

User Guide

Nonsterile 33 mm Millex® Syringe Filters

Millex®-LG, LCR, GV, HV,
GN, HN, GP, HP,

For laboratory use only



Introduction

This document provides chemical compatibility information, operating steps, and specifications for the nonsterile 33 millimeter (mm) Millex® syringe filter with male Luer-slip outlet. This syringe filter is recommended for filtering 10–100 milliliter (mL) volumes to remove particles prior to instrumentation analysis. The single-use, disposable filter removes particles larger than the membrane's rated pore size.

The Millex® syringe filter consists of a membrane sealed in a polypropylene housing. For details on the type of membrane in your Millex® syringe filter, refer to the table below.

| Filter | Membrane | Application |
|--------|--|--|
| LG | 0.20 µm hydrophilic PTFE (polytetrafluoroethylene) | Filtration of protein-containing solutions and aqueous or organic solutions |
| LCR | 0.45 µm hydrophilic PTFE | Filtration of protein-containing solutions and aqueous or organic solutions |
| GV | 0.22 µm PVDF (polyvinylidene fluoride) | Filtration of protein-containing solutions and aqueous or mild organic solutions |
| HV | 0.45 µm PVDF | Filtration of protein-containing solutions and aqueous or mild organic solutions |
| GN | 0.20 µm nylon | Filtration of aqueous or organic solutions |
| HN | 0.45 µm nylon | Filtration of aqueous or organic solutions |
| GP | 0.22 µm PES (polyethersulfone) | Filtration of protein-containing solutions and aqueous or mild organic solutions |
| HP | 0.45 µm PES | Filtration of protein-containing solutions and aqueous or mild organic solutions |

Chemical Compatibility

Millex® syringe filters are compatible with aqueous, mild organic, and organic solutions. You can use them 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 beyond our control that may affect the use of the unit, no warranty is provided or implied with respect to such information. Agents not listed in the following table should be tested with the Millex® syringe filter prior to use.

NOTE: For low extractable HPLC instrumentation analysis applications, it is recommended that you discard the first 1 mL or rinse with 1 to 2 mL of primary solvent before sample filtration.

Chemical Compatibility, continued

Chemical

| | | |
|---|--|--|
| Acetic acid, glacial ¹ | Formaldehyde | Nitrogen |
| Acetone ^{2,3} | Formic acid (50%) ^{1,3} | Ozone (10 ppm in water) |
| Acetonitrile | Freon® (TF or PCA) solvent | Paraldehyde |
| Ammonium hydroxide ^{1,3} | Gasoline | Perchloroethylene ^{1,3} |
| Ammonium sulfate (saturated) ^{2,3} | Glycerine (glycerol) | Petroleum based oils |
| Amyl acetate ³ | Helium | Petroleum ether |
| Amyl alcohol | Hexane | Phenol (10%) |
| Benzyl alcohol | Hydrochloric acid ¹ | Potassium hydroxide ³ |
| Boric acid | Hydrofluoric acid ¹ | Pyridine ^{1,2,3} |
| Butyl alcohol | Hydrogen | Silicone oils |
| Cellosolve® (ethyl) solvent | Hydrogen peroxide (3%) | Sodium carbonate (aqueous solution) ^{1,3} |
| Chloroform ^{1,3} | Hypo (sodium thiosulfate) ³ | Sodium chloride (2 M) |
| Cyclohexane | Isobutyl alcohol | Sodium hydroxide (3 N) ^{1,3} |
| Cyclohexanone ^{2,3} | Isopropyl acetate ³ | Sulfuric acid (3 N) ¹ |
| Dimethylacetamide ^{2,3} | Isopropyl alcohol | Tetrahydrofuran ³ |
| Dimethylformamide ^{2,3} | Kerosene | Toluene |
| Dimethylsulfoxide ^{2,3} | Lactic acid (50%) ^{1,2,3} | Trichloroacetic acid (aqueous solution) ^{1,3} |
| Dioxane ³ | Methyl alcohol | Trichloroethane ^{1,3} |
| Ethers ³ | Methylene chloride ^{1,3} | Trichloroethylene ^{1,3} |
| Ethyl acetate ³ | Methyl ethyl ketone ^{2,3} | Trifluoroacetic acid ^{1,3} |
| Ethyl alcohol | Methyl isobutyl ketone ^{2,3} | Urea (8 M) ³ |
| Ethylene glycol | Mineral spirits | Xylene |

¹ Not compatible with GN and HN² Not compatible with GV and HV³ Not compatible with GP and HP

How to Use 33 mm Millex® Syringe Filters

WARNINGS:

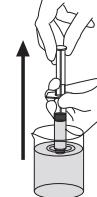
- The 33 mm Millex® syringe filter is intended for laboratory use only and is not a medical device for direct patient care applications.
- Do not use with syringes smaller than 10 mL because pressures in excess of the maximum pressure rating may be reached, potentially causing damage to the filter unit and/or personal injury.

CAUTIONS:

- Do not use the syringe filter at temperatures above 45 °C (113 °F).
- Do not use the same 33 mm syringe filter to filter solutions in both directions.
- Do not reuse the syringe filter.
- Do not use the syringe filter to filter emulsions or suspensions.
- Perform a binding study before use if there is a concern about loss of analyte (proteins, nucleic acids, active pharmaceuticals) due to binding.

Instructions for Use

1



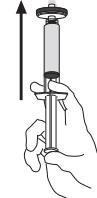
Fill the syringe with the solution to be filtered.

2



Attach the syringe to the 33 mm Millex® syringe filter.

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 the filtered solution.

Optional: To purge the syringe filter and maximize sample throughput, remove the Millex® filter from the syringe and draw air into the syringe. Then reattach the Millex® filter, and push the plunger to force some of the air through the filter.

Specifications

| | |
|---|---|
| Housing | Polypropylene |
| Membrane | |
| LG, LCR | Hydrophilic PTFE |
| GV, HV | Hydrophilic Durapore® PVDF |
| GN, HN | Hydrophilic Nylon |
| GP, HP | Hydrophilic Millipore Express® PES |
| Dimensions | |
| Inlet to outlet | 27 mm (1.1 in.) |
| Diameter | 33 mm (1.3 in.) |
| Filtration surface area | 4.5 cm ² (0.7 in. ²) |
| Pore size | |
| GV, GP | 0.22 µm |
| LG, GN | 0.20 µm |
| LCR, HV, HN, HP | 0.45 µm |
| Temperature limit | |
| 45 °C (113 °F) | |
| Connections | |
| Female Luer-Lok™ inlet, male Luer-slip outlet | |
| Pressure limit at 21 °C | |
| 8.6 bar (125 psi) differential | |
| Filtration volume | |
| 10–100 mL | |
| Hold-up volume | |
| ≤ 80 µL after air purge at pressure that exceeds bubble point of the membrane | |

Performance

| Membrane Type | Typical Water Flow Rate at 21 °C and 2.1 bar (30 psi) | Bubble point |
|----------------------|--|----------------------|
| LG | 185 mL/min | ≥ 2.8 bar (≥ 41 psi) |
| LCR | 438 mL/min | ≥ 1.5 bar (≥ 22 psi) |
| GV | 94 mL/min | ≥ 3.4 bar (≥ 50 psi) |
| HV | 423 mL/min | ≥ 1.5 bar (≥ 22 psi) |
| GN | 75 mL/min | ≥ 3.0 bar (≥ 43 psi) |
| HN | 169 mL/min | ≥ 2.2 bar (≥ 32 psi) |
| GP | 240 mL/min | ≥ 4.3 bar (≥ 63 psi) |
| HP | 480 mL/min | ≥ 2.0 bar (≥ 29 psi) |

HPLC Certification

Millex®-LG, LCR, GN, and HN syringe filters are tested for UV-absorbing extractables. HPLC analysis of 1 mL samples of both acetonitrile and water collected after discarding the first 1 mL of solvent showed no peaks greater in intensity than 0.004 AUFS (after the column frontal volume) at either 214 nm or 254 nm.

Representative samples of all lots manufactured are tested.

Product Ordering Information

This section lists the catalogue numbers for 33 mm nonsterile Millex® syringe filters. You can purchase these products on-line at www.millipore.com/products, or see contact information below.

| Syringe filter | Color | 50/pk | 250/pk | 1000/pk |
|---------------------------|--------|-----------|-----------|-----------|
| Millex®-LG, PTFE 0.20 µm | Blue | SLLG033NS | SLLG033NB | SLLG033NK |
| Millex®-LCR, PTFE 0.45 µm | Blue | SLCR033NS | SLCR033NB | SLCR033NK |
| Millex®-GV, PVDF, 0.22 µm | Yellow | SLGV033NS | SLGV033NB | SLGV033NK |
| Millex®-HV, PVDF, 0.45 µm | Yellow | SLHV033NS | SLHV033NB | SLHV033NK |
| Millex®-GN, Nylon 0.20 µm | Purple | SLGN033NS | SLGN033NB | SLGN033NK |
| Millex®-HN, Nylon 0.45 µm | Purple | SLHN033NS | SLHN033NB | SLHN033NK |
| Millex®-GP, PES, 0.22 µm | Green | SLGP033NS | SLGP033NB | SLGP033NK |
| Millex®-HP, PES, 0.45 µm | Green | SLHP033NS | SLHP033NB | SLHP033NK |

Notice

We provide information and advice to our customers on application technologies and regulatory matters to the best of our knowledge and ability, but without obligation or liability. Existing laws and regulations are to be observed in all cases by our customers. This also applies in respect to any rights of third parties. Our information and advice do not relieve our customers of their own responsibility for checking the suitability of our products for the envisaged purpose.

Contact Information

For the location of the office nearest you, go to www.millipore.com/offices.

Technical Assistance

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 ("Conditions of Sale").

