adherent cell lines are routinely used to investigate growth factors such as cytokines, signal transduction factors such as kinases and phosphatases, and other bioactive compounds.

Millicell membrane-based products are shown to improve the study of these, and other, cell lines by promoting natural cell growth. The optimized membranes result in cells with structure and function that more closely mimic what occurs *in vivo*. Quality results are seen for applications including primary and secondary screening, transport assays, toxicity screening, cell signaling, cell proliferation, and ADME drug safety studies.

The Millicell Cell Culture product family has now expanded to include 24-well and 96-well insert plates, as well as the new hanging single-well insert. Each platform is available with a selection of membranes to support a range of applications.

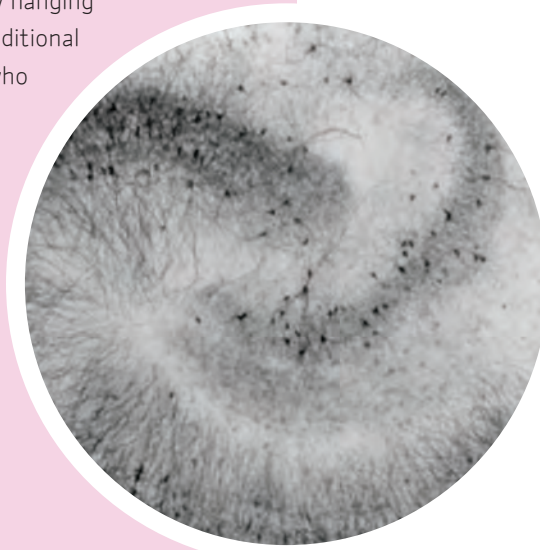
- Optimized membranes for reliable monolayer formation
- Transparent membranes for easy cell growth monitoring
- Choice of device platforms available



MILlicell CELL CULTURE INSERTS

Proven Over Decades of Research

Millicell inserts are available in three sizes for 24-, 12- or 6-well plates. The new hanging Millicell inserts provide an additional level of flexibility for users who need to remove inserts for media feeding, changes, and monolayer analysis.

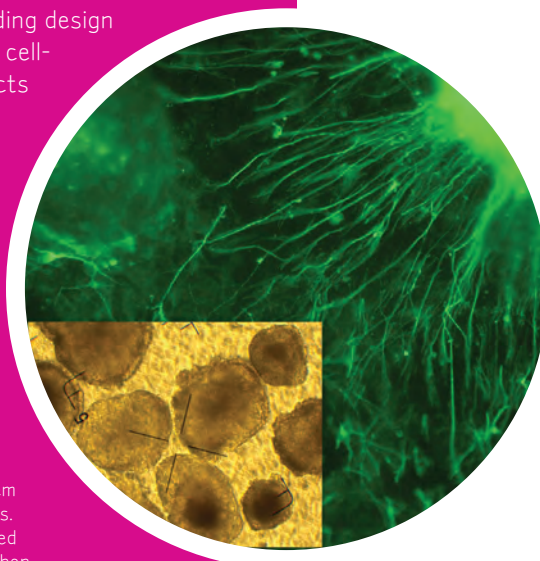


Hippocampal explant grown on Millicell organotypic insert in 1.5 mM Mg Hanks buffer.

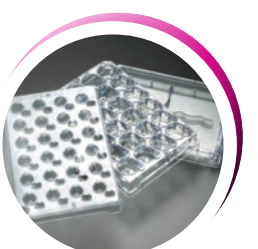
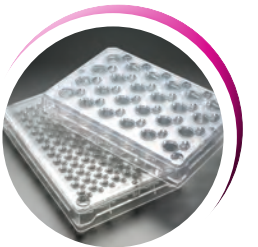


PLATE DESIGNS SIMPLIFY CELL CULTURE ASSAYS AND ANALYSIS

Both the 24-well and 96-well cell culture insert plates incorporate patent pending design features for high performance cell-based assays. The plate products simplify handling of multiple samples simultaneously, maintain assay integrity and prevent monolayer disruption, contamination or damage during analysis. The assemblies include a choice of a multi-well or single-well feeder tray.



Neuron differentiation of embryonic stem cells in Millicell-24, 1 µm PET filter plates. Murine embryonic stem cells were formed into suspended embryoid bodies (EBs), then transferred to Millicell-24, 1 µm PET for attachment and differentiation. Neural differentiation after retinoic acid treatment of attached EBs was confirmed by anti-neurofilament immunofluorescence. (Insert: Inverted phase contrast imaging through membrane of live EBs in media.)



APPLICATION GUIDE

Filter Code (Recommended Pore Size)

Filter Codes

Code	Membrane Type	Membrane Material
CM	Biopore®	Hydrophilic PTFE
HA	MF-Millipore®	Mixed cellulose esters
PCF	Isopore®	Polycarbonate
PET	PET	Polyethylene terephthalate

Application	Standing Insert (pore size)	Hanging Insert (pore size)	24-Well Plate (pore size)	96-Well Plate (pore size)
Angiogenesis	PCF (3, 8)	PET (3, 5, 8)	PCF (3, 5, 8)	MultiScreen MIC Plate (3, 5, 8)
Cell Proliferation	PCF (0.4)	PET (0.4, 1)	PCF (0.4) PET (1)	PCF (0.4) PET (1)
Cell Surface Receptors	PCF (0.4) HA (0.45) CM (0.4)	PET (0.4, 1)	PCF (0.4) PET (1)	PCF (0.4) PET (1)
Chemotaxis	PCF (3, 8)	PET (3, 5, 8)	PCF (3, 5, 8)	MultiScreen MIC Plate (3, 5, 8)
Co-culture	PCF (0.4) CM (1)	PET (0.4, 1)	PET (1) PCF (0.4)	PCF (0.4) PET (1)
Migration/Invasion	PCF (8,12)	PET (5, 8)	PCF (5, 8)	MultiScreen MIC Plate (5, 8)
Epithelial Cell Growth	PCF (0.4) HA (0.45)	PET (0.4, 1)	PCF (0.4) PET (1)	PCF (0.4) PET (1)
Feeder Layers	PCF (0.4, 3, 8)	PET (all)	PCF (all) PET (1)	PCF (0.4) PET (1)
Fluorescent Detection/ Immunohistochemistry	PCF (all) CM (0.4)	PET (all)	PCF (all) PET (1)	PCF (0.4) PET (1)
<i>In Vitro</i> Fertilization	CM (0.4)	PET (1)	PET (1)	PET (1)
<i>In Vitro</i> Toxicology	PCF (0.4) CM (0.4) HA (0.45)	PET (0.4, 1)	PCF (0.4) PET (1)	PCF (0.4) PET (1)
Microbial Attachment	PCF (0.4) CM (0.4) HA (0.45)	PET (0.4, 1)	PCF (0.4) PET (1)	PCF (0.4) PET (1)
Organotypic	Organotypic (0.4)			
Phase Contrast Microscopy	CM (0.4)	PET (1)	PET (1)	PET (1)
Polarized Protein Secretions	PCF (0.4) CM (1)	PET (0.4, 1)	PCF (0.4) PET (1)	PCF (0.4) PET (1)
Polarized Uptake	PCF (0.4) CM (0.4) HA (0.45)	PET (0.4, 1)	PCF (0.4) PET (1)	PCF (0.4) PET (1)
Transport/Permeability	PCF (0.4)	PET (0.4, 1)	PCF (0.4) PET (1)	PCF (0.4) PET (1)
Tumor Cell Metastasis and Invasion	PCF (8,12)	PET (5, 8)	PCF (5, 8)	MultiScreen MIC Plate (5, 8)

ORDERING INFORMATION

Millicell Single-well Standing Inserts

Membrane	Pore size	Device size	Qty/Pk	Catalogue No.
Organotypic insert** Biopore (PTFE)	0.4 µm	6 well	50	PICM ORG 50
HA insert MF-Millipore (Mixed cellulose esters)	0.45 µm	24 well 6 well	50 50	PIHA 012 50 PIHA 030 50
CM insert** Biopore (PTFE)	0.4 µm	24 well 6 well	50 50	PICM 012 50 PICM 030 50
PCF insert Isopore (Polycarbonate)	0.4 µm 3 µm 8 µm 12 µm 0.4 µm	24 well 24 well 24 well 24 well 6 well	50 50 50 50 50	PIHP 012 50 PITP 012 50 PI8P 012 50 PIXP 012 50 PIHP 030 50

** For adherent cells, this membrane needs to be coated with an extracellular matrix.

Millicell Single-well Hanging Inserts

Membrane	Pore Size	Device Size	Qty/Pk	Catalogue No.
PET Insert PET	0.4 µm 1 µm 3 µm 5 µm 8 µm	6 well	48	PIHT 30R 48 PIRP 30R 48 PISP 30R 48 PIMP 30R 48 PIEP 30R 48
	0.4 µm 1 µm 3 µm 5 µm 8 µm	12 well	48	PIHT 15R 48 PIRP 15R 48 PISP 15R 48 PIMP 15R 48 PIEP 15R 48
	0.4 µm 1 µm 3 µm 5 µm 8 µm	24 well	48	PIHT 12R 48 PIRP 12R 48 PISP 12R 48 PIMP 12R 48 PIEP 12R 48



Further Information

- Millicell Cell Culture Inserts and Insert Plates, Data Sheet PF187EN00
- Millicell Technical Guide, TN2004EN00
- Millicell Organotypic Cell Culture Procedure, TN062
- *In Vivo* Studies using Millipore Diffusion Chambers, TN1244EN00
- Millicell-24 Cell Culture Plate Microscopy Guidelines, PC1620EN00
- Millicell-24 Cell Culture Plate: Fixation and Immunostaining Guidelines, PC1621EN00

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Millicell-24 Well Cell Culture Insert Plate Assemblies

Description	System Components	Membrane pore size	Qty/Pk	Catalogue No.
Millicell-24 cell culture insert plates	24-well cell culture plate, single-well feeder tray, 24-well receiver tray and lid	PCF (0.4 µm) PET (1.0 µm) PCF (3 µm) PCF (5 µm) PCF (8 µm)	1	PSHT 010 R1 PSRP 010 R1 ✓ PSST 010 R1 PSMT 010 R1 PSET 010 R1
	24-well cell culture plate, 24-well receiver tray and lid	PCF (3 µm) PCF (5 µm) PCF (8 µm)	5	PSST 010 R5 PSMT 010 R5 PSET 010 R5
	24-well cell culture plate, single-well feeder tray and lid	PCF (0.4 µm) PET (1.0 µm)	5	PSHT 010 R5 PSRP 010 R5 ✓

Accessories

Description	Qty/Pk	Catalogue No.
24-well receiver trays with lids	5	PSMW 010 R5
Single-well feeder trays with lids	5	PSSW 010 R5

Millicell-96 Cell Culture Insert Plate Assemblies

Description	System Components	Membrane pore size	Qty/Pk	Catalogue No.
Millicell-96 cell culture insert plates	96-well cell culture plate, single-well feeder tray, 96-well receiver tray and lid	PCF (0.4 µm) PET (1.0 µm)	1	PSHT 004 R1 PSRP 004 R1
	96-well cell culture plate, 96-well receiver tray and lid	PCF (0.4 µm)	5	PSHT 004 S5
	96-well cell culture plate, single-well feeder tray and lid	PCF (0.4 µm) PET (1.0 µm)	5	PSHT 004 R5 PSRP 004 R5

Accessories

Description	Qty/Pk	Catalogue No.
96-well receiver trays with lids	5	MACA COR S5

Millicell Inserts Pre-loaded in 24-well Receiver Plates*

Membrane	Pore size	Catalogue No.
PET	0.4 µm	PIHT 12L 04
PET	8.0 µm	PIEP 12L 04

*Coming soon. Check with Tech Service for availability

Accessories

Description	Qty/Pk	Catalogue No.
Millicell-ERS Volt-Ohm meter	1	MERS 000 01
Replacement electrodes	1 pair	MERS STX 01
Stericup®-GP filter unit, PES membrane	12	SCGP U01 RE
Sterile Millex®-GP filter unit, PES membrane	50	SLGP 033 RS
Steriflip®-GP filter unit, PES membrane	25	SCGP 005 25

Further Information

- Millicell Cell Culture Inserts and Insert Plates data sheet, PF187EN00
- Drug Transport Assays in a 96-well System: Reproducibility and Correlation to Human Absorption, application note AN1727EN00
- Optimization of Caco-2 Cell Growth and Differentiation for Drug Transport Assay Studies Using a 96- well Assay System, protocol note PC1060EN00
- Optimization of MDCK Cell Growth and Differentiation for Drug Transport Assay Studies Using a 96- well Assay System, protocol note PC1061EN00
- Performance Characterization of a 96-well Filter Plate in Drug Transport Assays Using Caco-2 Cells and Automation, poster PS1653EN00
- Millicell-24 Cell Culture Plate Seeding and Feeding Guidelines, PC0015EN00
- Millicell-24 – Monolayer Integrity and Drug Transport Guidelines, PC0016EN00

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Tissue Culture Plates for Cell Growth

Tissue culture treated plates offer a surface which enables most adherent cells to attach and proliferate. The 6-, 12-, and 24-well formats provide users flexibility to run multiple samples simultaneously. These plates can be easily prepared for SEM and TEM, and are compatible with cellular and fluorescent staining procedures. Additionally, TC-treated plates can be used in conjunction with membrane-based Millicell inserts as receiver plates.

Plates are also available precoated with common ECM proteins which have been shown to enhance cell growth of more challenging cell lines. Studies show that anchor-dependent cells growing on ECM undergo more efficient plating, have a higher proliferation rate, reach a higher density, require lower serum and growth factor concentrations and demonstrate enhanced differentiation potential.

ORDERING INFORMATION

MILLICELL-TREATED TISSUE CULTURE PLATES

Tissue-Culture Plates

Membrane	Qty/pk	Catalogue No.
6-well cell culture plate, tissue culture treated, sterile	50	PIMW S06 50
12-well cell culture plate, tissue culture treated, sterile	50	PIMW S12 50
24-well cell culture plate, tissue culture treated, sterile	50	PIMW S24 50

Milliccoat ECM Precoated Receiver Plates, Sterile

Description	Coating	Qty/pk	Catalogue No.
6-well plate with Collagen coating	Collagen Type I	5	PICL 06P 05
24-well plate with Collagen coating	Collagen Type I	5	PICL 24P 05
6-well plate with Poly-D-Lysine coating	Poly-D-Lysine	5	PIDL 06P 05
24-well plate with Poly-D-Lysine coating	Poly-D-Lysine	5	PIDL 24P 05
6-well plate with Fibronectin coating	Fibronectin	5	PIFB 06P 05
24-well plate with Fibronectin coating	Fibronectin	5	PIFB 24P 05

* Laminin-coated plates coming soon. Check with Tech Service for availability.

Further Information

- ECM Cell Culture Optimization Array data sheet, Lit. No. DS1724EN00

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Migration, Invasion and Chemotaxis

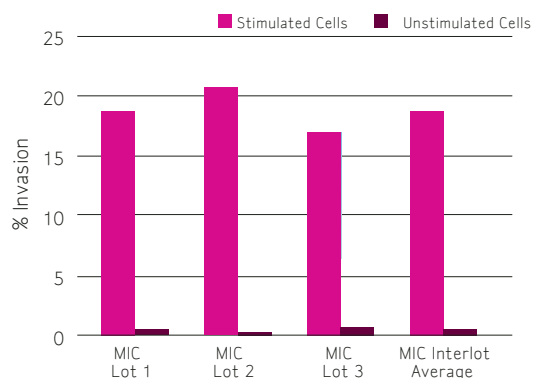
The MultiScreen-MIC filter plate provides a reliable, versatile platform for a range of cell-based screening assays including migration, invasion, chemotaxis, co-culture, angiogenesis and transmigration.

Plates and kits are available in a range of pore sizes to support assays with suspension and adherent cell lines and support cell growth for co-culture and transmigration assays. Results show that the plates demonstrate high assay consistency with little inter-assay variability. The plates are provided sterile to support longer incubation times and allow for assay set up and analysis in the same device.

MultiScreen-MIC filter plates are designed for broad assay compatibility and are available in three membrane pore sizes. The 96-well plates increase throughput 4x over 24-well systems, with no sacrifice to membrane surface area.

- Use with adherent or suspension cells
- Polycarbonate membrane available in 3, 5, and 8 μm pore sizes
- Pre-assembled kits available

Invasion Profile using MultiScreen-MIC Plates with 8 μm Membrane

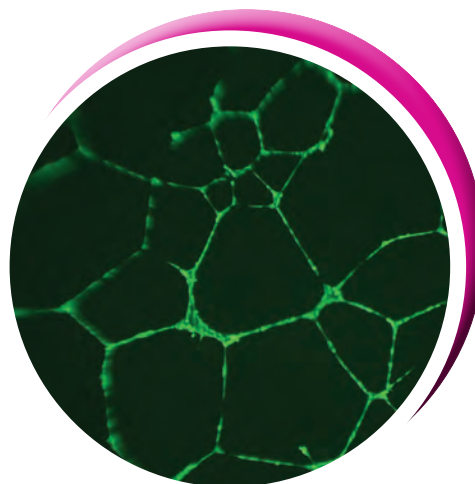


Percent invasion exhibited by MDA-MB-231 cells in response to 10% serum-containing medium (stimulated cells) or 0.2% BSA-containing medium (unstimulated cells) as a chemoattractant is shown. Plates were seeded with 50,000 cells/well. Invasion assays were carried out over a period of 24 hours at 37° C. Invaded cells for MultiScreen-MIC plates were quantified using KS300 cell-counting software on a Zeiss Axioplan® 2 microscope with an automated stage.

PROVEN TUBE FORMATION FOR ANGIOGENESIS ASSAYS

Plates support in vitro angiogenesis assays with HUVEC cells

MultiScreen-MIC Plates with 5 μm Membrane



Angiogenesis (tube formation) experiments were performed using HUVEC (human umbilical vein endothelial cells) cells on 5 μm MultiScreen-MIC plates pre-coated with extracellular matrix (400 $\mu\text{g}/\text{well}$). Plates were seeded with 10,000 cells/well. Cells were labeled with 8 mg/mL of Calcein AM fluorescent label. Tube formation was imaged with Zeiss Axiovision® software.

Pore Size Recommendations by Cell Type

Cell name	Cell type	Pore sizes	Assays
MDA-MB-231	Invasive breast cancer cell line (human)	5 or 8 µm	Chemotaxis or invasion assay
MCF7	Non-invasive breast cancer cell line (human)	5 or 8 µm	Chemotaxis or invasion assay
HT1080	Invasive fibrosarcoma cell line (human)	5 or 8 µm	Chemotaxis or invasion assay
NIH3T3	Non-invasive fibroblast cell line (mouse)	5 or 8 µm	Chemotaxis or invasion assay
HUVEC	Endothelial cells	3, 5, or 8 µm	Chemotaxis, invasion, angiogenesis or transendothelial migration assays
HMVEC/HMEC	Endothelial cells	3, 5, or 8 µm	Chemotaxis, invasion, angiogenesis or transendothelial migration assays
PMN	Polymorphonuclear neutrophils	1 or 3 µm	Chemotaxis assays
K562	Human leukemia	3 µm	Chemotaxis assays
HB124	Mouse myeloma	3 µm	Chemotaxis assays

Pore size determination is dependent on cell type. The chart illustrates pore size choices for a selection of cell lines used in Millipore laboratories and by customers for the assays indicated. For more information, please contact Millipore technical service.

ORDERING INFORMATION

MultiScreen-MIC System

Description	Pore size	Qty/Pk	Catalogue No.
MultiScreen-MIC	3 µm	10	MAMI C3S 10
MultiScreen-MIC	5 µm	10	MAMI C5S 10
MultiScreen-MIC	8 µm	10	MAMI C8S 10

Includes 96-well receiver plates housed in single-well trays, with lids. All parts are sterilized.

Accessories

Description	Qty/Pk	Catalogue No.
Single-well culture tray	10	MAMC S01 10
96-well receiver plate	10	MAMC S96 10

Further Information

- MultiScreen-MIC Filter Plate, data sheet PF2627EN00
- Evaluation of MultiScreen-MIC Plates in Chemotaxis Assays, application note AN1060EN00
- Evaluation of MultiScreen-MIC Plates in Invasion and Angiogenesis Assays, application note AN1675EN00
- A Non-Scrubbing Protocol For Use with Adherent Cells in Chemotaxis Assays, protocol note PC2003EN00

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Toxicity Using Whole Organism Models

Multicellular organisms including drosophila, nematodes, and zebra fish embryos provide effective *in vivo* models for new compound evaluation. MultiScreen MESH plates provide a complete system for target screening and other applications by evaluating new compounds using multi-cellular organisms as the *in vivo* model. They are routinely used in pharmaceutical and agropharma discovery for assays measuring paralysis, cytotoxicity, and death.

The MultiScreen MESH system includes a 96-well nylon mesh-bottom filter plate and a 96-well tray. The plates are constructed of optically clear plastic to facilitate use with imaging microscopes.

The protocol is simple. Add the organisms to the wells, apply the target compound, and measure the effects.

- Complete screening system includes filter plate and receiver tray
- Clear plates for use with microscopic analysis
- Can be utilized for de-clumping cells prior to FACS analysis

ORDERING INFORMATION

MultiScreen MESH System

Plate Type	Pore size	Qty/Pk	Catalogue No.
*MultiScreen MESH	20 µm	10	MANM N20 10
	40 µm	10	MANM N40 10
	60 µm	10	MANM N60 10
	100 µm	10	MANM 100 10

*Provided with MultiScreen Transport Receiver plate

Accessories

Description	Qty/Pk	Catalogue No.
MultiScreen transport receiver plate	50	MATR NPS 50
Single-well cell culture tray	10	MAMC S01 10
96-well cell culture tray	10	MAMC S96 10

Further Information

- MultiScreen Mesh Plates with Transport Receiver Plate, data sheet PF1516EN00
- MultiScreen Transport Receiver Plates, data sheet PF0125EN00

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Elispot Assays

The Elispot (enzyme-linked immunospot) assay was first described two decades ago as a useful assay for the detection of specific immune responses on a single cell level. Since that time, the assay has been optimized through the introduction of specifically designed antibodies, automated reader systems, and other tools including 96-well Elispot membrane plates.

MultiScreen_{HTS} filter plates provide high protein-binding capacity with low background staining and reliable sensitivity from lot-to-lot. The plates are designed for enhanced imaging on a range of systems including Zeiss and AID imaging devices. They also have a removable underdrain to allow for easy membrane access.

- Consistent performance lot-to-lot
- Uniform distribution of spots
- Automation compatible

Further Information

- IFN- γ Elispot Assays on MultiScreen-IP Filter Plates, technical note TN1003EN00
- IFN- γ Elispot Assays on MultiScreen-HA Filter Plates, technical note TN1075EN00
- MultiScreen_{HTS} Filter Plates for Elispot, data sheet PF025EN00
- Immunodetection hand book, CA1013EN00

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ELISPOT ASSAY PROCEDURE FOR THE DETECTION OF CYTOKINES IN RESPONSE TO A STIMULUS



1. Coat membrane with antibodies. Add immune and target cells and incubate.
2. Responding cells produce cytokines.
3. Wash to remove cells.
4. Add avidin-enzyme conjugate. Add biotinylated antibodies.
5. Each responding cell produces one spot.

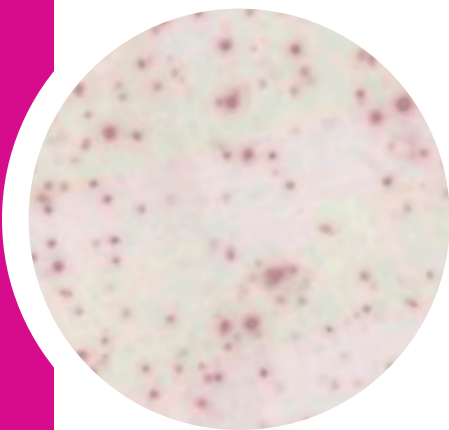
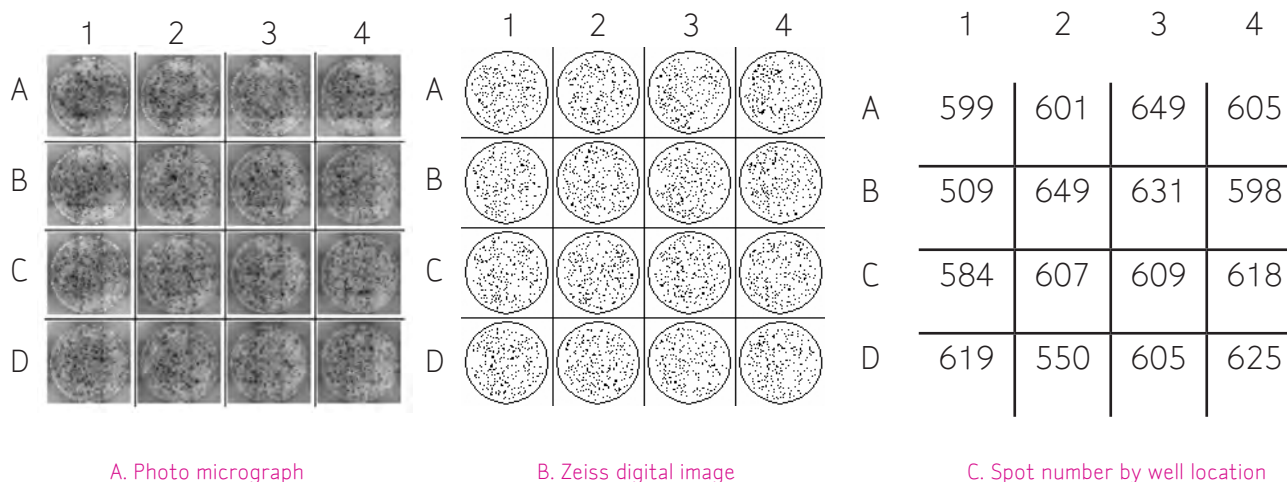


Image of typical Elispot well. The spots are clear, focused, and easy to distinguish.

Photo courtesy of ZellNet Consulting, Inc.

UNIFORM AND REPRODUCIBLE SPOTS

Optimized Membrane Gives Consistent Results Even in Corner and Edge Wells



These images represent the number of cells secreting IFN- γ in response to PHA-L stimulation of Human Peripheral Blood Mononuclear cells (HPBMC). The wells were seeded with 50,000 cells and developed using BCIP/NBTplus substrate. The wells were imaged with the Zeiss KS Elispot imaging system. Typical MultiScreen_{HTS}-IP filter plate variability expressed by coefficient of variation (% CV)* is less than 10%.

* %CV = (SD/mean)*100

ORDERING INFORMATION

MultiScreen_{HTS} 96-well Plates*

Description	Plate material /color	Qty/Pk	Sterile	Catalogue No.
MultiScreen _{HTS} -HA with MCE membrane	Styrene/clear	10	Yes	MSHA S45 10
MultiScreen _{HTS} -IP with Immobilon-P membrane	Acrylic/clear	10	Yes	MSIP S45 10
		50	No	MSIP N45 50
	Acrylic/white	10	Yes	MSIP S4W 10
		50	No	MSIP N4W 50
MultiScreen _{HTS} plate with Immobilon-P membrane without underdrain	Acrylic/white No underdrain	10	Yes	MAIP SWU 10
8-well strip				
MultiScreen 8-well strip with Immobilon-P membrane	Acrylic/Clear	10	Yes	M8IP S45 10

* Classic MultiScreen plates are also available for Elispot assays. Contact technical service for information on catalogue numbers MAHA S45 10, MAIP S45 10 and S2EM 004 M99.

Accessories

Description	Qty/Pk	Catalogue No.
Single-well punch kit for individual membrane removal	1	MELI PUN CH
Plate sealing tape, clear	100	MATA HCL 00
MultiScreen 8-Well Strip Support Frame	10	M8IP FRA ME

ADME/COMPOUND PROFILING

The current attrition and failure rate of candidate drugs at the ADME stage of drug development is driving the need for earlier compound profiling for drug-like properties. Early-ADME information assists in the selection and optimization of pharmaceutical properties in parallel with compound screening for activity.

Millipore has taken the lead in the development of new screening technology for adsorption characteristics at a higher throughput level. Product and assay methodologies for absorption (both cell- and non-cell-based transport), and solubility correlate well with standard methodologies. The 96-well assay solutions offer a high level of predictability and are proven for use in the application.

- MultiScreen filter plates for solubility determination
- MultiScreen filter plates for PAMPA and permeability

Aqueous Solubility Assay

Determining compound solubility is an increasingly important task for drug discovery researchers. Since shake flasks set the standard for solubility assays, competing methodologies have failed to meet throughput or quantitative demands – until now.

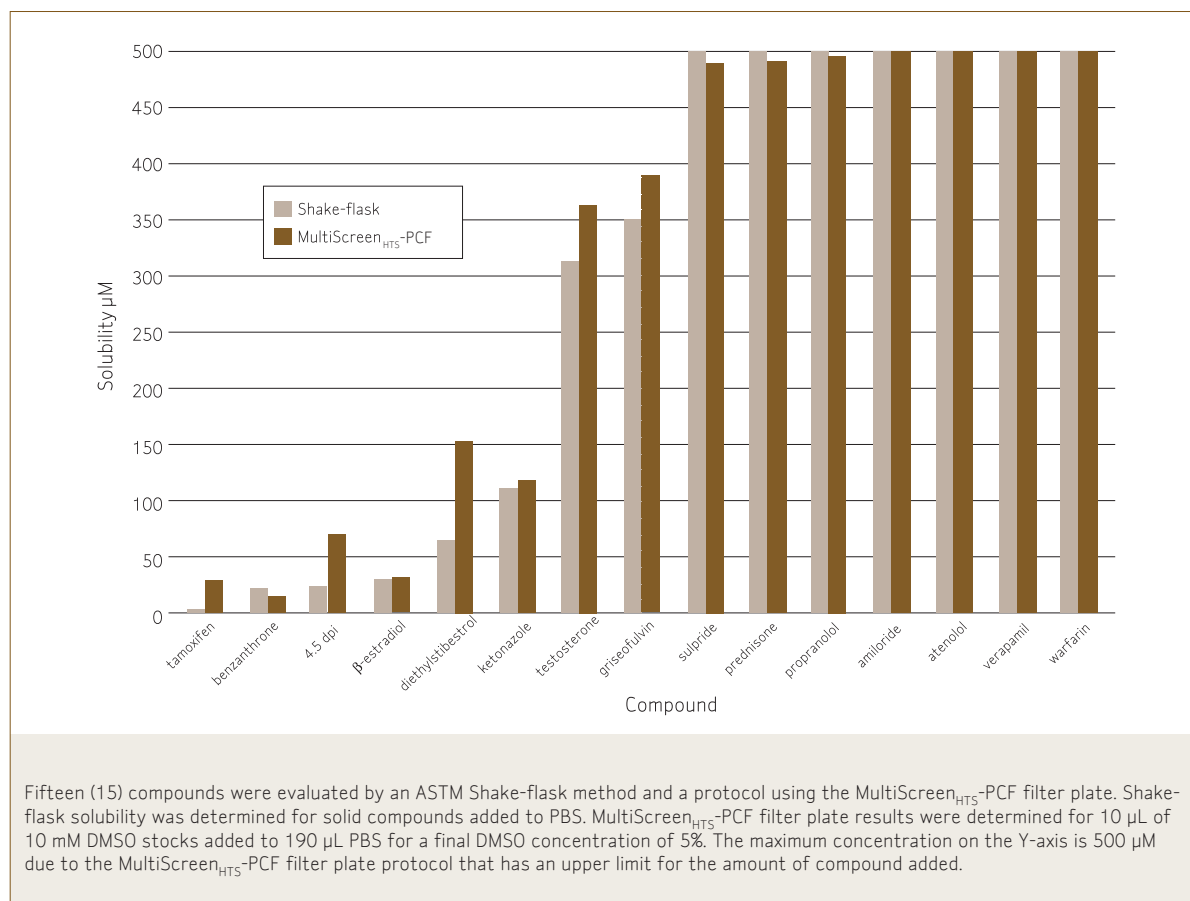
The MultiScreen_{HTS}-PCF filter plate incorporates filtration-based technology to provide a robust, automation-compatible solubility assay. The plates demonstrate fast flow rates, good retention of particulates that can interfere with analysis, and low non-specific binding. Results are highly reproducible and correlate with published literature values.

Unlike other high throughput methods, this method measures the compound in solution.

- Results correlate with shake-flask standards
- Reproducible results
- 90 minute screening protocol
- High compound recovery



MULTISCREEN_{HTS}-PCF FILTER PLATE PERFORMANCE IN A SOLUBILITY ASSAY



ORDERING INFORMATION

Description	Pore size	Qty/Pk	Catalogue No.	
			96-well	384-well
*MultiScreen _{HTS} -PCF filter plate	0.45	10 50	MSSL BPC 10 MSSL BPC 50	—
MultiScreen Solvintert filter plate	0.45	10 50	MSRL N04 10 MSRL N04 50	—
MultiScreen _{HTS} -HV	0.45	10 50	MSHV N45 10 MSHV N45 50	MZHV NOW 10 MZHV NOW 50
MultiScreen _{HTS} -GV	0.2	10 50	MSGV N22 10 MSGV N22 50	—
MultiScreen Solvintert deepwell	0.45	10	MDRL N04 10	—

* Formerly MultiScreen_{HTS}-Solubility filter plate

Required Equipment

Description	Qty/Pk	Catalogue No.
MultiScreen _{HTS} vacuum manifold	1	MSVM HTS 00

Accessories

Description	Qty/Pk	Catalogue No.
96-well collection plate clear, non-sterile	100	MSCP NPS 00
96-well collection plate for UV analysis, non-sterile	40	MSCP NUV 40
96-well deep well receiver plate, non-sterile	50	MDCP N2M 50

Further Information

- MultiScreen_{HTS}-Solubility Filter Plate, data sheet PF1315EN00
- Determination of Aqueous Compound Solubility Based on Removal of Precipitated Solids Using a 96-well Filter Plate Prior to UV-VIS Spectroscopic Analysis, protocol note PC2445EN00
- Performance and Correlation of a 96-Well High Throughput Screening Method to Determine Aqueous Drug Solubility, application note AN1731EN00
- Quantitative Method to Determine Drug Aqueous Solubility: Optimization and Correlation to Standard Methods, application note AN1730EN00
- Combining Permeability and Solubility Analysis in a Single Workflow, application note AN1058EN00
- MultiScreen_{HTS}-Solubility Filter Plate: Integration with Detection Techniques application note AN1240EN00

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Non-Cell-Based Absorption Assays

MultiScreen filter plates for PAMPA and permeability assays yield effective predictive results that correlate well to both *in vitro* Caco-2 and human absorption values. The assays are easy to set up and the results are highly reproducible. The plates are treated to create 96 artificial biomembranes with drug compounds introduced for passive permeability testing.

MultiScreen Permeability Assays

This fast predictive assay correlates well to human data. Set-up is easy and results are available in 8 hours. This assay is ideal for large library classifications, rank ordering of compounds and the identification of problem components. Polymer membrane is impregnated with a hexane/hexadecane (HDM) layer.

MultiScreen PAMPA Assays

This 16 hour assay demonstrates high correlation to human values. It is best suited for oral absorption predictive values of charged drugs and predictive values for permeability results of charged compounds. Artificial biomembranes are created by coating the filter with lipid.

- Rapid absorption screening tools for transcellular compounds prior to Caco-2 assays
- Results correlate with human absorption values
- Automation compatible

Further Information

- MultiScreen for PAMPA and MultiScreen Permeability Filter Plates, data sheet PF1781EN00
- MultiScreen Transport and Receiver Plates, data sheet PF0125EN00
- Evaluation of the Reproducibility of Parallel Artificial Membrane Permeation Assays (PAMPA), application note AN1728EN00
- Automation of ADME Applications, poster PS1050EN00
- Advances in Transport Receiver Plate Capabilities, poster PS1346EN00

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ORDERING INFORMATION

Description	Qty/Pk	Catalogue No.
MultiScreen-IP filter plate for PAMPA assays with underdrain	50	MAIP N45 50
w/o underdrain	10	MAIP NTR 10
MultiScreen permeability	10	MPC4 NTR IO

Accessories

Description	Qty/Pk	Catalogue No.
MultiScreen transport receiver plate	50	MATR NPS 50
MultiScreen acceptor PTFE receiver plate	1	MSSACCEPTOR



ACCESSORIES

In addition to applications development, MultiScreen_{HTS} filter plates are accompanied by optimized plate accessories. This section provides information on the new MultiScreen_{HTS} vacuum manifold, products for radiometric binding assays, as well as ordering details for recommended receiver and analysis plates.

- Vacuum Filtration
- Radiometric Assays
- Centrifugation and Chromatography
- Collection Plates
- Tissue Cultureware

MULTISCREEN_{HTS} VACUUM MANIFOLD

The MultiScreen_{HTS} Vacuum Manifold is designed to improve filter-based assay performance and reliability. The manifold supports a wide variety of MultiScreen platforms, including 96-well and 384-well filter plates for bioassays, and deep-well solvilinear filter plates for sample preparation.

The manifold configuration is easily adapted to accommodate filter to waste or collection assays. For those assays where filtrate collection is required, the MultiScreen_{HTS} Vacuum Manifold incorporates DirectStack™ technology. This feature eliminates gaps between flow directors and receiver wells to increase assay reliability and eliminate cross talk. The direct stacking of plates also makes vacuum initiation effortless.



The MultiScreen_{HTS} Vacuum Manifold is also ideally suited for automation. The compact size of the manifold base is modeled on ANSI/SBS standards for microplates to fit most robot deck locations. The manifold collar is lightweight and features a groove for easy handling by robotic gripper systems. If additional precision is needed for placement of the collar during assembly/disassembly routines, a collar holder accessory is available.

- DirectStack technology enables crosstalk-free filtrate collection
- Configurations for deep well or standard receiver plates
- ANSI/SBS compliant footprint allows for easy robotic deck integration
- Solvent-resistant

DirectStack Technology Improves Assay Reliability

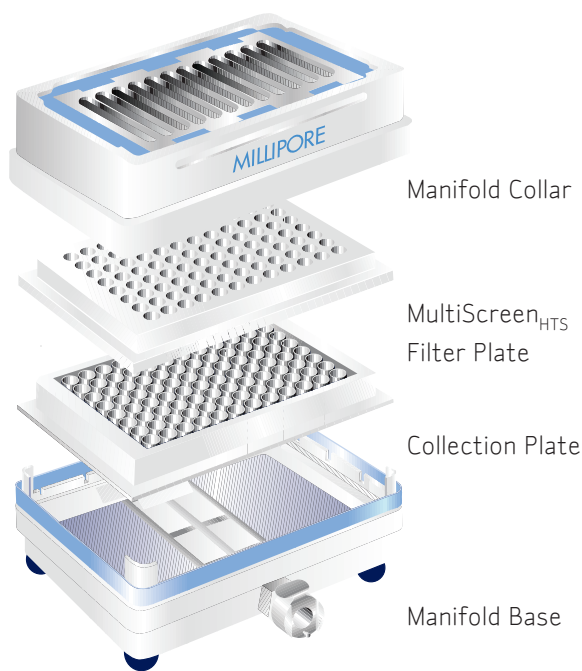


Plate-on-plate stacking eliminates gaps between flow directors and receiver wells in applications that require filtrate collection. The manifold also accommodates a deep well system (if both receiver and filter plate are deep well, a deep well collar is required to accommodate plate-on-plate stacking).

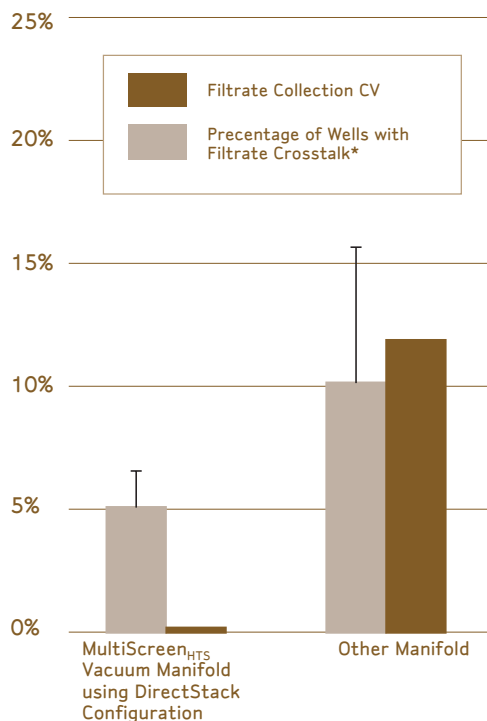
Further Information

- MultiScreen_{HTS} Vacuum Manifold, Data Sheet PF2014EN00
- Advances in Vacuum Filtration, Poster PS2101EN00
- Automating Multiplexed Cytokine Assays with the MultiScreen_{HTS} Vacuum Manifold case study PRO001EN00

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Low Crosstalk

MultiScreen_{HTS} vacuum manifold with DirectStack feature enhances 384-well filter plate performance



*A filtrate crosstalk event is defined as any buffer-only well location with >2% fluorescent signal.

Data shown is for MultiScreen_{HTS} 384 well filter plates (n=4). %CV was determined by microplate spectrophotometer absorbance measurement of dye in aqueous buffer. Filtrate crosstalk was determined by filtering a checkerboard pattern of fluorescent dye containing and buffer only containing wells into a 384-well collection plate and reading in a Tecan Spectrafluor™ Plus plate reader.



VACUUM FILTRATION

MultiScreen_{HTS} Vacuum Manifold

Description	Qty/Pk	Catalogue No.
MultiScreen _{HTS} vacuum manifold standard kit (includes manifold base, standard collar, gaskets, gasket inserts, all tubing, valves, and pressure gauge)	1	MSVM HTS 00

Adaptors

Description	Qty/Pk	Catalogue No.
Deep well collar, (includes gaskets and collar gasket frame)	1	MSVM HTS 0D
Collar holder, for automation	1	MSVM HTS 0H

Replacement Parts

Description	Qty/Pk	Catalogue No.
Replacement gasket set	1	MSVM HTS 04
Droplet trap array	1	MSVM HTS 0A
Collar gasket frame	1	MSVM HTS 0F
MultiScreen replacement support grid	1	MAVM XXA 05
On/Off valve kit	1	MSVM HTS 06
Control valve kit	1	MSVM HTS 10
Vacuum gauge kit	1	MSVM HTS 07
Standard Collar with gasket	1	MSVM HTS 08
Replacement tubing, 10 ft (3 m)	1	MSVM HTS 09

MultiScreen Vacuum Manifold for Classic Filter Plates

Description	Qty/Pk	Catalogue No.
MultiScreen Resist Vacuum Manifold (includes manifold base, standard ring with gaskets, support grid, all tubing, valves and pressure gauge)	1	MAVM 096 OR

Replacement Parts

Description	Qty/Pk	Catalogue No.
MultiScreen gasket set (1 each top & bottom)	1	MAVM XXA 04
MultiScreen replacement support grid	1	MAVM XXA 05
MultiScreen replacement tubing set	1	MAVM XXA 06
MultiScreen On/Off & vacuum control valves & tee assembly	1	MAVM XXA 07
MultiScreen replacement standard ring	1	MAVM XXA 08

Vacuum Manifold Kits

Includes: MultiScreen_{HTS} Vacuum Manifold, Chemical duty pump (choose appropriate voltage), vacuum flask, stoppers and Millex

Description	Qty/Pk	Catalogue No.
Vacuum pump kit (220 volts, 50Hz)	1	MSVM KIT 00
Vacuum pump kit (115 volts, 60Hz)	1	MSVM KIT 01
Vacuum pump kit (100 volts, 50-60Hz)	1	MSVM KIT 02
Kit Components:		
Chemical duty pump (220 volts, 50Hz)	1	WP61 220 50
Chemical duty pump (115 volts, 60Hz)	1	WP61 115 60
Chemical duty pump (100 volts, 50-60Hz)	1	WP61 100 50
Vacuum flask, 1L	1	XX10 047 05
#8 Silicone stoppers, 9.5mm hole	5	XX20 047 18
Millex-FA filter unit	10	SLFA 050 10

RADIOMETRIC ASSAYS

Scintillation Counting in Vials

Components Needed: Punch, Vial Carrier and Punch Tips; Note: Punch and vial carriers are included in the punch kits

Punch Kits: includes punch and carrier racks	Qty/Pk	Catalogue No.
MultiScreen punch kit for 7 mL vials (includes multiple punch, MAMP09608, and 2 carrier racks for 7mL vials, MACR08127)	1	MAPK 896 0A
MultiScreen punch kit for 4 mL vials (includes multiple punch, MAMP09608, and 2 carrier racks for 4mL vials, MACR08124)	1	MAPK 896 0B
MultiScreen punch kit for 12 x 75 mm tubes (includes multiple punch, MAMP09608, and 2 carrier racks for 12mm x 75mm tubes, MACR81275)	1	MAPK 896 0C
MultiScreen multiple punch (includes punch with punch carrier slide for MultiScreen Classic 96-well filter plates: No vial rack included)	1	MAMP 096 08

Punch Tips	Qty/Pk	Catalogue No.
MultiScreen disposable punch tips	5 x 10	MADP 196 50

Replacement Parts

Carrier Racks (included in punch kits)	Qty/Pk	Catalogue No.
MultiScreen carrier rack for 7 mL vials	1	MACR 081 27
MultiScreen carrier rack for 4 mL vials	1	MACR 081 24
MultiScreen carrier rack for 12 mm x 75 mm tubes	1	MACR 812 75

Accessories

Description	Qty/Pk	Catalogue No.
MultiScreen plate carrier slide (required for punching MultiScreen _{HTS} filter plates)	1	MSCP 096 00

Scintillation Counting in Plates

Plate Adaptors	Qty/Pk	Catalogue No.
Packard Top Count adapter for MultiScreen _{HTS} 96-well filter plates	50	MSTP CWH 50
Packard Top Count adapter for MultiScreen classic filter plates	50	SE3M 203 V6

Sealing Tape	Qty/Pk	Catalogue No.
Sealing tape, opaque	100	MATA HOP 00
Sealing tape, clear	100	MATA HCL 00

Centrifugation and Chromatography

Description	Qty/Pk	Catalogue No.
MultiScreen column loader, 25 µL	1	MACL 096 25
MultiScreen column loader, 45 µL	1	MACL 096 45
MultiScreen column loader, 80 µL	1	MACL 096 80
MultiScreen column loader, 100 µL	1	MACL 096 00
MultiScreen column loader Scraper	3	MACL OSC 03
MultiScreen centrifuge alignment Frame, blue, aqueous applications	4	MACF 096 04

Sealing Tape	Qty/Pk	Catalogue No.
Sealing tape, opaque	100	MATA HOP 00
Sealing tape, clear	100	MATA HCL 00

Cultureware

Tissue Culture Treated Plates

Description	Qty/Pk	Catalogue No.
6-well cell culture plate, tissue culture treated, sterile	50	PIMW S06 50
12-well cell culture plate, tissue culture treated, sterile	50	PIMW S12 50
24-well cell culture plate, tissue culture treated, sterile	50	PIMW S24 50

Milliccoat ECM Precoated Plates, Sterile

Description	Coating	Qty/box	Catalogue No.
6-well plate with Collagen coating	Collagen Type I	5	PICL 06P 05
24-well plate with Collagen coating	Collagen Type I	5	PICL 24P 05
6-well plate with Poly-D-Lysine coating	Poly-D-Lysine	5	PIDL 06P 05
24-well plate with Poly-D-Lysine coating	Poly-D-Lysine	5	PIDL 24P 05
6-well plate with Fibronectin coating	Fibronectin	5	PIFB 06P 05
24-well plate with Fibronectin coating	Fibronectin	5	PIFB 24P 05

* Laminin coated plates coming soon. Check with Tech Service for availability.

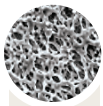
ORDERING GUIDE FOR FILTER PLATES



A guide to MultiScreen_{HTS} filter plates and Millicell assay systems by membrane type.

Sterility ● **Sterile** ○ **Non-sterile**

Plate Colors 96 384 96
 Number indicates the number of wells Clear or natural White Opaque



The Durapore membrane provides high flow rates and throughput, low extractables and broad chemical compatibility.

PVDF Membrane

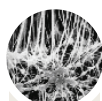
Description	Product	Pore Size, μm	Plate color	Plate material	Sterility	Qty/Pk	Catalogue No.
Plates with hydrophilic Durapore PVDF membrane	MultiScreen _{HTS}	0.22	96	acrylic	○	10	MSGV N22 10
					○	50	MSGV N22 50
					●	10	MSGV S22 10
	0.45	96	styrene	○	10	MSHV N45 10	
				○	50	MSHV N45 50	
				●	10	MSHV S45 10	
	0.45	96	Barex®/TiO2	○	10	MSHV N4B 10	
				○	50	MSHV N4B 50	
	0.65	96	styrene	○	10	MSDV N65 10	
				○	50	MSDV N65 50	
0.65	96	Barex/TiO2	○	50	MSDV N6B 50		
			1.2	96	styrene	○	10
○	50	MSBV N12 50					
●	10	MSBV S12 10					
1.2	96	Barex/TiO2	○	50	MSBV N1B 50		
			MultiScreen _{HTS} 384-well	0.45	384	SAN/TiO2	○
○	50	MZHV NOW 50					
Plates with hydrophobic Immobilon-P PVDF	MultiScreen _{HTS}	0.45	96	acrylic	○	10	MSIP N45 10
					○	50	MSIP N45 50
					●	10	MSIP S45 10
	0.45	96	acrylic	●	10	MSIP S4W 10	
				○	50	MSIP N4W 50	
	0.45	96	Barex/TiO2	○	10	MSIP N4B 10	
○				50	MSIP N4B 50		



MCE Membrane

Biologically inert mixtures of cellulose acetate and cellulose nitrate have made MF-Millipore membranes one of the most widely-used membranes in analytical and research applications.

Description	Product	Size, μm	Pore color	Plate material	Plate Sterility	Qty/Pk	Catalogue No.
Plates with hydrophilic MCE membrane	MultiScreen _{HTS}	0.45	96	styrene	○	10	MSHA N45 10
					○	50	MSHA N45 50
	0.45	96	Barex/TiO ₂	●	10	MSHA S45 10	
				○	50	MSHA S4B 10	
				○	50	MSHA N4B 50	



PTFE Membrane

Fluoropore membrane is a PTFE membrane bonded to a high density polyethylene support. Teflon provides the broadest chemical compatibility of all membrane types

Solvent-resistant filter plates (500 μL)	Hydrophilic MultiScreen Solvinert	0.45	96	polyolefin copolymer	○	10	MSRL N04 10
					○	50	MSRL N04 50
	Hydrophobic MultiScreen Solvinert	0.45	96	polyolefin copolymer	○	10	MSRP N04 10
					○	50	MSRP N04 50
Solvent-resistant deep well filter plates (2 mL)	Hydrophilic MultiScreen Deep Well Solvinert	0.45	96	polyolefin and cyclic olefin copolymers	○	10	MDRL N04 10
	Hydrophobic MultiScreen Deep Well Solvinert	0.45	96	polyolefin and cyclic olefin copolymers	○	10	MDRP N04 10
		0.45 with pre-filter	96	polyolefin and cyclic olefin copolymers	○	10	MDRP NP4 10



Nylon

Nylon net fillers are compatible with a wide range of solvents and are good for crude separations of large cell clumps or whole organisms.

Plates with nylon mesh filter	MultiScreen MESH	20	96	styrene	○	10	MANM N20 10
		40			○	10	MANM N40 10
		60			○	10	MANM N60 10
		100			○	10	MANM 100 10

Polycarbonate Membrane



Isopore membrane is a polycarbonate, track-etched filter recommended for all analyses in which the sample is viewed on the surface of the membrane.

Description	Product	Pore Size	Plate color	Plate material	Sterility	Qty/pk	Catalogue No
Cell culture insert plates	24-well cell culture plate, single-well feeder tray, 24-well receiver tray and lid	0.4	24	styrene	●	1	PSHT 004 R1
		3.0				1	PSST 010 R1
		5.0				1	PSMT 010 R1
		8.0				1	PSET 010 R1
24-well cell culture plate, 24-well receiver tray and lid	24-well cell culture plate, 24-well receiver tray and lid	3.0	24	styrene	●	5	PSST 010 R5
		5.0				5	PSMT 010 R5
		8.0				5	PSET 010 R5
24-well cell culture plate, single-well feeder tray and lid	24-well cell culture plate, single-well feeder tray and lid	0.4	24	styrene	●	5	PSHT 010 R5
96-well cell culture plate, single-well feeder tray, 96-well receiver tray and lid	96-well cell culture plate, single-well feeder tray, 96-well receiver tray and lid	0.4	96	styrene	●	1	PSHT 004 R1
96-well cell culture plate, 96-well receiver tray and lid	96-well cell culture plate, 96-well receiver tray and lid	0.4	96	styrene	●	5	PSHT004 S5
96-well cell culture plate, single-well feeder tray and lid	96-well cell culture plate, single-well feeder tray and lid	0.4	96	styrene	●	5	PSHT 004 R5
96-well Multi-Screen _{HTS} -PDF filter plate	96-well Multi-Screen _{HTS} -PDF filter plate	0.45	96	styrene	●	10 50	MSSL BCP 10 MSSL BCP 50



Polyester Membrane

Polyester, track-etched membranes are optically clear, support cell growth and are recommended for assays requiring analysis of cells.

Cell culture insert plates	24-well cell culture plate, single-well feeder tray, 24-well receiver tray and lid	1.0	24	styrene	●	1	PSRP 010 R1
		1.0				5	PSRP 010 5R
		1.0				1	PSRP 004 R1
		1.0				5	PSRP 004 R5



Ultrafiltration Membrane

Improved molecule retention and low protein-binding.

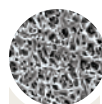
Plates with ultrafiltration membrane	MultiScreen with Ultracel-10 10K NMWL	—	96	polyolefin	○	10	MAUF 010 10
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Specialty membranes and filters are available for a variety of applications.

Specialty Membranes and Filters

Description	Product	Pore Size, μm	Plate color	Plate material	Sterility	Qty/Pk	Catalogue No.
Plates for lysate clearing	MultiScreen _{HTS} -NA	—	96	styrene	○	10	MSNA NLY 10
					○	50	MSNA NLY 50
Plates with negatively charged phosphocellulose membrane	MultiScreen _{HTS} + Hi Flow	- Charge	96	Barex/TiO ₂	○	50	MSPH NXB 50
					○	10	MSPH N6B 10
						50	MSPH N6B 50
MultiScreen _{HTS} 384-well	- Charge	384	SAN/TiO ₂	○	10	MZPH NOW 10	
				○	50	MZPH NOW 50	
Plates with positively charged DEAE membrane	MultiScreen _{HTS}	+Charge	96	Barex/TiO ₂	○	50	MSDE N6B 50
Plates with glass fiber filter	MultiScreen _{HTS} + Hi Flow	1.0	96	Barex/TiO ₂	○	50	MSFB NXB 50
		1.2			○	50	MSFC NXB 50
	MultiScreen _{HTS}	1.0	96	Barex/TiO ₂	○	10	MSFB N6B 10
		1.2			○	50	MSFB N6B 50
					○	10	MSFC N6B 10
	○	50	MSFC N6B 50				
MultiScreen _{HTS} 384-well	1.0	384	SAN/TiO ₂	○	10	MZFB NOW 10	
				○	50	MZFB NOW 50	
Harvest plates with glass fiber filter	Harvest plates with 100 μL wells	1.0	96	Barex/TiO ₂	○	60	MAHF B1H 60
		1.2			○	60	MAHF C1H 60



Various membranes are found in MultiScreen Classic Filter plates with easily removable underdrains

Classic MultiScreen Filter Plates

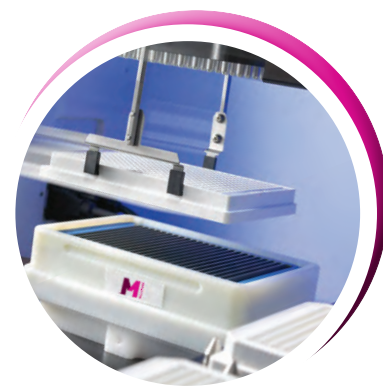
Plates with hydrophilic Durapore membrane	0.22	96	styrene	●	10	MAGV S22 10
	0.45	96	styrene	○	10	MAHV N45 10
	0.45	96	styrene	○	50	MAHV N45 50
	0.65	96	styrene	○	50	MADV N65 50
	1.2	96	Barex/TiO ₂	○	50	MABV NOB 50
	1.2	96	styrene	○	50	MABV N12 50
Plate with hydrophobic Durapore membrane	0.45	96	styrene	○	50	MAIP N45 50
	0.45	96	styrene	●	10	MAIP S45 10
	0.45	96	acrylic	●	10	MAIP SWU 10*
	0.45	96	Barex/TiO ₂	○	50	MAIP NOB 50
Plates with glass fiber filters	1.0	96	Barex/TiO ₂	○	50	MAFB NOB 50
	1.2	96	Barex/TiO ₂	○	50	MAFC NOB 50
Plate with negatively charged membrane (phosphocellulose)	- Charge	96	Barex/TiO ₂	○	50	MAPH NOB 50
Plate with MCE membrane	0.45	96	styrene	●	10	MAHA S45 10
				○	50	MSHA N45 50

*This plate does not come with an underdrain.

GENERAL GUIDELINES FOR CHEMICAL COMPATIBILITY OF MULTISCREEN FILTER PLATES

All plate types

Ratings are based on 100% or concentrated solutions, unless otherwise indicated. Aromatic hydrocarbons (especially ketones, DMF, DMAC, DMSO, THF, acetonitrile) and chlorinated hydrocarbons will attack both membranes and plastics. A chemical listed as NR may be suitable in low concentrations for short exposures, but this must be determined on an individual assay basis.



Compatibility of MultiScreen_{HTS} and MultiScreen Classic Filter Plates with Various Reagents

Plate Material/ Membrane	Polyolefin copolymer/PTFE	Acrylic or Classic Styrene/Durapore	Acrylic or Styrene/ MCE	Barex/TiO ₂ / Durapore, MCE, DEAE	Acrylic or Styrene, Barex/ TiO ₂ / Immobilon-P
Acids					
Acetic (5%)	R	R	R	R	R
Acetic, Glacial	R	L to NR	NR	R/L to NR	L
Boric	R	R	R	R	R
Trichloroacetic (< 20%)	R	R	R	R	R
Trichloroacetic (20 to 40%)	R	R	L	R/L to NR	L
Trichloroacetic (> 40%)	R	L to NR	NR	L/NR	NR
Hydrochloric (0.1N)	R	R	R	R	R
Hydrochloric (1N)	R	R	L to NR	R/L to NR	R to L
Hydrochloric (> 1N)	R	R	NR	R/L to NR	R
Hydrofluoric	R	R (20% max.)	NR	NR	R (20% max.)
Nitric (conc)	R	L to NR	NR	NR	L
Sulphuric (conc)	R	L	NR	L/NR	L
Bases					
NH ₄ OH (6N)	R	L to NR	NR	L to NR	R
NaOH (0.1N)	R	R to L	L to NR	R/L to NR	R
NaOH (1N)	R	L to NR	NR	L/NR	L
NaOH (> 6N)	R	NR	NR	NR	NR
Urea	R	R	—	R (Durapore only)	R
Triethylamine	R	R	R	R	R
Diethanolamine (≤ 3 mol)	R	R	R	R	R
Alcohols					
Amyl	R	R	NR	R/NR	R
Benzyl (1%)	R	R	R	R	R
Butyl	R	R	R	R	R
Ethanol (40%)	R	R	NR	R	R
Ethanol (≥50%)	R	R	NR	R/NR	R (no filtrate collect.)
Isobutyl	R	R	R	R	R
Isopropyl	R	R	L to NR	R/L to NR	R
Methanol	R	R to L	NR	R/NR	R

R = Recommended, no known restrictions, NR = Not recommended, membrane or plate severely attacked by chemical, L = Limited, chemical resistance marginal, short time exposures should be tested individually for application. Dilution with water or other non-solvent will likely enhance compatibility

1. Scintillants should only be used with Barex or SAN plates.
2. Surfactants are in general readily usable with all MultiScreen plate types. However, before quantitative fluid transfer to a receiver plate, it is essential that the plate be rinsed with non-surfactant containing fluid (e.g., 100 µL PBS) and then the underdrain be thoroughly blotted prior to adding the material which will ultimately be collected. Triton-x 100 should not be used with MCE membrane in concentrations greater than 5% (the membrane will appear to lose flow).

Plate Material/ Membrane	Polyolefin copolymer/PTFE	Acrylic or Styrene/Durapore	Acrylic or Styrene/ MCE	Barex/TiO ₂ / Durapore, MCE, DEAE	Acrylic or Styrene, Barex/ TiO ₂ / Immobilon-P
Solvents					
Acetone	R	NR	NR	NR	NR
Acetonitrile (no filtrate collect, centrifuge)	R	NR	NR	NR	L (<35%)
Amyl Acetate	R	NR	NR	R/NR	R
Carbon tetrachloride	R	L to NR	L to NR	R	R
Chloroform	R	NR	NR	NR	NR
Cyclohexanone	R	NR to L	NR to L	R/ NR to L	NR to L
DMAC	R	NR	NR	NR	NR
DMF	R	NR	NR	NR	NR
DMSO (no filtrate collect)	R	L (70%)	NR	NR	L (10%) max.
Ethylene Glycol	R	R	R	R	R
Formaldehyde	R	R (10% max.)	NR	R (<40%) /NR	R (<40%)
Hexane	NR	R	R	R	R
Methylene Chloride	L	NR	NR	NR	NR
MEK	R	NR	NR	NR	NR
MIBK	R	NR	NR	L/NR	NR/L
Phenol (5%)	R	L to NR	L to NR	R	R
Pyridine	R	R	R	R	R
Scintillants	NR	NR	NR	R	NR/R ⁽¹⁾
Triethylamine	R	R	R	R	R
Toluene	NR	NR to L	NR to L	R	NR to L/R
THF	R	NR	NR	L/NR	NR/L
Xylene	R	NR	NR	R	R
Other Organics					
Attophos®	R	R	R	R	R
Fluorescein	R	R	R	R	R
Glycerine	R	R	R	R	R
Hydrogen Peroxide	R	R	NR	R (3%)	R
Polyethylene Glycol	R	R	R	R	R
Tween® (<5%) ⁽²⁾	R	R	R	R	R
Triton™ X-100™ Surfactant (<1%)	R	R	R	R	R
Triton X-100 Surfactant (<5%)	R	R	L	R/L	R
Inorganic Salts					
Carbon Disulfite	R	NR	NR	NR	NR
Sodium Hypochlorite	R	R	NR	R (5%)/ NR	R



GENERAL GUIDELINES FOR CHEMICAL COMPATIBILITY AND MULTISCREEN VACUUM MANIFOLDS

MultiScreen_{HTS} and MultiScreen Resist Manifolds

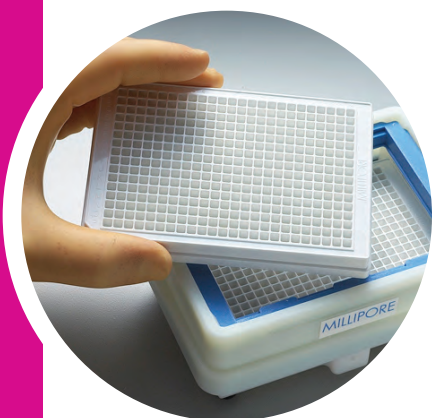
The following tables outline the solvents that have been evaluated for compatibility with the various components of the MultiScreen_{HTS} and MultiScreen Resist vacuum manifolds. In general the manifolds will tolerate the same chemicals as the rest of the system.

However, when using concentrated acids it is important to rinse through the entire manifold at the end of procedures, especially if collection is done through the manifold into a trap, rather than using the collection trays.

MultiScreen_{HTS} Vacuum Manifold Components

Component	Manifold Base/ Collar Gasket Frame	Gaskets/Tubing	Standard Collar	Support Grid	Tubing Fittings	Droplet Trap Array
Materials of Construction	HDPE/ Polypropylene, Polyolefin	Silicone	Nylon	Stainless Steel	PP with EPDM or Viton® Seals	Teflon® coated aluminum
Acetone	R	G	G	E	G	E
Acetonitrile	E	G	E	E	G	E
Dimethyl Formamide (DMF)	E	G	R	E	G	E
Dimethyl Sulfoxide (DMSO)	E	G	E	E	G	E
Ethyl Acetate	E	G	E	E	G	E
Ethanol	E	G	G	E	E	E
Formic Acid	E	G	NR	G	G	R
Hexane	NR	NR	R	E	G	E
Hydrochloric Acid (37%)	E	R	NR	R	R	R
Isopropanol	E	E	R	E	E	E
Methanol	E	E	R	E	E	E
Methylene Chloride	NR	NR	R	E	R	E
Sodium Hypochlorite	E	G	NR	G	G	R
Tetrahydrofuran (THF)	R	NR	E	E	NR	E
Toluene	NR	NR	E	E	R	E
Trichloroacetic Acid (TCA)	E	NR	G	G	R	R
Trifluoroacetic Acid (TFA)	E	NR	R	R	G	R

E = Excellent performance, G = Good performance, R = Rinse after contact, NR = Not recommended



MultiScreen Resist Vacuum Manifold Components

Component	Manifold Base & Deep Well Ring	Gaskets	Standard Ring	Tubing Inside: Outside	Support Grid	Control Valve	On/Off Valve
Materials of Construction	HDPE	EPDM	Nylon	FEP-lined Tygon	Stainless steel	Brass socket steel case	PP with EPDM seal
Comments				Crimping can alter resistance		Normally no fluid contact	
Acetone	R-G	G	G-E	E: NR	E	E	G-E
Acetonitrile	E	E	E	E: NR	E	E	G-E
Dimethyl Formamide (DMF)	E	E	R	E: NR	E	E	G
Dimethyl Sulfoxide (DMSO)	E	E	E	E: R	E	E	G
Ethyl Acetate	E	E	E	E: NR	E	G	G-E
Ethanol	E	E	G	E: E	E	E	E
Formic Acid	E	E	NR	G-E: NR	G-E	P-R	G-E
Hexane	R	R	R	R-G: P	E	E	G-E
Hydrochloric Acid	E	E	R-NR	E: R			
Isopropanol	E	E	R	E: G	E	E	E
Methanol	E	E	R	E: G	E	E	E
Methylene Chloride	R	R	R-G	E: NR	E	E	P-R
Sodium Hypochlorite	E	E	NR-P	E: R	G	G	G
Tetrahydrofuran (THF)	R	R	E	E: G	E	E	NR
Toluene	R	R	E	E: R	E	E	R
Trichloroacetic Acid (TCA)	E	E	G	E: G	G-E	R	R-G
Trifluoroacetic Acid (TFA)	E	E	R	E: R	R-G	P-R	G

E = Excellent performance, G = Good performance, R = Rinse after PROLONGED contact, P = Rinse immediately, NR = Not recommended

FIXATION AND STAINING

Millicell cell culture inserts (single-well, 24-well plates and 96-well plates) are designed to support all fixation, staining and immunostaining procedures in a single device. The 24 and 96-well plates are also automation compatible. The variety of membranes offered in the inserts allow the fixed and stained cells to be visualized by stereoscopic microscopy, phase contrast microscopy, or fluorescent methods.

The majority of staining procedures employ a fixation step first. Fixation is required to stabilize sub-cellular morphology and prevent degradation of antigens during subsequent staining procedures. Consult the following table for chemical compatibility information with common fixative chemicals and stains.

General Considerations

- If the chemicals are compatible with the membrane but not the polystyrene housing, remove the membrane from the housing before adding the chemical.
- Unless otherwise stated, the chemicals listed are at maximum concentration. If the plastic housing and/or membranes are not compatible with the maximum concentration, they might be compatible at lower concentration.

Chemical Compatibility of Fixation and Staining Reagents

Chemical	Concentration	Polystyrene (PS) housing	HA (Mixed Cellulose) membrane	CM (PTFE)	PCF (Polycarbonate)	PET (polyterephthalate)
Methanol	100%	R	NR	R	R	R
Ethanol	95%	R	R	R	R	R
Glacial Acetic Acid	1%	R	R	R	R	R
Paraformaldehyde	4%	R	R	R	R	R
Glutaraldehyde	3%	R	R	R	R	R
Formaldehyde	4%	R	R	R	R	R
Formamide	50%	R	NR	R	R	R
Formamide	100%	R	NR	R	R	R
HCL	1.0%	R	R	R	R	R
Osmium tetroxide	1.0%	R	R	R	R	R
Hematoxylin	100%	R	R	R	R	R
Eosin	1.0%	R	R	R	R	R
Tryptan Blue	0.1%	R	R	R	R	R
Nigrosin	0.2%	R	R	R	R	R
Toluidine Blue	0.3%	R	R	R	R	R

R = recommended, NR = not recommended, RS = recommended for short term use, TST = testing recommended, ND = no data available



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