

## User Guide

# Millex® Syringe Filters Nonsterile 25 mm

Millex®-LG, LCR, HV, GN, HN, PB Filters

Automation Compatible and High Particulate Filtration

For laboratory use only

|                  |                  |                  |                  |                  |
|------------------|------------------|------------------|------------------|------------------|
| <b>SLPBDZ5NZ</b> | <b>SLCRBZ5NZ</b> | <b>SLGNDZ5NZ</b> | <b>SLLGM25NS</b> | <b>SLHVM25NK</b> |
| <b>SLPBDZ5NK</b> | <b>SLCRBZ5NK</b> | <b>SLGNDZ5NK</b> | <b>SLLGM25NK</b> | <b>SLGNM25NS</b> |
| <b>SLLGDZ5NZ</b> | <b>SLHVDZ5NZ</b> | <b>SLHNDZ5NZ</b> | <b>SLCRM25NS</b> | <b>SLGNM25NK</b> |
| <b>SLLGDZ5NK</b> | <b>SLHVDZ5NK</b> | <b>SLHNDZ5NK</b> | <b>SLCRM25NK</b> | <b>SLHNM25NS</b> |
| <b>SLCRDZ5NZ</b> | <b>SLHVBZ5NZ</b> | <b>SLHNBZ5NZ</b> | <b>SLHVM25NS</b> | <b>SLHNM25NZ</b> |
| <b>SLCRDZ5NK</b> | <b>SLHVBZ5NK</b> | <b>SLHNBZ5NK</b> | <b>SLHVMZ5NZ</b> | <b>SLHNM25NK</b> |

## Introduction

This document provides chemical compatibility information, operating steps, and specifications for nonsterile 25 millimeter (mm) Millex® Automation Compatible (AC) and High Particulate Filtration (HPF) syringe filters. The single-use, disposable filters remove particles larger than the membrane's rated pore size and are recommended for filtering 10–100 milliliter (mL) volumes to remove particles prior to instrumentation analysis.

The Millex® syringe filter consists of a membrane and/or glass fiber filter in a high density polyethylene housing. For details on the type of membrane/glass fiber syringe filters available, see "Product Ordering" section.

| Filter | Membrane                               | Application                                                                          |
|--------|----------------------------------------|--------------------------------------------------------------------------------------|
| PB     | 1.0 µm glass fiber                     | Clarification of aqueous or organic solutions                                        |
| LG     | 0.20 µm PTFE (polytetrafluoroethylene) | Clarification of protein-containing solutions, and aqueous or organic solutions      |
| LCR    | 0.45 µm PTFE                           | Clarification of protein-containing solutions, and aqueous or organic solutions      |
| HV     | 0.45 µm PVDF (polyvinylidene fluoride) | Clarification of protein-containing solutions, and aqueous or mild organic solutions |
| GN     | 0.20 µm nylon                          | Clarification of aqueous or mild organic solutions                                   |
| HN     | 0.45 µm nylon                          | Clarification of aqueous or mild organic solutions                                   |

## Chemical Compatibility

The 25 mm Millex® AC and HPF 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 syringe filter, no warranty is provided or implied with respect to such information. Agents not listed below 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                     | *   | Chemical          | * | Chemical                   | * | Chemical                  | *   | Chemical                                | *   |
|------------------------------|-----|-------------------|---|----------------------------|---|---------------------------|-----|-----------------------------------------|-----|
| Acetic acid, glacial         | 1   | Chloroform        | 1 | Formaldehyde               |   | Hypo (sodium thiosulfate) |     | Nitrogen                                |     |
| Acetone                      | 2   | Cyclohexane       |   | Formic acid (50%)          | 1 | Isobutyl alcohol          |     | Ozone (10 ppm in water)                 |     |
| Acetonitrile                 |     | Cyclohexanone     | 2 | Freon® (TF or PCA) solvent |   | Isopropyl acetate         |     | Paraldehyde                             |     |
| Ammonium hydroxide           | 1,3 | Dimethylacetamide | 2 | Gasoline                   |   | Isopropyl alcohol         |     | Perchloroethylene                       | 1   |
| Ammonium sulfate (saturated) | 2   | Dimethylformamide | 2 | Glycerine (glycerol)       |   | Kerosene                  |     | Petroleum based oils                    |     |
| Amyl acetate                 |     | Dimethylsulfoxide | 2 | Helium                     |   | Lactic acid (50%)         | 1,2 | Petroleum ether                         |     |
| Amyl alcohol                 |     | Dioxane           |   | Hexane                     |   | Methyl alcohol            |     | Phenol (10%)                            |     |
| Benzyl alcohol               |     | Ethers            |   | Hydrochloric acid          | 1 | Methylene chloride        |     | Potassium hydroxide                     | 1,3 |
| Boric acid                   |     | Ethyl acetate     |   | Hydrofluoric acid          | 3 | Methyl ethyl ketone       | 2   | Pyridine                                | 1,2 |
| Butyl alcohol                |     | Ethyl alcohol     |   | Hydrogen                   |   | Methyl isobutyl ketone    | 2   | Silicone oils                           |     |
| Cellosolve® (ethyl) solvent  |     | Ethylene glycol   |   | Hydrogen peroxide (3%)     |   | Mineral spirits           |     | Sodium carbonate (aqueous solution)     | 1   |
|                              |     |                   |   |                            |   |                           |     | Tetrahydrofuran                         |     |
|                              |     |                   |   |                            |   |                           |     | Toluene                                 |     |
|                              |     |                   |   |                            |   |                           |     | Trichloroacetic acid (aqueous solution) | 1   |
|                              |     |                   |   |                            |   |                           |     | Trichloroethane                         | 1   |
|                              |     |                   |   |                            |   |                           |     | Trichloroethylene                       | 1   |
|                              |     |                   |   |                            |   |                           |     | Trifluoroacetic acid                    | 1   |
|                              |     |                   |   |                            |   |                           |     | Urea (8 M)                              |     |
|                              |     |                   |   |                            |   |                           |     | Xylene                                  |     |

1 Not compatible with GN and HN

2 Not compatible with HV

3 Not compatible with Glass Fiber

## How to Use 25 mm Millex® AC and HPF Syringe Filters

### WARNINGS:

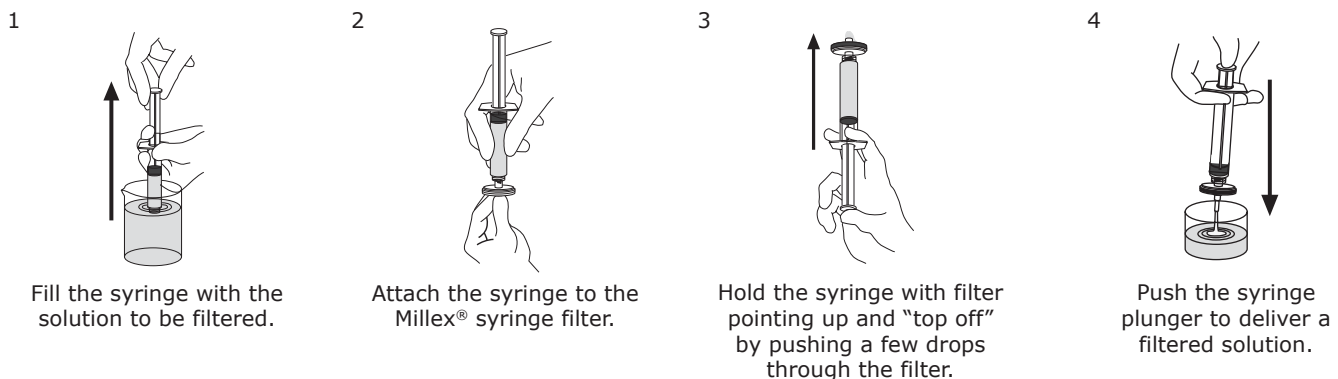
- The 25 mm Millex® syringe filter is intended for laboratory use only and is not a medical device for direct patient care applications.
- Do not use with syringes smaller than 10 mL because pressures in excess of the maximum pressure rating may be reached, potentially causing damage to the syringe filter and/or personal injury.

### CAUTIONS:

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

## Instructions for Use

**Optional:** To purge the unit 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

|                                         |                                               |
|-----------------------------------------|-----------------------------------------------|
| <b>Housing</b>                          | High density polyethylene                     |
| <b>Prefilter</b>                        | Borosilicate glass fiber                      |
| <b>Membrane</b>                         | LG: Hydrophilic PTFE, 0.20 µm pore size       |
|                                         | LCR: Hydrophilic PTFE, 0.45 µm pore size      |
|                                         | HV: Durapore® PVDF, 0.45 µm pore size         |
|                                         | GN: Nylon, 0.20 µm pore size                  |
|                                         | HN: Nylon, 0.45 µm pore size                  |
| <b>Dimensions</b>                       |                                               |
| Inlet to outlet                         | 21 mm (0.83 in.)                              |
| Diameter                                | 30 mm (1.18 in.)                              |
| Filtration surface area                 | 3.9 cm <sup>2</sup> (0.61 in <sup>2</sup> )   |
| <b>Filtration volume (guideline)</b>    | 10–100 mL                                     |
| <b>Hold-up volume (after air purge)</b> | ≤ 100 µL (membrane)                           |
|                                         | ≤ 250 µL (membrane w/ prefilter)              |
| <b>Connections</b>                      | Female Luer-Lok™ inlet, male Luer-slip outlet |
| <b>Temperature limit</b>                | 45 °C (113 °F) maximum                        |
| <b>Pressure limit at 21 °C</b>          | ≤ 100 psi (6.9 bar) inlet and differential    |

## HPLC Certification

Millex®-LG, LCR, GN, and HN filters that do not contain glass fiber 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. HPLC claims do not apply to certain automation compatible (AC) devices containing a pre-filter and High Particulate Filtration devices as listed below.

Representative samples of all lots manufactured are tested.

## Product Ordering

Purchase products online at [SigmaAldrich.com/products](https://SigmaAldrich.com/products).

### Millex® Automation Compatible (AC) Syringe Filters

| Syringe Filter | Description                                                | Qty/Pk     | Cat. No.  |
|----------------|------------------------------------------------------------|------------|-----------|
| Millex®-PB     | 1.0 µm glass fiber                                         | 200 (8×25) | SLPBDZ5NZ |
|                |                                                            | 1000       | SLPBDZ5NK |
| Millex®-LG     | 0.20 µm hydrophilic PTFE                                   | 200 (8×25) | SLLGDZ5NZ |
|                |                                                            | 1000       | SLLGDZ5NK |
| Millex®-LCR    | 0.45 µm hydrophilic PTFE                                   | 200 (8×25) | SLCRDZ5NZ |
|                |                                                            | 1000       | SLCRDZ5NK |
| Millex®-LCR/PB | 0.45 µm hydrophilic PTFE with 1.0 µm glass fiber prefilter | 200 (8×25) | SLCRBZ5NZ |
|                |                                                            | 1000       | SLCRBZ5NK |
| Millex®-HV     | 0.45 µm Durapore® PVDF membrane                            | 200 (8×25) | SLHVDZ5NZ |
|                |                                                            | 1000       | SLHVDZ5NK |
| Millex®-HV/PB  | 0.45 µm Durapore® PVDF membrane with 1.0 µm glass fiber    | 200 (8×25) | SLHVBZ5NZ |
|                |                                                            | 1000       | SLHVBZ5NK |
| Millex®-GN     | 0.20 µm nylon                                              | 200 (8×25) | SLGNDZ5NZ |
|                |                                                            | 1000       | SLGNDZ5NK |
| Millex®-HN     | 0.45 µm nylon                                              | 200 (8×25) | SLHNDZ5NZ |
|                |                                                            | 1000       | SLHNDZ5NK |
| Millex®-HN/PB  | 0.45 µm nylon with 1.0 µm glass fiber prefilter            | 200 (8×25) | SLHNBZ5NZ |
|                |                                                            | 1000       | SLHNBZ5NK |

## Millex® High Particulate Filtration (HPF) Syringe Filters

| Filter Unit | Description                                                                      | Qty/Pk     | Cat. No.  |
|-------------|----------------------------------------------------------------------------------|------------|-----------|
| Millex®-LG  | 0.20 µm hydrophilic PTFE with graduated multi-layer glass fiber prefilter        | 50         | SLLGM25NS |
|             |                                                                                  | 1000       | SLLGM25NK |
| Millex®-LCR | 0.45 µm hydrophilic PTFE with graduated multi-layer glass fiber prefilter        | 50         | SLCRM25NS |
|             |                                                                                  | 1000       | SLCRM25NK |
| Millex®-HV  | 0.45 µm Durapore® PVDF membrane with graduated multi-layer glass fiber prefilter | 50         | SLHVM25NS |
|             |                                                                                  | 200 (8×25) | SLHVMZ5NZ |
|             |                                                                                  | 1000       | SLHVM25NK |
| Millex®-GN  | 0.20 µm nylon with graduated multi-layer glass fiber prefilter                   | 50         | SLGNM25NS |
|             |                                                                                  | 1000       | SLGNM25NK |
| Millex®-HN  | 0.45 µm nylon with graduated multi-layer glass fiber prefilter                   | 50         | SLHNM25NS |
|             |                                                                                  | 200 (8×25) | SLHNMZ5NZ |
|             |                                                                                  | 1000       | SLHNM25NK |

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