



User Guide

Samplicity® Filtration System with Millex Samplicity® Filters



interchim®

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Millex Smplicity® Filters are manufactured in Ireland.

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Introduction

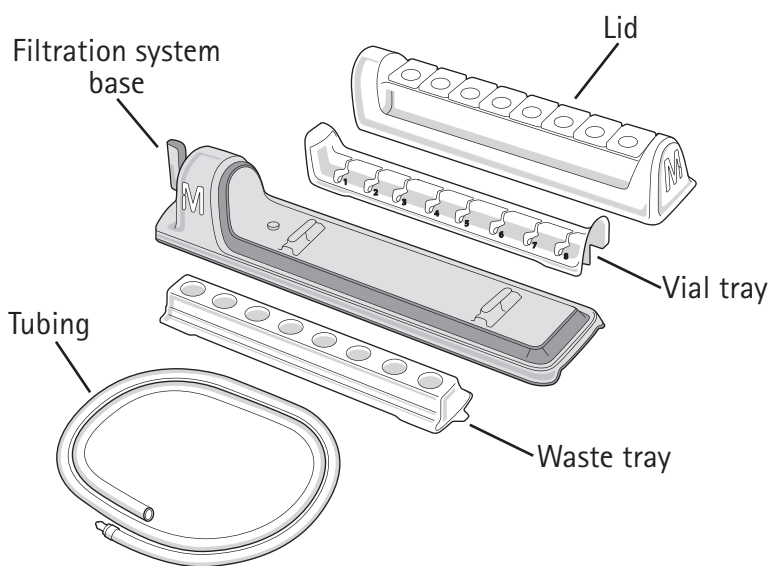
The Smplicity® Filtration System is a vacuum-based system that simultaneously filters multiple samples directly into standard HPLC vials. It can filter up to eight samples, even those with high viscosity or particulates, in seconds. Disposable Millex Smplicity® Filters come in strips of four for fast setup, but can be separated at the perforations to filter fewer samples. The funnel-shaped filter is quickly and easily loaded with a pipettor, providing a convenient, ergonomic alternative to syringe filters. Filtered samples are immediately ready for subsequent analyses.

Applications include sample preparation for dissolution testing, high performance liquid chromatography (HPLC), ultra-high performance liquid chromatography (UHPLC or UPLC®), and liquid chromatography-mass spectrometry (LC-MS).

The Smplicity® Filtration System and Millex Smplicity® Filters are intended for use in a GLP (Good Laboratory Practice) environment.

Smplicity® Filtration System Components

The Smplicity® Filtration System includes the following components:



Safety Precautions

- Use a vacuum source appropriate for the samples being filtered.
- Protect the vacuum source from contamination with an in-line filter (e.g., Millex®-FA₅₀ filter).

Chemical Compatibility

Millex Smplicity® Filter Chemical Compatibility

Millex Smplicity® Filters are compatible with aqueous and mild organic solutions. They can be used to filter the agents listed in the following table. This information was developed from technical publications, materials suppliers, and laboratory tests, and is believed to be accurate and reliable. However, because of variability in temperature, concentrations, exposure time, and other factors outside of our control that may affect the use of the filter, no warranty is given or is to be implied with respect to such information. Agents not listed below should be tested with the Millex Smplicity® Filter prior to use.

Millex Smplicity® Polytetrafluoroethylene (PTFE) Filter Compatibility

Acetic acid, glacial	Dimethyl sulfoxide	Isobutyl alcohol	Petroleum ether
Acetone	Dioxane	Isopropyl acetate	Phenol (10%)
Acetonitrile	Ethers	Isopropyl alcohol	Pyridine
Amyl acetate	Ethyl acetate	Kerosene	Silicone oils
Amyl alcohol	Ethyl alcohol	Methyl alcohol	Sulfuric acid
Benzyl alcohol (1%)	Ethylene glycol	Methylene chloride	Tetrahydrofuran
Boric acid	Formaldehyde	Methyl ethyl ketone	Toluene
Brine (sea water)	Freon® (TF or PCA) solvent	Methyl isobutyl ketone	Trichloroethane
Butyl alcohol	Gasoline	Nitric acid	Trichloroethylene
Cellosolve® (ethyl) solvent	Glycerine (Glycerol)	Nitrobenzene	Trifluoroacetic acid
Chloroform	Hexane	Paraldehyde	Xylene
Cyclohexanone	Hydrochloric acid	Pentane	
Dimethyl acetamide	Hydrofluoric acid	Perchloroethylene	
Dimethyl formamide	Hydrogen peroxide (30%)	Petroleum based oils	

NOTE: For low extractable HPLC applications, EMD Millipore Corporation recommends either discarding the first 1 mL or rinsing the filter with 1 mL of primary solvent before sample filtration.

Millex Smplicity® Polyvinylidene Fluoride (PVDF) Filter Compatibility

Acetic acid, glacial	Cellosolve® (ethyl) solvent	Gasoline	Petroleum based oils
Acetonitrile	Chloroform	Glycerine (glycerol)	Sulfuric acid (3 N)
Ammonium hydroxide	Cyclohexanone	Hydrochloric acid	Toluene
Amyl alcohol	Ethyl alcohol	Hydrofluoric acid	Xylene
Benzene	Ethylene glycol	Hydrogen peroxide (10%)	Trifluoroacetic acid
Boric acid	Formaldehyde	Kerosene	
Brine (sea water)	Formic acid	Methyl alcohol	
Carbon tetrachloride	Freon® (TF or PCA) solvent	Phenol (10%)	

Smplicity® Filtration System Chemical Compatibility

The Smplicity® Filtration System is compatible with aqueous acid and base solutions, methyl alcohol, ethyl alcohol, isopropyl alcohol, acetonitrile, 40% dimethyl formamide, dimethyl sulfoxide, and 5–10% organic solvents in water.

The waste tray is compatible with weak acids, organic solvents, alcohols, and fuels.

General Guidelines

- Vacuum should remain off while system is being assembled.
- Vacuum pressure of 610–847 millibar (mbar) [18–25 inches (in.) Hg] at 30 L/min is recommended for optimum performance.
- The waste tray can be used in place of the vial tray with vials when washing or flushing the filters prior to sample filtration.
- Doors above empty positions must be closed.
- Do not turn on vacuum until after samples have been added to filters.
- Make sure that all samples have filtered into vials before turning vacuum off. Some samples may take longer to process.
- System must be turned off (system handle UP) and pressure allowed to release through the bleeder orifice before removing filters and lid or opening doors. Sample spray or cross-contamination may occur if filters, lid, or doors are moved before vacuum pressure is fully released.

Materials Required

Vacuum source [minimum 474 mbar (14 in. Hg) at 20 L/min]

Pipette and pipette tips

Sample vials (12 × 32 mm)

Millex Smplicity® Filters for the Smplicity® Filtration System

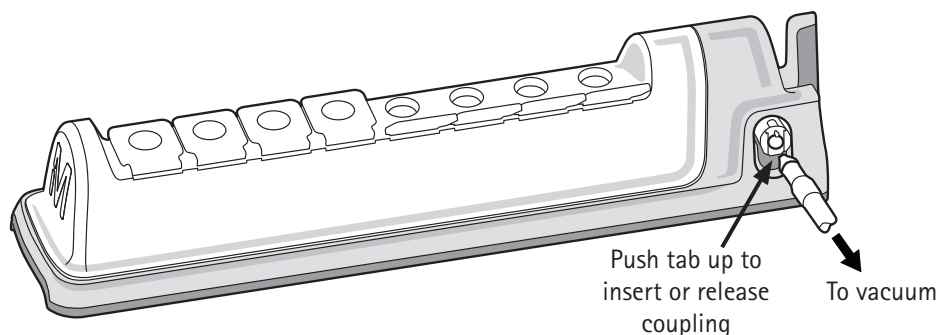
0.20 µm hydrophilic PTFE filter

0.45 µm hydrophilic PTFE filter

0.45 µm hydrophilic PVDF filter

How to Use the Smplicity® Filtration System

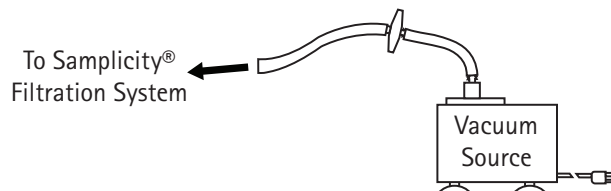
1. Place the Smplicity® Filtration System base on a level bench top.
2. With vacuum source OFF and system handle in the OFF position, attach the vacuum tubing to the back of the system by pushing the coupling insert on the end of the tubing into the quick disconnect fitting on the system base until it clicks.



NOTE: To disconnect the tubing, push the tab below the tubing connector up with the index finger and pull tubing out.

How to Use the Smplicity® Filtration System, continued

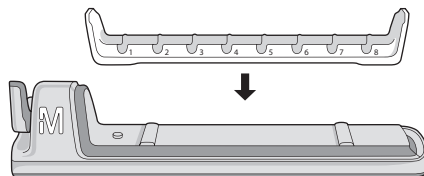
3. Connect the other end of the tubing to a vacuum source. Use a Millex®-FA₅₀ filter to protect the vacuum source from contamination.



NOTES: Any vacuum source which can deliver 474 mbar (14 in. Hg) at 20 L/min is sufficient. A vacuum flask trap may be used; however, if the vacuum source is a pump rather than a central vacuum system, it may take longer to achieve the required vacuum pressure. When setting up the system, avoid crimping the tubing, as this can reduce vacuum pressure.

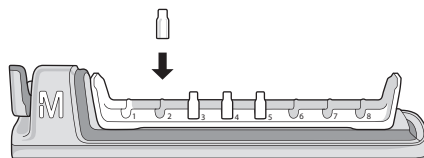
CAUTION: Do not allow the in-line Millex®-FA₅₀ filter to get wet; this will block flow of vacuum.

4. Place vial tray on system base with tray numbers facing forward.

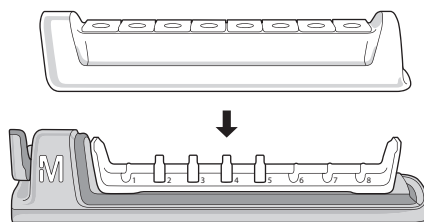


5. Place one to eight uncapped 12 × 32 mm vials in the vial tray.

NOTE: To wash filters prior to sample filtration, install the waste tray in place of vials. Follow steps 6–11, using the appropriate solvent/sample to wash the filters. Then, replace the waste tray with vial tray and vials, and process samples beginning with step 6.

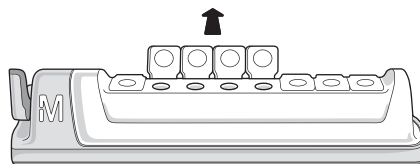


6. Seat lid firmly down over gasket.

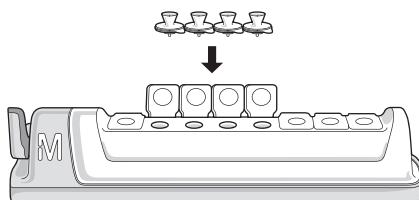


How to Use the Smplicity® Filtration System, continued

7. Open doors directly above the positions where vials have been installed. Close doors above empty positions.

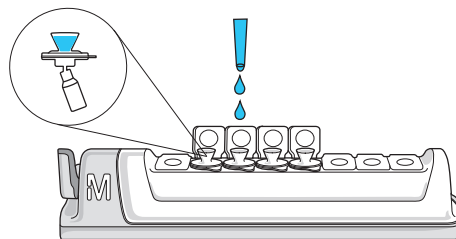


8. Seat one to eight Millex Smplicity® Filters over the openings with the M logos facing forward. Filters can be separated from the strip by twisting them at the perforations.



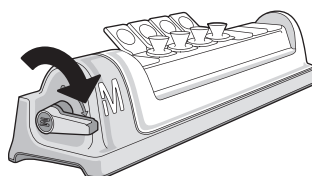
9. Add samples (0.3–1.7 mL) to filters. To avoid air-locking the filter, pipette the sample directly into the center of the funnel, not down the side.

CAUTION: Do not exceed vial volume.



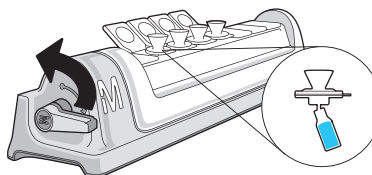
10. Turn vacuum on at the source, then rotate system handle forward. Vacuum will pull samples through the filters and into the vials.

NOTE: Light downward pressure on the lid may be required to initiate vacuum.



11. When all filters are empty, rotate the system handle up and wait for the vacuum pressure to release through the bleeder orifice. Remove filters, then remove lid to access sample vials.

NOTE: To avoid sample spray/cross-contamination, do not remove filters or lid, or open doors before vacuum has released.



Troubleshooting

Symptom	Cause	Corrective Action
Sample does not filter	Inadequate vacuum	Make sure tubing connection between system and vacuum source is secure and leak-free.
		If using a flask trap, make sure it is empty and that the in-line Millex®-FA ₅₀ filter has not gotten wet.
		Make sure filters are seated correctly with the M logo facing forward.
		Make sure vial tray and lid are seated correctly.
		Make sure doors on any empty ports are closed.
		Make sure vacuum source is on and system handle is in the "ON" position.
		Make sure system gaskets and door gaskets are clean and undamaged.
Slow filtration	Air-locked filter	Pipette sample directly into center of filter, not down the side.
	Insufficient vacuum	Increase vacuum pressure.
	Sample viscosity or particulate load too high	Dilute or prefilter sample.
	Reuse of filter	Filters are single use. Do not reuse.
Sample spray/sample cross contamination	Incorrect release of vacuum	Rotate system handle up and wait for vacuum to release before removing filters or lid, or opening doors.
	Reuse of filter	Filters are single use. Do not reuse.
Vacuum does not release	Bleeder orifice is clogged	Contact Technical Service.

Maintenance and Storage

Storage

Store the Smplicity® Filtration System and Millex Smplicity® Filters at room temperature in a dry environment. The system lid should be stored on the base in order to maintain the correct shape.

Cleaning and Maintenance

The Smplicity® Filtration System must be kept clean in order to function properly. To prevent buildup of contaminants, clean up spills and sample residue promptly. If liquid spills in the system, remove the vial tray, clean the system, then apply vacuum pressure for 30 seconds. Clean components as follows:

- Lid, doors, and vial tray: Hand wash with mild soap solution, followed by rinse in deionized water; or wipe down with deionized water, 10% bleach, 70% ethyl alcohol, or 100% methyl alcohol. Do not use abrasive cleaning agents. Wipe components dry with a soft, lint-free cloth.
- Base: Wipe down with mild soap solution, then wipe with deionized water; or wipe down with deionized water, 10% bleach, 70% ethyl alcohol, or 100% methyl alcohol. Wipe dry with a soft, lint-free cloth.

NOTE: Smplicity® Filtration System components should not be cleaned in a dishwasher or autoclaved.

Specifications

Samplicity® Filtration System

Performance

Vacuum pressure required 610–847 mbar (18–25 in. Hg) at 30 L/min

Dimensions

Length 44.5 cm (17.5 in.)
Width 10.2 cm (4.0 in.)
Height 9.1 cm (3.6 in.)
Weight (approximate) 1.3 kg (2.9 lb)
Tubing 6.4 mm ID × 0.9 m (1/4 in. ID × 36 in.)
Waste tray well capacity 5 mL

Materials of Construction

Base Polypropylene, silicone, stainless steel
Waste tray Recycled polyester (PET)
Vial tray Polypropylene, thermoplastic elastomer (TPE)
Lid/doors Engineering copolymer, TPE
Internal components Polypropylene, Tygon® tubing, polyvinyl chloride (PVC), acetal, Buna-N

Vacuum tubing and connector Tubing: silicone
Connector: acetal, Buna-N, stainless steel

Millex Samplicity® Filter

Dimensions (strip of 4 filters)

Length 14.5 cm (5.7 in.)
Width 4.3 cm (1.7 in.)
Height 3.0 cm (1.2 in.)
Weight 22.7 g (0.8 oz)
Sample volume 0.3–1.7 mL

Materials of Construction

Housing High density polyethylene (HDPE), TPE,
high impact polystyrene/polyester (HIPS/PET)

Membrane 0.20 µm hydrophilic PTFE
0.45 µm hydrophilic PTFE
0.45 µm hydrophilic PVDF

HPLC Certification (PTFE filters only)

Millex Samplicity® PTFE Filters are tested for UV-absorbing extractables. One mL samples of acetonitrile (0.20 and 0.45 µm filters) and water (0.45 µm filter) are collected after discarding the first 1 mL of solvent. HPLC analysis shows no peaks greater in intensity than 0.004 AUFS (after column frontal volume) at either 214 or 254 nm.

Conformance to Pressure Equipment Directive

The Smplicity® Filtration System does not fall within the scope of Pressure Equipment Directive 97/23/EC (PED), therefore, conformance to this directive is not applicable.

Ordering Information

This section lists catalogue numbers for the Smplicity® Filtration System and related products. See the Technical Assistance section for contact information. You can also purchase these products on-line at www.millipore.com/products.

Product Description		Cat. No.	Qty/Pk
Smplicity® Filtration System			
(includes base, vial tray, lid, waste tray, tubing, and quick-start card)	Green	SAMPSYSGR	1
	Blue	SAMPSYSBL	1
Smplicity® Filtration System Vial Trays (one blue, one green)		SAMVIALTR	2
Smplicity® Filtration System Waste Trays		SAMWASTTR	5
Smplicity® Filtration System Tube Set Assembly		SAMTUBING	1
Smplicity® Filtration System Replacement Lid		SAMSYSLID	1
Millex Smplicity® Filters			
0.20 µm Hydrophilic PTFE Filter		SAMPLG001	96
		SAMPLG004	384 (4 × 96/pk)
0.45 µm Hydrophilic PTFE Filter		SAMPLCR01	96
		SAMPLCR04	384 (4 × 96/pk)
0.45 µm Hydrophilic PVDF Filter		SAMPHV001	96
		SAMPHV004	384 (4 × 96/pk)
Smplicity® Filtration System and Filter Starter Bundles			
Green Smplicity® Filtration System + 0.20 µm PTFE Filters (96 pk)		SAMPLG0GR	1
Green Smplicity® Filtration System + 0.45 µm PTFE Filters (96 pk)		SAMPLCRGR	1
Green Smplicity® Filtration System + 0.45 µm PVDF Filters (96 pk)		SAMPHV0GR	1
Blue Smplicity® Filtration System + 0.20 µm PTFE Filters (96 pk)		SAMPLG0BL	1
Blue Smplicity® Filtration System + 0.45 µm PTFE Filter (96 pk)		SAMPLCRBL	1
Blue Smplicity® Filtration System + 0.45 µm PVDF Filters (96 pk)		SAMPHV0BL	1

Ordering Information, continued

Accessories

Millex®-FA ₅₀ Filter, 1.0 µm, hydrophobic PTFE, 50 mm	SLFA05010	10
Chemical Duty Pump, 115 V (60 Hz)	WP6111560	1
Chemical Duty Pump, 100 V (50/60 Hz)	WP6110060	1
Chemical Duty Pump, 220 V (50 Hz)	WP6122050	1
High Output Pump, 115 V (60 Hz)	WP6211560	1
High Output Pump, 100 V (50/60 Hz)	WP6210060	1
High Output Pump, 220 V (50 Hz)	WP6222050	1
Vacuum Tubing, 6.4 mm ID × 3 m (1/4 in. ID × 10 ft)	MSVMHTS09	1

Technical Assistance

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

Standard Warranty

The applicable warranty for the products listed in this publication may be found at www.millipore.com/terms (within the "Terms and Conditions of Sale" applicable to your purchase transaction).

