Whatman GD/X™ 25 mm

Whatman™ sterile syringe filters

Instructions for use

Introduction

Important

Read these instructions carefully before using the products.

Intended use

The products are intended for research use only, and shall not be used in any clinical or *in vitro* procedures for diagnostic purposes.

Background

Description

The Whatman GD/X™ 25 mm sterile syringe filters are designed to enable the filtration of viscous, hard-to-filter samples greater than 10 mL. They are available in a wide variety of filter choices with a polypropylene housing. The combination of the prefiltration stack and filter housing design enables you to filter samples with high particulate load.

These sterile products are sealed in a medical grade clear blister pack, radiation sterilized and sealed in their own protective shelf pack.

Disposable filtration devices provide labor-saving efficiency while ensuring highly effective filtration when compared to hand-assembled reusable filter housings.

This document provides general information on the Whatman GD/X 25 mm sterile syringe filters. The specifications in the Technical Data section are intended to provide a basis for establishing functional use, as well as for setting quality assurance test performance levels.

Prefilter media

The Whatman GD/X 25 mm sterile syringe filters contain a prefiltration stack of Multigrade GMF 150 (10:1 µm) and Grade GF/F prefilters.

Multigrade GMF 150 is a combination of two glass microfiber filters in one. Manufactured from 100 % Borosilicate glass, its construction consists of a coarse layer on top, meshed with a fine layer below. The Grade GF/ F Filter will retain fine particles down to 0.7 µm.

The prefiltration technology allows you to filter even the most difficult samples with minimal hand force. Compared to an unprotected membrane, the volume of sample filtered can be three to seven times greater.

Typical applications

Filter media	Typical application
CA	Aqueous and some organic samples
GMF	Aqueous and/or organic; high loading capacity
PES	Aqueous based samples; low protein binding
PVDF	Aqueous and/or organic based samples; low protein binding membrane

Filter media

The following filter media choices are available for Whatman GD/X 25 mm sterile syringe filters.

Cellulose Acetate (CA) Membrane

Cellulose Acetate is a common selection for filtering biological solutions. The typically low binding characteristics of the membrane allow maximum recovery of target analytes like proteins. The membrane exhibits good flow characteristics and high loading capacity, which allows fast and complete processing of the complex particle matrix found in biological samples.

Glass Microfiber Filter (GMF)

The Glass Microfiber Filter media are produced entirely from fine grade borosilicate glass microfiber and contain no binders either as manufacturing aids or as wet strengthening additives. Glass Microfiber Filters are generally resistant to weakening or disruption of the fibrous matrix by inorganic or organic solutions and have broad chemical compatibility.

Polyethersulfone (PES) Membrane

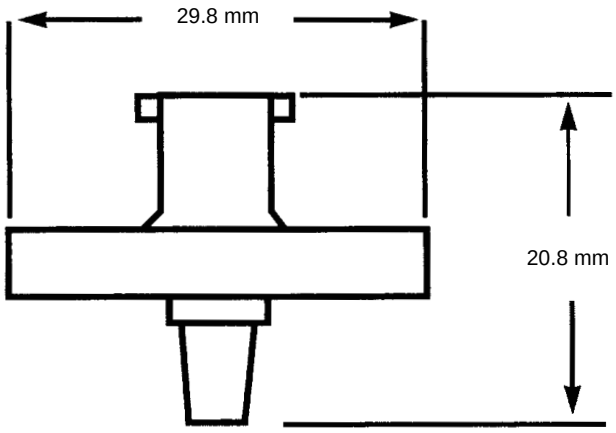
Polyethersulfone membrane provides durability, high temperature resistance, good chemical compatibility, and low protein absorption. It is particularly suitable for filtration of serum, plasma and tissue culture solutions as well as other protein containing solutions where minimal adsorptive protein loss is desired.

Polyvinylidene Difluoride (PVDF) Membrane

Polyvinylidene Difluoride membrane is a suitable choice for most HPLC sample preparation applications. The membrane is hydrophilic with low water breakthrough values. It offers good chemical resistance to all common HPLC solvents, has low protein binding and negligible extractables.

Technical information

Illustration of Whatman GD/X 25 mm sterile syringe filters



Technical data

Dimensions:	20.8 mm x 29.8 mm
Weight:	Approximately 3 grams
Filtration Area:	4.6 cm^2
Maximum Pressure:	0.5 MPa (5.2 bar, 75 psi)
Housing:	Polypropylene
Hold Up Volume:	Full Housing 1.4 mL with air purge 250 µL (approx)
Flow Direction:	Flow should enter from the inlet
Connectors:	Inlet - Female Luer Lock (FLL) Outlet - Male Luer (ML)
Sterilization:	Gamma radiation
Glass Microfiber:	100% Borosilicate
Prefiltration Media:	GMF 150 10µm: 1 µm GF/F 0.7 µm

Operating instructions

Safety

When considering the specific factors of your application, see *Technical data* for correct use. Do not exceed the pressure, temperature, or chemical compatibility recommendations.

High pressures can be obtained when using syringes. The smaller the syringe, the higher the pressure that can be generated. As general guideline, the following pressures can be obtained by hand with the syringes indicated:

Syringe size	20 mL	10 mL	5 mL	3 mL	1 mL
Pressure obtained by hand	0.6 MPa (5.5 bar, 80 psi)	1.0 MPa (9.7 bar, 140 psi)	1.2 MPa (12.4 bar, 180 psi)	1.4 MPa (14 bar, 200 psi)	1.7 MPa (17 bar, 250 psi)

Determine the pressure generated by hand with a specific size syringe and take appropriate safety precautions not to exceed the recommended rating for the device used.

CAUTION
If the Maximum operating pressure is exceeded, bursting of the device can occur resulting in loss of sample or personal injury.

Efficiency

To maximize filtration throughput, use the largest pore size filter that will provide the required purity. To extend filter life, use low flow rates or pressures.

Air locks

Air locks can seriously limit flow rates. To eliminate air locks, point the outlet of the filter device upward during the initiation of liquid flow.

To filter a solution with a syringe

Follow these steps to filter a solution with a syringe.

Step	Action
1	Fill the syringe with the solution to be filtered.
2	Secure the filled syringe to the FLL inlet of the syringe filter with a twisting motion.
3	With the outlet pointed upward, gradually apply thumb pressure to the syringe plunger to initiate flow.
4	Continue thumb pressure until all the air in the syringe is displaced with liquid.
5	Once liquid starts to exit the syringe filter from the outlet, stop applying pressure, point the syringe downward and away from the user.
6	Orient the syringe filter over a suitable collection container or other apparatus and apply pressure again to filter the sample.

Integrity test

Bubble point test

Follow these steps to perform a bubble point test if required for your application.

Step	Action
1	Flush the filter device with 1.4 mL or more of the test fluid.
2	After the filter is completely wet, with the outlet pointed upward, apply air under controlled pressure to the inlet until air breaks through the filter and bubbles can be seen at the outlet.
3	The pressure at which air passes through the wetted filter is the bubble point.

Refer to the table for typical bubble point values.

Bubble point data

Description	Pore size	Minimum bubble point		
	(µm)	(MPa)	(bar)	(psi)
Cellulose Acetate	0.2	0.3	3.2	46
Cellulose Acetate	0.45	0.2	2.0	29
GMF	0.45	N/A	N/A	N/A
Polyethersulfone	0.2	0.3	3.2	46

Description	Pore size	Minimum bubble point		
	(µm)	(MPa)	(bar)	(psi)
Polyethersulfone	0.45	0.2	2.1	30
Polyvinylidene Fluoride	0.2	0.3	3.1	45
Polyvinylidene Fluoride	0.45	0.2	1.9	28

Chemical compatibility of membrane

Solvent	CA	GMF	PES	PVDF
Acetic Acid 5%[1]	LR	R	R	R
Acetic Acid, Glacial	NR	R	R	R
Acetone	NR	R	NR	NR
Acetonitrile	NR	R	NR	R
Ammonia, 6N	-	LR	R	LR
Amyl Acetate	NR	R	LR	LR
Amyl Alcohol	R	R	NR	R
Benzene[2]	R	R	NR	R
Benzyl Alcohol[2]	LR	R	NR	R
Boric Acid	R	R	R	R
Butyl Alcohol	R	R	R	R
Butyl Chloride[2]	-	R	-	R
Carbon Tetrachloride[2]	NR	R	NR	R
Chlorobenzene	-	R	-	R
Chloroform[2]	NR	R	NR	R
Citric Acid	-	R	R	R
Cresol	NR	R	NR	NR
Cyclohexanone	NR	R	NR	R
Cyclohexane	R	R	R	R
Diethyl Acetamide	NR	R	NR	NR
Dimethyl Formamide	NR	R	NR	NR
Dioxane	NR	R	NR	LR
DMSO	NR	R	NR	LR
Ethanol	R	R	R	R
Ethers	LR	R	R	LR
Ethyl Acetate	NR	R	NR	LR
Ethylene Glycol	LR	R	R	R
Formaldehyde	LR	R	R	R
Freon TF	R	R	R	R
Formic Acid	LR	R	LR	R
Hydrochloric Acid (Conc)	NR	R	R	R
Hydrofluoric Acid	NR	NR	-	R
Hexane	R	R	R	R
Isobutyl Alcohol	R	R	R	R
Isopropyl Alcohol	R	R	-	R
Isopropyl Acetate	NR	R	NR	R
Methanol	R	R	R	R
Methyl Ethyl Ketone	LR	R	NR	NR
Methylene Chloride[2]	NR	R	NR	R
Nitric Acid (Conc)	NR	R	NR	NR
Nitric Acid, 6N	LR	R	LR	LR
Nitrobenzene[2]	NR	R	NR	R
Pentane	R	R	R	R
Perchloro Ethylene	R	R	NR	R
Pyridine	NR	R	NR	R
Phenol (0.5%)	LR	R	NR	R
Sodium Hydroxide, 6N	NR	NR	R	NR
Sulfuric Acid (Conc)	NR	R	NR	NR
Tetrahydrofuran	NR	R	NR	R
Toluene[2]	LR	R	NR	R
Trichloroethane[2]	NR	R	NR	R
Trichloroethylene[2]	-	R	NR	R
Water	R	R	R	R
Xylene[2]	R	R	NR	R

[1] Insufficient Data

[2] Short term resistance of housing

Legend: R = Resistant; LR = Limited Resistant; NR = Non Resistant.

Ordering information

For ordering information, visit *cytiva.com*.

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91814 AC V:8 12/2022