



# Environmental Monitoring

## Product Guide



**Sample Collection, Preparation, and  
Analysis for Air, Water, and Soil**

[www.millipore.com/EMsample](http://www.millipore.com/EMsample)

# Environmental Monitoring

Whether you need to collect large quantities of air to monitor particulate contamination, or analyze soil or water for hazardous chemicals, we can supply the expertise, products and protocols to ensure superior analytical results and compliance with regulatory requirements. Millipore devices and systems designed for environmental applications have been developed for use with standard methods, including those of NIOSH, OSHA™, and ASTM™.



## Air Monitoring

Alpha particle monitoring  
Industrial particulates



## Soil Monitoring

Toxicity Characteristic Leaching  
Procedure (TCLP)  
Extraction  
Gas chromatography  
Ion chromatography



## Water Testing

Ground water  
Waste water  
Drinking water  
Storm drain water

This product guide is designed to support each step of your environmental monitoring workflow. Products are organized according to the part of the monitoring workflow in which they are used. For reference, we also include a guide to filter selection, accessories, and examples of standard methods for sample analysis.

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# Millipore supports you at every stage of the environmental monitoring workflow.



## Sample Collection

Whether you need to collect large quantities of air to monitor particulate contamination, or analyze soil or water for hazardous chemicals, we can supply the expertise, products and protocols to ensure superior analytical results and compliance with regulatory requirements.

- Sampling Kits
- Filter Discs
- Filter Holders
- Monitors
- Monitor Refills
- Solvent Dispensers



## Sample Preparation

For the best downstream results, choose the best upstream tools. Sample preparation with Millipore filtration products ensures fast, accurate, reproducible results, for every type of sample. Whether you are filtering 1 mL or 5 L, you can choose a sample preparation device with the right membrane and chemical compatibility for your application.

- Syringe Filters
- Filter Discs
- Filter Holders
- Vacuum- and Pressure-Driven Filtration Equipment



## Sample Analysis

Millipore gives you more than products for your environmental monitoring workflow, we give you knowledgeable technical service and support for your particular analysis application. We can help you choose products which will give you reliable results to fit your chosen method of analysis, relevant to the protocols listed here and on page 11.

- Gravimetric
- Microscopic
- HPLC

# Radiation Monitoring

In order to reap the benefits of nuclear energy responsibly, both users and regulatory organizations must monitor the degree to which radioactive byproducts of human activity enter the environment. Human activities that generate radioactive particles include scientific experiments involving radiation, medical therapies, nuclear-powered submarines, x-ray procedures, nuclear power plants, and smoke detectors. The potential for misuse of radioactive materials and weapons by terrorist organizations and other criminals also demands vigilant radiation monitoring.

Nuclear power is relatively clean and renewable, and through radiation monitoring, can be a safe source of energy for the planet. Although there are many naturally occurring radioisotopes that make up water, air, soil, and organisms, the challenge in radiation monitoring is to detect the "non-natural" radiation signal above the naturally occurring background radiation levels.

To support efficient, convenient radiation monitoring, Millipore has developed a special Fluoropore™ membrane filter designed for alpha particle collection in continuous air monitors.

## The Fluoropore filter for alpha particle monitoring provides:

### Improved Data Collection

Unlike fibrous filter media that trap particles in their matrix, Fluoropore (hydrophobic PTFE) membranes collect particles on their surface. This surface collection provides better detection efficiencies and improved resolution.

### Choice of Pore Sizes

Fluoropore membranes are available in 3 and 5 µm pore sizes. The smaller pore size provides high resolution. The larger pore size has very low pressure drop and greater throughput capacity, which minimizes the number of filter changeouts.

### Contrasting Backing Material

The 5 µm Fluoropore membrane is bonded to a contrasting backing made from high density polyethylene fiber. The contrast between the top and bottom of the filter prevents incorrect installation in sampling devices. The backing also reduces the electrostatic charge of the filters and makes them easier to handle.

## ORDERING INFORMATION

Pore Size	Diameter (mm)	Qty/Pk	Catalogue No.
3 µm	25	100	FSLW 025 00
	47	100	FSLW 047 00
	90	25	FSLW 090 25
5 µm	47	100	FMLB 047 00

# Sample Collection



Collection is the first step of air, water and soil testing. An appropriate, representative sample is critical for accurate results. Millipore offers products for collecting diverse samples such as in-line purified water, liquid from cooling towers, air or other gases, and environmental field samples.



DOMINIQUE DIETSCHER SA

# Products for Environmental Sample Collection



## Aerosol Filter Holders

Vacuum-filter air or other gases from open atmospheres or from closed systems for particulate contamination analysis.

Description	Catalogue No.
Standard Stainless Steel Filter Holder	XX5004700
Open Stainless Steel Filter Holder	XX5004710



## Three-piece, 25 and 37 mm Aerosol Analysis Monitors

Aerosol monitors contain 0.45 µm and 0.8 µm MCE membranes. Convenient matched weight monitors include two filters matched to within 0.1 mg. A cellulose support seal between monitor sections distributes sample evenly over the filter.

Description	Catalogue No.
25 mm Monitor, Type A Pre-loaded with Filter and Cellulose Pad – 0.8 µm pores	MAWPO25A0
25 mm Monitor, Type B* Pre-loaded with Filter and Cellulose Pad – 0.8 µm pores	MAWPO25AC
37 mm Monitor, Complete with Filter – 0.8 µm pores	MAWPO37A0
37 mm Monitor, Complete with Filter – 0.45 µm pores	MHWPO37A0
Matched-weight Aerosol Analysis Monitor – 0.8 µm pores	MAWPO37AM



\*Use Type B monitor for airborne asbestos monitoring in accordance with NIOSH specifications.

### Monitor Components

Empty 37 mm Monitor Cassette with Rings and Plugs	M000037A0
Empty Monitor Case without Ring	M00003700
Monitor Ring	M000037RS

## Samplers

Pocket-sized samplers for semi-quantitative monitoring are ready-to-use, sterilized devices containing dehydrated media and filter.

Description	Catalogue No.
Coli-Count, measures total coliforms	MC0010025
Yeast and Mold	MY0010025
Total Count (bacteria)	MT0010025
HPC Total Count, measures heterotrophic (environmentally stressed) bacteria	MHPC10025



## Groundwater Sampling Capsules

Disposable, EPA-accepted method for collecting groundwater prior to dissolved metals analysis.

Description	Pore Size (µm)	Catalogue No.
Groundwater Sampling Capsules	0.45	GWSC04501
	1.0	GWSC10001
	5.0	GWSC50001



# Membranes for Contamination Monitoring



## 1. Glass Fiber Filters

Borosilicate microfiber glass without binder resin. Gravimetric stability up to 500 °C. For suspended solids in water and waste water.

## 2. Isopore™ Membrane Filters

Polycarbonate film. Consistently low ash and tare weights. Hydrophilic, non-hygroscopic. For Chemotaxis, Environmental/air analysis.

## 3. PTFE Membranes

### Fluoropore Membrane Filters

Bonded to high-density polyethylene support for easier handling. Broad chemical compatibility. For air monitoring, prefiltration of solvents.

### Mitex™ Membrane Filters

Unsupported PTFE membrane. It can be used under extreme chemical or temperature conditions that other membranes cannot withstand (up to 260 °C). Broad chemical compatibility.

### LCR Membrane Filters

Hydrophilized PTFE. LCR is compatible with all commonly used HPLC solvents. It can be used to filter aqueous fluids without prior wetting.

### Omnipore™ Membrane Filters

Hydrophilic PTFE compatible with virtually all solvents, acids and alkaline solutions.

## 4. Nylon Membrane Filters

Nylon polyamide 6,6. Use for large particle filtration, particle analysis, prefiltration of solvents.

## 5. MCE Membrane filters

Mixed cellulose esters. For monitoring particulate contamination in air and clarification and sterilization of fluids.

## 6. Quartz Membrane Filters

Pure quartz fibers with no glass fibers or binders. For measurement of heavy metal concentrations and small amounts of particles (such as the USEPA PM 10 ambient air monitoring method).

## 7. Durapore® Membrane Filters

PVDF (polyvinylidene fluoride). For monitoring particulate contamination in air and clarification and sterilization of fluids.

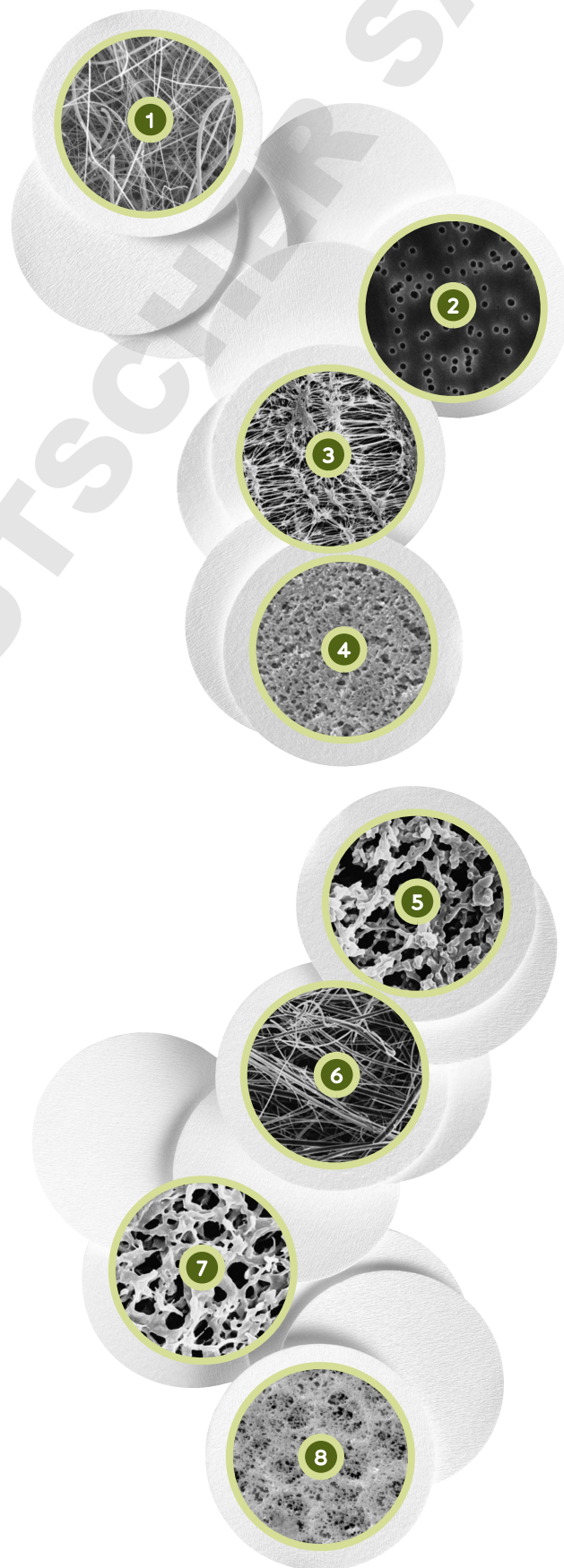
## 8. PVC Membrane Filters

Pure, medical-grade PVC. Low weight and low moisture pick-up. For monitoring silica, carbon black or metal particles in air. Excellent for gravimetric analysis.

## Silver Membrane Filters (not shown)

Pure silver. For monitoring of carbon black, coal tar products, coke oven emissions and silica in air.

For a list of filter choices and ordering information, see page 13-14.



# Sample Preparation



Proper sample handling and preparation should begin immediately after collection to ensure accurate downstream analysis. Millipore's family of certified sample preparation devices provide a disposable, yet reliable method for collecting and preparing environmental samples.

For ultimate quality and convenience, use Millex® syringe filters. With their low extractables and low binding membranes, Millex filters are ideal for sensitive instrumental analysis, including gas, liquid and ion chromatography. A wide range of chemical compatibility enables their use with virtually any sample composition.





# Products for Environmental Sample Preparation



## Millex Syringe Filters

Filter Diameter (mm)	Recommended Sample Volume (mL)
4	<1
13	<10
25 and 33	<100



## Millex-LCR Filters for HPLC

4, 13, and 25 mm Millex-LCR filter units are low extractable filters specifically designed for HPLC.

- HPLC Certified for low extractables
- Low binding hydrophilic PTFE membrane
- Filters both aqueous and organic solvents

13 mm size available with extended tube outlet for convenient filtration directly into autosampler vials or other small vessels.

Description	Pore size (µm)	Diameter (mm)	Catalogue No.
Millex-LCR filters	0.45	4	SLLHR04NL
	0.45	13	SLCR013NL
	0.45	25	SLCR025NB
Millex-LCR filter with tube outlet	0.45	13	SLCRT13NL



## IC-Millex Filters for Ion Chromatography

13 and 25 mm low extractable filters specifically designed for ion chromatography sample preparation.

Description	Pore size (µm)	Diameter (mm)	Catalogue No.
IC Millex-LG filters	0.20	4	SLLGR04NL
	0.20	13	SLLGC13NL
	0.20	25	SLLGC25NS
IC Millex-LH filters	0.45	13	SLLHC13NL
	0.45	25	SLLHC25NS





## Millex Syringe Filters for Sample Filtration

### Millex filters with Durapore membrane

Description	Pore size (µm)	Diameter (mm)	Catalogue No.
Millex-GV	0.22	4	SLGVR04NL
	0.22	13	SLGVO13NL
	0.22	33	SLGVO33NS
Millex-HV	0.45	4	SLHVR04NL
	0.45	13	SLHVO13NL
	0.45	33	SLHVO33NS

### Millex filters with Nylon membrane

Description	Pore size (µm)	Diameter (mm)	Catalogue No.
Millex-GN	0.20	4	SLGNR04NL
	0.20	13	SLGNO13NL
	0.20	33	SLGNO33NS
Millex-GV	0.45	4	SLHNR04NL
	0.45	13	SLHNO13NL
	0.45	33	SLHNO33NS



## HPF Millex Filters for High Particulate Filtration

This dual membrane Millex filter is ideal for clarification of particulate-laden solutions prior to instrument analysis. The product includes two different media: a graduated glass fiber prefilter (10.0 to 0.7 µm) to remove larger particles and a 0.45 µm membrane filter for fine filtration.

- o Two to four times greater throughput than syringe filters without prefilters
- o Manual or automated use

### HPF Millex filters with Nylon (HN) or Durapore (HV) membrane

Description	Pore size (µm)	Diameter (mm)	Catalogue No.
Millex-HPF HN	Prefilter/0.45	25	SLHNM25NS
Millex-HPF GN	Prefilter/0.20	25	SLGNM25NS
Millex-HPF HV	Prefilter/0.45	25	SLHVM25NS
Millex-HPF LG	Prefilter/0.20	25	SLLGM25NS
Millex-HPF LCR	Prefilter/0.45	25	SLCRM25NS

For a complete listing of non-sterile Millex syringe filters, visit [www.millipore.com/NSmillex](http://www.millipore.com/NSmillex).

# Sample Analysis



To provide more informative environmental testing results, manufacturers of analytical instruments are constantly developing new technologies with lower and lower detection limits, demanding that samples be treated with the highest quality analysis tools.

Millipore devices and systems designed for environmental monitoring analysis have been developed for use with standard methods, including those of NIOSH, OSHA, and ASTM.



## EXAMPLES OF REGULATED METHODS ARE:

Method	Application	Recommended Millipore Products
NIOSH 5006	Air Monitoring	M000037A0
ASTM D4382-2	Water Monitoring	HAWP04700
EPA 1311	Soil Monitoring	YT30090HW
		YT30142HW
		AP4009000
OSHA Standard 1910.1001 App A	Air Monitoring	MAWP025AC

To get product recommendations on other methods, contact technical service at [www.millipore.com/techservice](http://www.millipore.com/techservice).

# Filtration Systems



## Hazardous Waste Filtration Systems

For use in:

- o USEPA EP Toxicity Test (EPA Method 1310) for non-volatile or semi-volatile waste
- o Toxicity Characteristic Leaching Procedure (TCLP) applications (EPA Method 1311)
  - Separates solid and liquid phases of waste samples
  - Contains interior holder with PTFE coating to prevent heavy metal contamination
  - Allows easy introduction of bulky samples through wide entry port and removable top plate

Description	Catalogue No.
Hazardous Waste Filtration System	YT30142HW
Filter	AP4014250
Millipore Rotary Agitator 115V/60Hz	YT310RAHW



## ZHE Hazardous Waste Filtration System

Millipore's ZHE (Zero Head Space Extractor) system has been designated by the USEPA as a suitable apparatus for Toxicity Characteristic Leaching Procedure (TCLP) for volatile substances.

- o Pressurizes filter without introducing air because of movable piston design
- o Prevents loss of volatiles
- o Use with 90 mm filters


Description	Catalogue No.
ZHE Hazardous Waste Filtration System	YT30090HW
Filter	AP4009000



# Filter Selection Guide for Environmental Monitoring

Filter Code	Diameter (mm)	Qty/Pk	Catalogue No.	Sample
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## Glass Fiber Membranes


APFA	25	100	APFA 025 00	
	37	100	APFA 037 00	
	47	100	APFA 047 00	
APFB	25	100	APFB 025 00	
	37	100	APFB 037 00	
	47	100	APFB 047 00	
APFC	25	100	APFC 025 00	
	37	100	APFC 037 00	
	47	100	APFC 047 00	
APFD	25	100	APFD 025 00	
	37	100	APFD 037 00	
	47	100	APFD 047 00	
APFF	25	100	APFF 025 00	
	37	100	APFF 037 00	
	47	100	APFF 047 00	
AP40	25	100	AP40 025 00	
	37	500	AP40 037 05	
	47	100	AP40 047 00	
		500	AP40 047 05	
	90	100	AP40 090 00	
	142	50	APFF 142 50	

## Quartz Membranes

AQFA	37	100	AQFA 037 00	
	47	100	AQFA 047 00	
	90	50	AQFA 090 50	

Pore Size (µm)	Diameter (mm)	Qty/Pk	Catalogue No.	Sample
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
## Nylon Membranes

0.2	25	100	GNWP 025 00	
	47	100	GNWP 047 00	
0.45	25	100	HNWP 025 00	
	47	100	HNWP 047 00	
0.8	25	100	ANWG02500	
	47	100	ANWG04700	
1.2	25	100	RNWG02500	
	47	100	RNWG04700	

Pore Size (µm)	Diameter (mm)	Qty/Pk	Catalogue No.	Sample
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## PTFE Membranes

### Fluoropore (PTFE) Membrane Filters

0.22	25	100	FGLP 025 00	
	47	100	FGLP 047 00	
	90	50	FGLP 090 50	
0.5	25	100	FHLP 025 00	
	47	100	FHLP 047 00	
	90	50	FHLP 090 50	
1.0	25	100	FALP 025 00	
	47	100	FALP 047 00	
	90	50	FALP 090 50	

### Unlaminated Fluoropore (PTFE) Membrane Filter

0.45	47	100	FHUP 047 00
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### Mitex (PTFE) Membrane Filters (plain)

5.0	25	100	LSWP 025 00
	37	100	LSWP 037 00
	47	100	LSWP 047 00
	90	25	LSWP 090 25

### Mitex (PTFE) Membrane Filters (gridded)

5.0	25	100	LSWG 025 00
	47	100	LSWG 047 00


### LCR (Hydrophilic PTFE) Membrane Filters

0.45	25	100	FHLC 025 00
	47	100	FHLC 047 00

### Omnipore (Hydrophilic PTFE) Membrane Filters

0.2	25	100	JGWP 025 00
	47	100	JGWP 047 00
	90	25	JGWP 090 25
0.45	25	100	JHWP 025 00
	47	100	JHWP 047 00
	90	25	JHWP 090 25
5.0	25	100	JMWP 025 00
	47	100	JMWP 047 00
	90	25	JMWP 090 25


## PVC Membranes

0.8	25	100	PVC0 825 00	
	37	100	PVC0 837 00	
	47	100	PVC0 847 00	
5.0	25	100	PVC5 025 00	
	37	100	PVC5 037 00	
	47	100	PVC5 047 00	

Pore Size (µm)	Diameter (mm)	Qty/Pk	Catalogue No.	Sample
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## MCE Membranes

### Standard MF-Millipore Membranes (white, plain)

0.22	25	100	GSWP 025 00	
	37	100	GSWP 037 00 <sup>1</sup>	
	47	100	GSWP 047 00	
	90	100	GSWP 090 00	
0.45	25	100	HAWP 025 00	
	37	100	HAWP 037 00 <sup>1</sup>	
	47	100	HAWP 047 00	
		50 pr	HAWP 047 0M	
90	100	HAWP 090 00		
0.8	25	100	AAWP 025 00	
	37	100	AAWP 037 00 <sup>1</sup>	
		100	AAWP 037 P0 <sup>3</sup>	
		50 pr	AAWP 037 PM <sup>4</sup>	
	47	100	AAWP 047 00	
		50 pr	AAWP 047 0M <sup>2</sup>	
90	100	AAWP 090 00		
5.0	25	100	SMWP 025 00	
	37	100	SMWP 037 00 <sup>1</sup>	
	47	100	SMWP 047 00	
	90	25	SMWP 090 25	

### Standard MF-Millipore Membranes (white, gridded)

0.45	25	100	HAWG 025 00
	37	100	HAWG 037 00
	47	100	HAWG 047 00
0.8	25	100	AAWG 025 0C <sup>5</sup>
	37	100	AAWG 037 00
		100	AAWG 037 P0 <sup>3</sup>
	47	100	AAWG 047 00

### Standard MF-Millipore Membranes (black, plain)

0.45	25	100	HABP 025 00
	47	100	HABP 047 00
0.8	25	100	AABP 025 00
	47	100	AABP 047 00

### Standard MF-Millipore Membranes (black, gridded)


0.45	25	100	HABG 025 00
	37	100	HABG 037 00 <sup>1</sup>
	47	100	HABG 047 00
0.8	25	100	AABG 025 00
	37	100	AABG 037 00
	47	100	AABG 047 00

For additional pore sizes and diameters, visit [www.millipore.com/sampleprep](http://www.millipore.com/sampleprep).

Pore Size (µm)	Diameter (mm)	Qty/Pk	Catalogue No.	Sample
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## PVDF Membranes

### Hydrophilic Durapore Membrane Filters


0.22	25	100	GVWP 025 00	
	47	100	GVWP 047 00	
	90	50	GVWP 090 50	
0.45	25	100	HVLP 025 00	
	47	100	HVLP 047 00	
	90	50	HVLP 090 50	
5.0	25	100	SVLP 025 00	
	47	100	SVLP 047 00	
	47	100	SVWG 047 00 <sup>6</sup>	
	90	50	SVLP 090 50	

### Hydrophobic Durapore Membrane Filters

0.22	25	100	GVHP 025 00
	47	100	GVHP 047 00
	90	50	GVHP 090 50
0.45	25	100	HVHP 025 00
	47	100	HVHP 047 00
	90	50	HVHP 090 50

## Polycarbonate Membranes

### White Membrane Filters

0.22	25	100	GTTP 025 00	
	37	100	GTTP 037 00	
	47	100	GTTP 047 00	
0.4	25	100	HTTP 025 00	
	37	100	HTTP 037 00	
	47	100	HTTP 047 00	
	90	30	HTTP 090 30	
0.8	25	100	ATTP 025 00	
	37	100	ATTP 037 00	
	47	100	ATTP 047 00	
5.0	25	100	TMTP 025 00	
	47	100	TMTP 047 00	
	90	30	TMTP 090 30	

### Black Membrane Filters

0.22	25	100	GTBP 025 00
	47	100	GTBP 047 00
0.4	25	100	HTBP 025 00
	47	100	HTBP 047 00

<sup>1</sup> Monitor refills with thin absorbent pads for aerosol monitoring.

<sup>2</sup> Matched weight filter pairs.

<sup>3</sup> Monitor refills with thick absorbent pads for liquid monitoring

<sup>4</sup> Monitor refills (matched weight pairs) with thick absorbent pads

<sup>5</sup> Cut from specifically selected and controlled roll stock to avoid contamination by fibers. For asbestos monitoring applications.

<sup>6</sup> The membrane disc SVWG04700 has a gridded surface.

# Accessories



## Portable Vacuum / Pressure Pumps

Millipore offers two portable pumps that provide reliable sources of vacuum or pressure. Both include easily adjusted vacuum and pressure regulators with individual gauges.

Description	Catalogue No.
<b>Chemical Duty Vacuum/Pressure Pump</b> <ul style="list-style-type: none"> <li>o 24 in. HG vacuum/UL and CE marked</li> <li>o For use with corrosive chemicals and solvents</li> </ul>	WP6111560 (115 V/60 Hz)
	WP6122050 (220 V/50 Hz)
<b>High Output Vacuum/Pressure Pump</b> <ul style="list-style-type: none"> <li>o 27.2 in. HG vacuum/UL and CE marked</li> <li>o Piston-driven design for greater power</li> </ul>	WP6211560 (115 V/60 Hz)
	WP6222050 (220 V/50 Hz)



## Millivac™ Vacuum Pumps

Millivac vacuum pumps are compact, maintenance-free pumps that provide a consistent source of vacuum for filtration and other laboratory applications. A patented diaphragm design has reduced the footprint of the pumps compared to conventional models.

- o Use Millivac Mini Pumps to filter water and aqueous solutions
- o Use Millivac Maxi Pump to filter larger volumes or viscous solutions
- o Neither pump requires lubrication and neither is explosion proof

Description	Catalogue No.
Millivac Mini Vacuum Pump, 115 V	SD1M001V00
Millivac Mini Vacuum Pump, 230 V	XF5423050
Millivac Maxi Vacuum Pump, 230 V	SD1P014M04



## Filter Holders

Millipore offers a broad range of filter holders and manifolds.

Description	Diameter (mm)	Catalogue No.
<b>Hydrosol™ Stainless Filter Holder</b> <ul style="list-style-type: none"> <li>◦ For particulate or biological contamination analysis via vacuum filtration.</li> <li>◦ Includes grounding set for use with flammable liquids</li> </ul>	47	XX2004720



## Glass Filter Holders

Designed for vacuum filtering liquids for analysis of bacteriological or particulate contamination.

- Includes funnel, fritted base, stopper, and clamp

Also available:

- PTFE-faced base for autoclaving with membrane in place
- Stainless Steel support screen with PTFE gasket base for filtration of aqueous, organic, or corrosive liquids

Description	Diameter (mm)	Catalogue No.
Glass Filter Holder with Frit Glass Screen Support	47	XX1004700
Glass Filter Holder, PTFE-coated	47	XX1004720
Glass Filter Holder with Stainless Steel Support	47	XX1004730
	90	XX1009020
<b>Sterifil® Aseptic System</b> Autoclavable polysulfone closed unit	47	XX1104700
Vacuum Filtering Flask, 1 L		XX1004705



## Swinnex® Filter Holders

Use to ultraclean or sterilize small volumes of liquids dispensed by syringe. Connect Swinnex 47 mm filter holder with tubing to pressurized reservoir or automatic filling machine for filtering larger volumes.

Description	Qty/Pk	Catalogue No.
Swinnex Filter Holder, 13 mm	10	SX0001300
Swinnex Filter Holder, 25 mm	12	SX0002500
Swinnex Filter Holder, 47 mm	8	SX0004700







## Filter Holder Manifolds

- Provide vacuum support for simultaneous filtration of either three or six test samples.
- Use Millipore filter holders fitted with standard No. 8 perforated stoppers
- Manifolds connect to a single vacuum source.
- Each station equipped with separate control valve for independent operation
- Available in stainless steel (SS) or PVC
- SS manifolds can be autoclaved

Description	Diameter (mm)	Catalogue No.
3-Place Manifold PVC	47	XX2604735
3-Place Stainless Steel	47	XX2504735
6-Place Stainless Steel	47	XX2504700



## Millicup™ Filter Units

0.45 µm pore size, 300 mL funnel volume

Self-contained, vacuum-driven, disposable bottle top filtration system

- Fast, effective, safe filtration of solvent used in HPLC and other analytical techniques.
- Process volumes of mobile phase or running buffer up to 3L
- Available with Durapore (PVDF) and PTFE (hydrophobic and hydrophilic) membranes

Description	Catalogue No.
With Hydrophilic PVDF membrane	SJHVM4710
With Hydrophilic PTFE membrane	SJLHM4710
With Hydrophobic PTFE membrane	SJFHM4710



## Filter Forceps

Handle filters without contaminating or damaging them with our easy-to-clean, stainless steel, flat-tipped forceps.

Description	Catalogue No.
Filter forceps	XX6200006P



# Analytical Methods

## Metals Analysis

Filters are prepped and analyzed for metals or other target compounds by Inductively Coupled Plasma (ICP) spectroscopy, Atomic Absorption (AA) spectroscopy, and other analytical methods.

## Gravimetric Analysis

Filters are weighed before and after filtration. The initial weight is subtracted from the final weight and a Total Suspended Solids (TSS) number is calculated. Alternatively, Matched Weight Filters may be used. For MCE filters further drying is necessary before preweighing (these filters are hygroscopic and their weight can vary with the humidity). The filter is put on a glass petri dish and placed in a vacuum or regular oven at 80-90C for 15 to 30 minutes or until a constant weight is reached. After drying allow the filter to come to ambient temperature in a desiccator containing calcium chloride before weighing. The same should be done after the sample has been filtered.

Dry filter disc  
prior to use

Pre-weigh  
filter

Flow sample  
through filter

Flow wash  
solution  
through filter  
(optional)

Dry filter

Weigh filter  
and determine  
differential

Wash  
filter disc

Flow sample  
through filter

Flow  
wash solution  
through filter

Count and  
size particles

## Microscopic Analysis

Particles are sized and counted under a microscope or with a particle analyzer. Depending on the sensitivity level of your test you might need to rinse filters with a compatible prefiltered solvent. Usually this is not necessary. Millipore Filters are manufactured under GMP and ISO 9001 regulations and are usually fine for most applications.

## Alpha Particle Counting

A PTFE filter is inserted into a spectrometer-based continuous air monitor. As air flows through the filter, alpha-particle emitters are trapped on the surface of the filter. Emitted particles collide with and ionize molecules on a solid state detector, and an electronic detector measures the change in the electric potential.

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