



Whatman™ Puradisc 13 mm Syringe Filters

Product Information Sheet 92327 AE

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.

Safety

For use and handling of the products in a safe way, either refer to the Safety section in these instructions or to the Safety Data Sheets where applicable.

Description

Puradisc 13 mm Syringe Filters are designed to provide clean filtrate from small volumes up to 10 mL. They are available in a variety of filter choices with a polypropylene housing utilizing the most advanced methods and design features available today. This level of engineering provides high quality disposable filtration devices.

The sterile, non-pyrogenic 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, insuring highly effective filtration when compared to hand assembled reusable filter housings.

This document provides general information on Puradisc 13 mm 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.

Filter Media

The following filter media choices are available for Puradisc 13 mm Syringe Filters

Cellulose Acetate (CA) Membrane

The Cellulose Acetate membrane utilized in these devices is described as "surfactant free". This minimizes the risk of filtrate contamination from aqueous based extractables associated with the membrane. Cellulose Acetate is a good membrane for biological solutions where high loading capacity and low protein binding are important concerns.

Glass Microfiber Filter (GMF)

The Glass Microfiber Filter media are produced entirely from the finest grade of 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.

Nylon (NYL) Membrane

Nylon membrane is hydrophilic and is a good choice for aqueous and/or aqueous-organic samples. The membrane offers good chemical resistance to most common HPLC solvents, however it has limited resistance to acids, bases, halogenated hydrocarbons, aldehydes and strong oxidising agents. The most common application is HPLC sample filtration.

Polypropylene (PP) Membrane

This specially selected Polypropylene membrane provides high flow with both solvent and aqueous compatibility. This medium provides a pure, single-material-construction filter device with a broad range of solvent/chemical resistance.

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.

Polytetrafluoroethylene (PTFE) Membrane

Polytetrafluoroethylene membrane is hydrophobic and will not allow water to pass without high pressures. Aqueous solutions may be filtered if the membrane is initially "wetted" with alcohol or another appropriate solvent. Polytetrafluoroethylene membrane will stop aqueous aerosols in gas streams.

Hydrophilic Polytetrafluoroethylene (H-PTFE) Membrane

Hydrophilic Polytetrafluoroethylene membrane can be used for both aqueous and aggressive organic solvents. This membrane is suitable for uHPLC / HPLC sample preparation as well as many other applications in a busy, high volume lab as its dual capability handles most solvents.

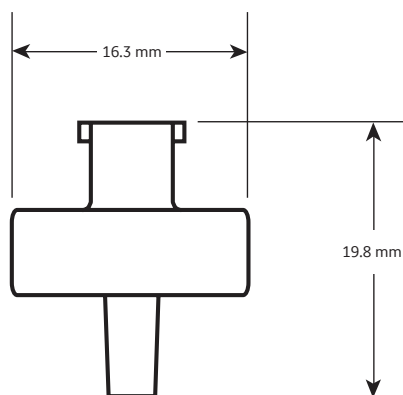
Polyvinylidene Difluoride (PVDF) Membrane

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.

Typical Applications: Puradisc 13 mm Syringe Filters

Filter Media	Typical Application
CA	Aqueous and some organic samples
GMF	Aqueous and/or organic; high loading capacity
NYL	Aqueous and/or organic samples; hydrophilic
PP	Aqueous and organic samples. Aqueous based samples; low protein binding
PES	Aqueous sample
PTFE	Organic based samples; hydrophobic membrane
H-PTFE	Solvents, chemicals, aqueous, and non-aqueous samples; hydrophilic membrane
PVDF	Aqueous and/or organic based samples; low protein binding membrane

Technical data: Puradisc 13 mm Syringe Filters



Connectors:	Inlet - Female Luer Lock (FLL) Outlet - Male Slip Luer (ML) Outlet - Male Tube Tip (MTT)
Dimensions:	45.2 mm x 16.3 mm with tube tip extension 19.8 mm x 16.3 mm without tube tip extension
Weight:	Approximately 0.95 grams
Filtration Area:	1.3 cm ²
Maximum Pressure:	5.2 bar (75 psi)
Housing:	Polypropylene
Hold-Up Volume:	Full housing 0.13 mL with air purge < 25 µL
Flow Direction:	Flow should enter from the inlet
Sterilization:	Autoclave at 121°C (131°C max) at 15 psi for 20 minutes
Biosafe:	All materials pass USP Class VI

Chemical Compatibility of Membrane and Housing

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

¹ Short term resistance of housing.

Legend: R = Resistant; LR = Limited Resistant; NR = Non Resistant. PTFE membrane may need pre-wetting with isopropanol/methanol if filtering a polar liquid.

The above data is to be used as a guide only. Testing prior to application is recommended.

Operating Instructions

Safety: When considering the special factors of your application, consult the Technical Data to determine correctness of 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 a general guide, the following pressures can be obtained by hand with the syringes indicated: 20 mL, 80 psi; 10 mL, 140 psi; 5 mL, 180 psi; 3 mL, 200 psi; 1 mL, 250 psi. Each user should determine the pressure they can generate by hand with a specific size syringe and take appropriate safety precautions not to exceed the recommended rating for the device used.



CAUTION

If these limitations are exceeded, bursting of the device may occur resulting in loss of sample or personal injury.

Efficiency: To maximise filtration throughput, use the largest pore size filter that will provide the required cleanliness. To extend filter life use low flow rates or pressures.

To use with a Syringe:

- 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 device is displaced with liquid.
- 5) Once liquid starts to exit the syringe filter from the outlet, stop applying pressure, point device downward and away from user.
- 6) Orientate syringe filter over suitable collection container or other apparatus and apply pressure again to filter sample.

Air Lock: Seriously hamper flow rates. To eliminate, point the outlet of the filter device upward during the initiation of liquid flow.

Bubble Point (BP) Test: Flush the filter device with 1.0 mL or more of the test fluid. 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. The pressure at which air passes through the wetted filter is the BP. Refer to table for typical BP values.

Mode d'Emploi

Sécurité: En considérant les facteurs spéciaux de votre application, consulter les Données Techniques afin de déterminer la précision de l'utilisation. Ne pas dépasser la pression, la température ou les recommandations de compatibilité chimique. De hautes pressions peuvent être obtenues en utilisant des seringues. Plus la seringue est petite, plus haute la pression pouvant être générée. En règle générale, les pressions suivantes peuvent être obtenues manuellement avec les seringues indiquées: 20 mL, 80 psi; 10 mL, 140 psi; 5 mL, 180 psi; 3 mL, 200 psi; 1 mL, 250 psi. Les utilisateurs devront déterminer la pression qu'ils peuvent générer manuellement avec une dimension de seringue déterminée et prendre les mesures de sécurité appropriées en vue de ne pas dépasser le débit nominal recommandé pour l'appareil à filtrer employé.



CAUTION

Si ces limites sont dépassées, le dispositif peut éclater et occasionner des dommages matériels ou lésions corporelles.

Efficacité: Pour maximiser le débit de la filtration, employer le filtre à la dimension de pore la plus grande, ce qui assurera la propreté requise. Pour prolonger la durée de vie utile du filtre, utiliser des vitesses de débit basses ou des pressions basses.

Pour utilisation avec une Seringue:

- 1) Remplir la seringue avec la solution à être filtrée.
- 2) Fixer la seringue remplie à l'orifice d'entrée FLL du filtre de la seringue dans un mouvement de torsion.
- 3) Avec l'orifice de sortie orienté vers le haut, appliquer graduellement la pression du pouce sur le piston de la seringue pour initier l'écoulement.
- 4) Maintenir la pression du pouce jusqu'à ce que tout l'air se trouvant dans l'appareil à filtrer se soit déplacé avec le liquide.
- 5) Une fois que le liquide commence à sortir de l'orifice de sortie du filtre de la seringue, arrêter l'application de la pression, orienter le dispositif vers le bas en l'éloignant de l'utilisateur.
- 6) Orienter le filtre de la seringue au-dessus d'un contenant de collection ou autre appareil approprié, et de nouveau, appliquer une pression à l'échantillon du filtre.

Bouchons d'air: Ils entravent sérieusement la vitesse d'écoulement. Pour les éliminer, orienter vers le haut l'orifice de sortie de l'appareil à filtrer quand l'écoulement du liquide est initié.

Test de point de bulle (BP): Rincer l'appareil à filtrer avec 1,0 mL ou plus du fluide de test. Une fois que le filtre est entièrement mouillé et avec l'orifice de sortie orienté vers le haut, appliquer de l'air sous pression contrôlée à l'orifice d'entrée jusqu'à ce que l'air passe au travers du filtre et que les bulles puissent être vues sortant de l'orifice de sortie. La pression à laquelle l'air passe à travers le filtre mouillé est le BP. Voir la table pour valeurs BP typiques.

Instrucciones de Uso

Seguridad: Al considerar los factores especiales de su aplicación, consulte los Datos Técnicos para determinar exactamente el modo de empleo correcto. No exceda las recomendaciones de presión, temperatura o compatibilidad química. Cuando se utilizan jeringas puedan obtenerse presiones altas. Mientras más pequeña sea la jeringa, mayor será la presión que puede generarse. Como guía general, las siguientes presiones pueden obtenerse manualmente con las jeringas indicadas: 20 mL, 80 psi; 10 mL, 140 psi; 5 mL, 180 psi; 3 mL, 200 psi; 1 mL, 250 psi. Cada usuario debe determinar la presión que puede generarse manualmente con una jeringa de tamaño específico tomando las precauciones de seguridad apropiadas para no exceder la capacidad nominal recomendada para el dispositivo utilizado.



CAUTION

Si se exceden estas limitaciones, podría ocurrir un estallido repentino del dispositivo, causando pérdidas de la muestra o lesiones corporales.

Effizienz: A fin de maximizar el rendimiento de filtración, utilice el filtro de poros de mayor tamaño que produzca el nivel de limpieza deseado. Para prolongar la vida del filtro emplee magnitudes bajas de flujo o presión.

Empleo con una jeringa:

- 1) Llene la jeringa con la solución a filtrarse.
- 2) Asegure la jeringa llena con un movimiento de giro a la entrada FLL del filtro de la jeringa.
- 3) Con la salida apuntando hacia arriba, aplique gradualmente presión sobre el émbolo de la jeringa con el pulgar para iniciar el flujo.
- 4) Continúe ejerciendo presión con el pulgar hasta que todo el aire en el dispositivo sea desplazado por el líquido.
- 5) Interrumpa la presión cuando el líquido comience a salir por la salida del filtro de la jeringa, apunte el dispositivo hacia abajo y alejado del usuario.
- 6) Oriente el filtro de jeringa sobre un recipiente de acopio adecuado o sobre algún otro dispositivo y aplique presión otra vez a la muestra de filtro.

Esclusas de aire: Dificultan gravemente el flujo. Para eliminarlas, apunte hacia arriba la salida del dispositivo de filtro al comenzar el flujo.

Prueba de punto de burbujeo (BP): Inunde el dispositivo de filtro con 1,0 mL o más del líquido de ensayo. Cuando el filtro se encuentre totalmente húmedo y con la salida apuntando hacia arriba, aplique aire a presión controlada a la entrada hasta que el aire pase por el filtro y se observen burbujas que salen por la salida del filtro. La presión a la que el aire pasa por el filtro húmedo es BP. Refiérase a la tabla para averiguar los valores de BP típicos.

Gebrauchsanleitung

Sicherheit: Bei Erwägung der Sonderfaktoren der jeweiligen Anwendung die technischen Angaben konsultieren, um die richtige Benutzung festzustellen. Die Empfehlungen über Druck, Temperatur oder chemische Kompatibilität nicht überschreiten. Hoher Druck entsteht bei der Benutzung von Spritzen. Je kleiner die Spritze, desto höher der erzeugte Druck. Im allgemeinen können folgende Drücke von Hand mit den angegebenen Spritzengrößen erzeugt werden: 20 mL, 80 psi; 10 mL, 140 psi; 5 mL, 180 psi; 3 mL, 200 psi; 1 mL, 250 psi. Jeder Benutzer sollte den Druck, der von Hand mit einer bestimmten Spritzengrößen erzeugt werden kann, feststellen und die geeigneten Sicherheitsvorkehrungen treffen, um die empfohlenen Richtlinien für das betreffende Gerät nicht zu überschreiten.



CAUTION

Falls diese Grenzen überschritten werden, kann das Gerät bersten und Sachschaden und Körperverletzungen verursachen.

Effizienz: Um den Filtierdurchfluß zu maximieren, den Filter mit den größten Poren verwenden, der die erforderliche Reinheit sicherstellt. Um die Nutzungsdauer der Filter zu verlängern, niedrige Durchflußgeschwindigkeit und geringen Druck einsetzen.

Benutzung mit Spritze:

- 1) Die Spritze mit der zu filtrierenden Lösung füllen.

- 2) Die gefüllte Spritze am FLL-Einfluß des Spritzenfilters andrehen.
- 3) Den Ausfluß nach oben halten und den Spritzenkolben mit dem Daumen langsam herunterdrücken, um den Fluß einzuleiten.

- 4) Den Kolben weiter herunterdrücken, bis die gesamte Luft im Gerät durch Flüssigkeit ersetzt ist.

- 5) Sobald die Flüssigkeit aus dem Ausfluß zu laufen beginnt, den Kolben nicht mehr drücken, das Gerät nach unten und vom Benutzer hinweg halten.

- 6) Den Spritzenfilter über einen geeigneten Sammelbehälter oder einen anderen Apparat halten und wieder Druck auf die Filtrierprobe ausüben.

Luftblasen: Luftblasen behindern die Flußrate stark. Um sie zu verhindern, den Ausfluß des Filtriergeräts während der Einleitung des Flüssigkeitsflusses nach oben halten.

Blasenpunkt (BP)-Test: Das Filtriergerät mit 1,0 mL oder mehr Testflüssigkeit spülen. Nachdem der Filter vollständig naß ist, den Ausfluß nach oben halten und Luft unter gesteuertem Druck in den Einlaß einbringen, bis die Luft den Filter durchbricht und am Ausfluß Blasen austreten. Der Druck, der durch den nassen Filter passiert, ist der BP. Typische BP-Werte sind der Tabelle zu entnehmen.

Integrity Test Data: Puradisc 13 mm Syringe Filters

Description	Pore Size (µm)	Minimum Bubble Point (psi)
CA	0.45	29
GF/A	1.6	N/A
GF/B	1.0	N/A
GF/C	1.2	N/A
GF/D	2.7	N/A
GF/F	0.7	N/A
GMF	0.45	N/A
934-AH	1.5	N/A
NYL	0.1	50
NYL	0.2	46
NYL	0.45	29
pp1	0.2	15
pp1	0.45	11
PES	0.2	36
PES	0.45	22
PTFE ¹	0.1	23
PTFE ¹	0.2	15
PTFE ¹	0.45	8.5
PTFE ¹	1.0	5
PTFE ¹	5.0	1
H-PTFE	0.2	49
H-PTFE	0.45	28
PVDF	0.2	33.5
PVDF	0.45	21
PVDF	1.0	14

¹ Bubble point determined with Methanol, all others determined with water.

Product table: Puradisc 13 mm Syringe Filters

Product Code	Membrane and Product Description	Pore Size (µm)	Quantity/Pack
6771-1304	CA	0.45	100
6763-1304	CA	0.45	2000
6786-1301	NYL, Sterile	0.1	50
6789-1301	NYL	0.1	100
6786-1302	NYL, Sterile	0.2	50
6789-1302	NYL	0.2	100
6790-1302	NYL	0.2	500
6768-1302	NYL	0.2	2000
6789-1304	NYL	0.45	100
6790-1304	NYL	0.45	500
6768-1304	NYL	0.45	2000
6788-1302	PP	0.2	100
6785-1302	PP	0.2	50
6788-1304	PP	0.45	100
6785-1304	PP	0.45	500
6780-1302	PES, Sterile	0.2	50
6782-1302	PES	0.2	100
6769-1302	PES	0.2	2000
6780-1304	PES, Sterile	0.45	50
6782-1304	PES	0.45	100
6781-1304	PES	0.45	500
6784-1301	PTFE	0.1	100
6775-1302	PTFE, with Tube Tip	0.2	50
6761-1302	PTFE, with Tube Tip	0.2	500
6784-1302	PTFE	0.2	100
6783-1302	PTFE	0.2	500
6766-1302	PTFE	0.2	2000
6775-1304	PTFE, with Tube Tip	0.45	50
6761-1304	PTFE, with Tube Tip	0.45	500
6784-1304	PTFE	0.45	100
6783-1304	PTFE	0.45	500
6766-1304	PTFE	0.45	2000
6784-1310	PTFE	1.0	100
6784-1350	PTFE	5.0	100
6772-1302	H-PTFE	0.2	100
6773-1302	H-PTFE	0.2	500
6774-1302	H-PTFE	0.2	2000
6772-1304	H-PTFE	0.45	100
6773-1304	H-PTFE	0.45	500
6774-1304	H-PTFE	0.45	2000
6791-1302	PVDF, Sterile	0.2	50
6778-1302	PVDF, with Tube Tip, Sterile	0.2	50
6777-1302	PVDF, with Tube Tip	0.2	50
6796-1304	PVDF, with Tube Tip	0.45	100
6760-1302	PVDF, with Tube Tip	0.2	500
6779-1302	PVDF	0.2	100
6792-1302	PVDF	0.2	500
6765-1302	PVDF	0.2	2000
6791-1304	PVDF, Sterile	0.45	50
6777-1304	PVDF, with Tube Tip, Sterile	0.45	50
6760-1304	PVDF, with Tube Tip	0.45	500
6779-1304	PVDF	0.45	100
6792-1304	PVDF	0.45	500
6765-1304	PVDF	0.45	2000
6778-1310	PVDF, with Tube Tip, Sterile	1.0	50
6839-1304	GMF	0.45*	100
6818-1304	GMF	0.45*	500
6820-1316	GF/A	1.6*	100
6806-1316	GF/A	1.6*	500

Product Code	Membrane and Product Description	Pore Size (µm)	Quantity/Pack
6921-1310	GF/B	1*	100
6822-1312	GF/C	1.2*	100
6823-1327	GF/D	2.7*	100
6825-1307	GF/F	0.7*	100
6828-1315	934-AH™	1.5*	100
6816-1315	934-AH	1.5*	2000

* Particle Retention Rating



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92327 AE V:4 12/2019