

Non-Sterile 13 mm Millex[®] Syringe Filter Unit

(Millex-FG, -FH, -GN, -GV, -HN, -HV, -LCR)

- Do not use if packaging is damaged
- Do not use with syringes smaller than 10 cc
- For laboratory use only
- Single use only

MILLIPORE

Notice

The information in this document is subject to change without notice and should not be construed as a commitment by Millipore Corporation. Millipore Corporation assumes no responsibility for any errors that may appear in this document. This manual is believed to be complete and accurate at the time of publication. In no event shall Millipore Corporation be liable for incidental or consequential damage in connection with or arising from the use of this manual.

Copyright 2005. Millipore Corporation. Printed in Ireland. All rights reserved.

Millipore, Durapore, Millex, and Milli-Q are registered trademarks of Millipore Corporation.

Fluoropore is a trademark of Millipore Corporation.

Cellosolve is a trademark of Union Carbide Chemicals & Plastics Technology Corporation.

Freon is a registered trademark of E. I. du Pont de Nemours and Company.

Luer-Lok is a trademark of Becton-Dickinson & Co.

P36136, Rev. D, 08/07

This product is manufactured by:

Millipore Ireland BV,

Carrigtwohill,

Co. Cork

Introduction

This document provides chemical compatibility information, operating steps, and specifications for the 13 millimeter (mm) Millex filter unit with male luer slip outlet and the 13 mm Millex filter unit with tube outlet. These filter units are non-sterile, single use, and disposable.

The Millex filter unit contains a membrane in a high density polyethylene housing. (For details on the type of membrane in your Millex filter unit, see the “Specifications” section.) For filtering 1–10 milliliter (mL) volumes to remove particles prior to instrumentation analysis, the 13 mm filter unit is recommended and typically used. The 13 mm Millex filter unit with tube outlet provides easier filtration into and out of cuvettes, small volume autosampler vials, and vial inserts. The extended tube outlet further facilitates filtration into small vials by eliminating airlocks.

Introduction, continued

Syringe Filter	Use to ...
FG	Remove fine particles from organic solutions. Also use for venting applications.
FH	Clarify organic solutions.
GN	Remove fine particles from aqueous or organic solutions.
GV	Remove fine particles from protein-containing solutions, as well as aqueous or mild organic solutions.
HN	Clarify aqueous or organic solutions.
HV	Clarify protein-containing solutions, as well as aqueous or mild organic solutions.
LCR	Clarify protein-containing solutions, as well as aqueous or organic solutions.

Chemical Compatibility

The 13 mm Millex filter unit with male luer slip outlet and the 13 mm Millex filter unit with tube outlet are compatible with aqueous, mild organic, and organic solutions. You can use them to filter the agents listed in the following chart. This information was developed from technical publications, materials suppliers, laboratory tests, and field evaluations, etc., 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 unit, Millipore does not provide or imply a warranty with respect to such information. Millipore recommends that you test the 13 mm Millex syringe filters with agents that are not listed in the chart before using them.

Chemical Compatibility, continued

Chemical

Acetic acid (5%)	Cyclohexane	Hydrogen	PET base oils
Acetic acid, glacial	DMSO ¹	Hydrogen peroxide (3%)	Phenol (10%)
Acetone ¹	Ethers	Isobutyl alcohol	Pyridine ¹
Amyl acetate	Ethyl acetate	Isopropyl acetate	Silicone oils
Amyl alcohol	Ethylene glycol	Kerosene	Sulphuric acid (3N)
Benzene	Formaldehyde	MEK	TFA
Benzyl alcohol	Freon [®] solvent, TF or PCA	MIBK	THF
Boric acid	Gasoline	Mineral spirits	Toluene
Brine (sea water)	Glycerine (Glycerol)	Nitrobenzene	Trichloroethane
Butyl alcohol	Helium	Nitrogen	Trichloroethylene
Carbon tetrachloride	Hydrochloric acid ²	Ozone (10 ppm in water)	Xylene
Cellosolve [®] solvent (Ethyl)	Hydrofluoric acid	Paraldehyde	
		Perchloroethylene	

¹ Chemical not compatible with GV and HV

² Hydrochloric acid (6N) not compatible with GN and HN

Chemical Compatibility, continued

You can use 13 mm Millex syringe filters to filter the agents listed in the next chart for low extractable HPLC instrumentation analysis applications.

NOTE: Millipore recommends that you discard the first 1 mL or rinse with 1 to 2 mL of primary solvent before sample filtration.

Chemical			
Acetonitrile	Dimethylformamide ¹	Hexane	Methylene chloride
Chloroform	Dioxane	Isopropyl alcohol	Pentane
Dimethylacetamide ¹	Ethyl alcohol	Methyl alcohol	Petroleum ether

¹ Chemical not compatible with GV and HV

How to Use the 13 mm Millex Syringe Filters

This section lists the warnings and cautions and provides steps to use the 13 mm Millex filter unit with male luer slip outlet or 13 mm Millex filter unit with tube outlet.

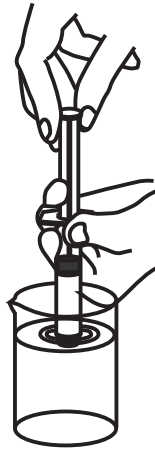
▲ WARNING: Do not use the 13 mm Millex filter unit with male luer slip or 13 mm Millex filter unit with tube outlet for direct patient care applications; they are designed for laboratory use only.

CAUTIONS:

- Do not use the 13 mm Millex syringe filters at temperatures above 45 °C (113 °F) to ensure proper filtration.
- Do not use syringes smaller than 10 cc; the pressure generated in these syringes may exceed the 100 psig limit of the Millex filter unit.
- Do not use the 13 mm Millex unit to filter a protein containing solution unless binding of the sample to the filter is evaluated.
- Do not reuse the 13 mm Millex filter unit with male luer slip outlet or 13 mm Millex filter unit with tube outlet.

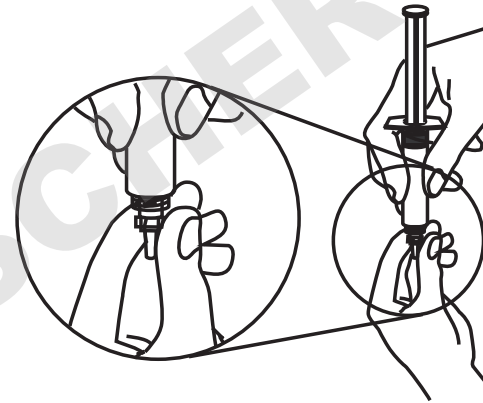
Directions for the 13 mm Millex Filter Unit with Male Luer Slip Outlet and 13 mm Millex Filter Unit with Tube Outlet

1



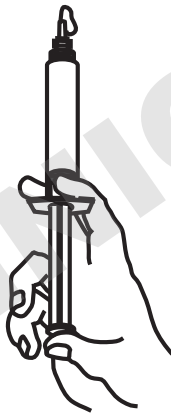
Fill the syringe with the solution you want to filter.

2



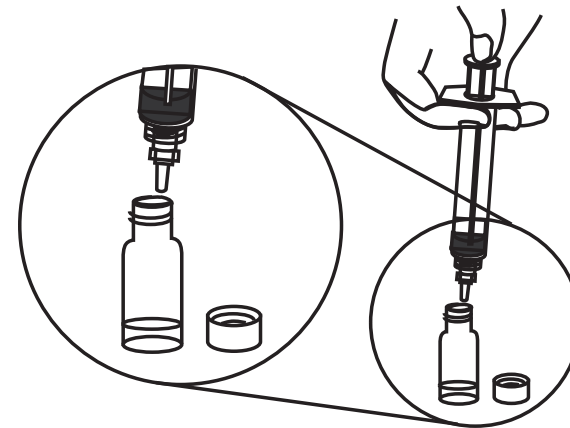
Attach the syringe to the 13 mm Millex filter unit with male luer slip outlet or tube outlet.

3



Hold the syringe with filter pointing up and “top off” by pushing a few drops through the filter.

4



Push the syringe plunger to deliver a filtered solution.

Specifications

Housing

High Density Polyethylene

Membrane

FG, FH

Hydrophobic Fluoropore™ (PTFE)

GN, HN

Nylon

GV, HV

Hydrophilic Durapore® (PVDF)

LCR

Hydrophilic LCR (PTFE)

Dimensions

inlet to outlet

(with Male Luer Slip Outlet)

21 mm (0.83 in.)

inlet to outlet

(with Tube Outlet)

48 mm (1.89 in.)

diameter

15 mm (0.58 in.)

filtration surface area

0.65 cm² (0.10 in²)

Specifications, continued

Pore size

FG, GN 0.20 μm

FH, HN, HV, LCR 0.45 μm

GV 0.22 μm

Temperature limit

45 °C (113 °F) maximum

Pressure limit at 25 °C

100 psig (7 bar) differential

Filtration volume

≤ 10 mL

Hold-up volume

≤ 25 μL after air purge at pressure that exceeds bubble point of the membrane

Specifications, continued

Typical average flow rate at 25 °C and 10 psig

FG	20 mL/min of methanol
FH	50 mL/min of methanol
GN	6 mL/min of Milli-Q [®] water
GV	7 mL/min of Milli-Q water
HN	15 mL/min of Milli-Q water
HV	28 mL/min of Milli-Q water
LCR	5 mL/min of Milli-Q water

Connections

with Male Luer Slip Outlet	Female Luer-Lok [®] inlet, male luer slip outlet
with Tube Outlet	Female Luer-Lok inlet, male luer slip outlet extended by tube

Product Ordering Information

Syringe Filter	With Male Luer Slip Outlet	With Tube Outlet
FG	SLFG 013 NL (100/pk) SLFG 013 NK (1000/pk)	SLFG T13 NL (100/pk)
FH	SLFH 013 NL (100/pk) SLFH 013 NK (1000/pk)	SLFH T13 NL (100/pk)
GN	SLGN 013 NL (100/pk) SLGN 013 NK (1000/pk)	SLGN T13 NL (100/pk)
GV	SLGV 013 NL (100/pk) SLGV 013 NK (1000/pk)	SLGV T13 NL (100/pk)
HN	SLHN 013 NL (100/pk) SLHN 013 NK (1000/pk)	SLHN T13 NL (100/pk)
HV	SLHV 013 NL (100/pk) SLHV 013 NK (1000/pk)	SLHV T13 NL (100/pk)
LCR	SLCR 013 NL (100/pk) SLCR 013 NK (1000/pk)	SLCR T13 NL (100/pk)

HPLC Certification

The Millex-HN, -GN, and -LCR filter units (with and without tube outlets) are tested for UV-absorbing extractables. HPLC analysis of a 0.5 mL volume of acetonitrile and 0.5 mL volume of water filtered with the 13 mm units show no peaks greater in intensity than 0.004 AUFS (after the column frontal volume) at either 214 nm or 254 nm.

Technical Assistance

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

Standard Warranty

Millipore Corporation (“Millipore”) warrants its products will meet their applicable published specifications when used in accordance with their applicable instructions for a period of one year from shipment of the products. **MILLIPORE MAKES NO OTHER WARRANTY, EXPRESSED OR IMPLIED. THERE IS NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.** The warranty provided herein and the data, specifications and descriptions of Millipore products appearing in Millipore’s published catalogues and product literature may not be altered except by express written agreement signed by an officer of Millipore. Representations, oral or written, which are inconsistent with this warranty or such publications are not authorized and if given, should not be relied upon.

In the event of a breach of the foregoing warranty, Millipore’s sole obligation shall be to repair or replace, at its option, the applicable product or part thereof, provided the customer notifies Millipore promptly of any such breach. If after exercising reasonable efforts, Millipore is unable to repair or replace the product or part, then Millipore shall refund to the customer all monies paid for such applicable product or part. **MILLIPORE SHALL NOT BE LIABLE FOR CONSEQUENTIAL, INCIDENTAL, SPECIAL OR ANY OTHER DAMAGES RESULTING FROM ECONOMIC LOSS OR PROPERTY DAMAGE SUSTAINED BY ANY CUSTOMER FROM THE USE OF ITS PRODUCTS.**

DOMINIQUE DUTSCHER SAS

MILLIPORE