GE Healthcare
Life Sciences

Whatman™ *Steri*VENT (0.2µm PTFE)

Product Information sheet

Warning
For research use only.
Not recommended or intended for diagnosis of disease in humans or animals.
Do not use internally or externally in humans or animals.

The *Steri*VENT family of integral VENT filters provides a unique range of dedicated products for the venting of vessels. These products are constructed from a single standardized set of materials (polypropylene & PTFE).

Typical Applications for *Steri*VENT

VENTING of [1]

Filling Vessels
Mixing Vessels
Holding Vessels
Autoclave Vessels
Fermentation Vessels
Shipping Vessels
Dispensing Vessels

ISOLATION of [2]

Incubators
Autoclaves
Lyophilizers
EtO Sterilizers
Fermentors

[1] Sterile Venting
[2] Gases Pass, Liquids/Aerosols are Stopped

Especially Useful For

Biotech: Sterile vents & exhausts for growth environments.

Pharmaceutical & Diagnostics: Vents for liquid vessels.

Food & Beverage: Vents for holding, shipping and dispensing vessels.

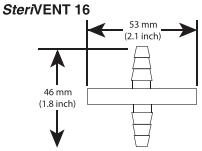
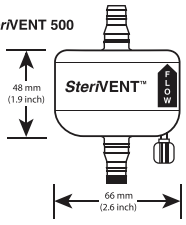
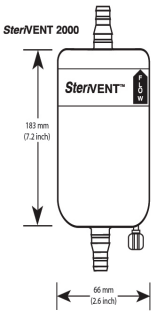
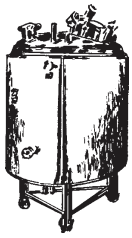
Bulk tanks may store food products, biological products, or deionized water. Vent filters on these tanks allow only sterile, microfiltered air to replace the liquid drawn off for use.

Positive pressure may develop in some vessels as liquids or gases are pumped into the vessel. Reaction gases must be safely vented off, without contaminating either the environment or the tank's contents.

A properly designed sterile vent allows pressure within a sealed vessel to equalize with external atmospheric pressure. In some applications, protection of the environment from contaminants in the vessel is the objective; in other applications, the objective is to protect the contents of the vessel from external contamination.

- Integral
- Bi-Directional
- Sterilizing Grade Filters
- Pure virgin polypropylene structure
- Hydrophobic PTFE membrane
- Autoclavable
- Passes the HIMA Challenge Test
- Broad family of devices specifically for venting
- Product identification and lot numbers are shown on each filter.

The *Steri*VENT family of VENT Filters Shown with Top Toward Atmosphere

Physical Size	Filter area	Connections	Typical Vessel Size
SteriVENT 16 	16 cm^2	Stepped Hose Barbs ¼ to ⅜ in. (6 mm to 10 mm)	≈ 5 Gal ≈ 19 L 
SteriVENT 500 	500 cm^2	Stepped Hose Barbs ⅜ to ½ in. (10 mm to 12 mm)	Bulk Tank Vessels 
SteriVENT 2000 	2000 cm^2	Stepped Hose Barbs ⅜ to ½ in. (10 mm to 12 mm) 1½ in. (38 mm) Sanitary Flange Fitting	Process Tanks 

Operating Instructions: Venting

Safety: Considering the special factors of your application, consult the table of Technical Data to determine the correctness of use. Key safety concern is to not exceed the pressure, temperature, or chemical compatibility recommendations.

PTFE membrane considerations: PTFE membrane is hydrophobic and will not allow water (aqueous solutions) to pass without high pressures. These pressures are called the Water Breakthrough Test (WBT) values and change with the pore size of the membrane.

Autoclaving: Autoclave, at 121°C (132°C Max.) for 20 minutes. Multiple autoclave cycles may be possible, however, reuse is the responsibility of the operator, who should protect the device from cross contamination and detect loss of integrity by appropriate testing. (EtO sterilization should be possible but no studies have been conducted. Radiation is destructive to PTFE.)

Filtration Installations:

Vents: The atmosphere **outlet** connector is indicated by the labeled side or the flow arrow. Attach the other connector to the vessel. If exhaust gas is saturated with moisture, install vent filter in a vertical position to allow collected moisture to drain back into vessel rather than fill (and block) vent filter housing.

Integrity Testing:

Water Breakthrough Pressure (WBT): The PTFE membrane is hydrophobic. This feature allows a simple yet practical test to be conducted with water to determine gross integrity of the filter device. This procedure is particularly helpful in testing "in situ" devices when used as vents. Use sterile water to fill **outlet side of filter.** Apply 5.0 psi (0.3 bar) controlled pressure for 15 seconds. An integral membrane should hold water. This test is not designed to be definitive for pore size. A WBT cannot be performed following use of alcohol.

Mode D'emploi: Aeration

Securite: En fonction des facteurs particuliers de votre application, consulter le table au des **Caractéristiques techniques** afin de déterminer si l'utilisation est correcte. En matière de sécurité, la règle

d'or est de ne pas exéder les recommandations relatives à la pression, à la température ou à la compatabilité chimique.

Membrane PTFE: La membrane PTFE est hydrophobe et elle ne permet pas le passage de l'eau (solutions aqueuses) sans hautes pressions. Ces pressions sont dénommées valeurs de Water Breakthrough Test (WBT: "test de percée de l'eau") et elles varient avec la taille du pore de la membrane.

Autoclavage: Autoclave: à 121°C (132°C Max.) pendant vingt minutes. Les cycles autoclaves multiples sont possibles, cependant, la responsabilité de l'utilisation incombe à l'opérateur qui devrait, en outre, protéger le dispositif contre la contamination croisée et détecter la perte d'etanchéité au moyen des tests appropriés. (La stérilisation à oxyde d'éthylène serait possible mais aucune étude n'a été menée dans ce domaine. La radiation détruit la membrane (PTFE.)

Installations de Filtration:

Events: Le raccord overt à l'air est marqué avec l'étiquette ou la flèche. Attacher l'autre raccord au recipient. Si le gaz d'échappement est saturé de moisissure, placer un filtre à évents verticalement afin de permettre à la moisissure recueillie de retourner dans le récipient plutôt que de remplir (et de bloquer) le corps de filtration.

Test d'Etancheite:

Water Breakthrough Pressure (WBT): La membrane PTFE est hydrophobe. Cette caractéristique permet d'effectuer un test simple mais pratique avec de l'eau afin de déterminer l'etanchéité glovale du dispositif de filtration. Cette pro-cédure est particuliérement utile pour tester les dispositifs "in situ" utilisés comme évents. Remplis **la sortie du dispositif** avec d'eau stérile. Appliquer une pression de 5.0 psi (0.3 bar) pendant 15 secondes. Une membrane intégrale devrait contenir d'eau. Ce test n'est pas concu pour être décisif pour la taille des pores. Un WBT ne peut être effectué aprés alcool.

Instrucciones de Utilizacion: Ventilación

Seguridad: Consulte el cuadro de Caracteristicas Técnicas para cerciorarse de que las condiciones particulares de su aplicación corresponden a los valores del dispositivo. Es esencial respetar las recomendaciones sobre presión, temperatura y compatibilidad química.

La Membrana PTFE: La membrana PTFE es hidrófoba y no deja pasar agua (soluciones acuosas) a no ser que se ejerza una presión elevada. La presión de paso de agua (WBT) depende del tamaño de los poros de la membrana.

Autoclavaggio: Autoclave; 121°C (132°C Max.) durante 20 minutos. Es posible esterilizar varias veces el filtro en autoclave. Ahora bien, el usuario asume los riesgos de la reutilización; debe proteger el dispositivo contra la contaminación cruzada y realizar las pruebas indicadas para cerciorarse de que el dispositivo está en perfecto estado. Esterilización Et0 puede ser posible pero no se han conducido ninguna clase de estudios. Radiación es destructiva para el PTFE

Instalacion del Filtro:

Ventilación: El conector de atmósfera **la parte de sálida** esta indicado en el lado de la etiqueta o la flecha de flujo. Adjunte el otro conector a la vasija. Si los gases de descarga están saturados de humedad, monte el filtro de ventilación en posición vertical para que la humedad recogida caiga al recipiente y evitar que se llene (y obstruya) el cuerpo del filtro.

Probar si esta en Perfecto Estado

Presión de paso de agua (WBT): La membrana PTFE es hidrófoba. Esta característica permite realizar con agua una prueba sencilla y muy apropiada para determinar si el filtro está en perfecto estado. Es interesante esta posibilidad especialmente para probar "in situ" sistemas que se utilizan para ventilación. Use agua esterilizada para llenar **la parte de salida del filtro**. Ejerza una presión controlada de 5.0 psi (0.3 bar) durante 15 segundos. Una membrana en buen estado debe retener el agua. No se trata de una prueba absoluta para el tamaño de los poros. No se puede realizar la prueba WBT después de la de alcohol.

Gebrauchsanleitung: Lüftung

Sicherheit: Unter Berücksichtigung der besonderen Gegebenheiten der jeweiligen Anwendung in der Tabelle im Abschnitt 'Technische Daten' nachsehen und anhand der dortigen Angaben überprüfen, ob die Filtereinheit richtig verwendet wird. Vor allem darauf achten, daß die angegebenen Werte für Druck, Temperatur oder chemische Verträglichkeit nicht überschritten werden.

PTFE-membran: Die PTFE-Membran ist hydrophob und laßt Wasser (Wässrige Lösung) nur bei Anwendung von hohen Drücken durch. Diese Drücke werden als Wasserdurchbruchtest (WBT)-Werte bezeichnet. Sie verändern sich mit der Porengröße der Membran.

Autoklavieren: Autoclav: 121°C (132°C Max.) für die Dauer von 20 Minuten. Mehrfachsterilisation ist möglich. Die Wiederverwendung erfolgt jeoch auf Verantwortung des Anwenders, der in diesem Fall den Filter vor Kreuzkontamination schützen und ihn auf Beeinträchtigung der Integrität durch geeignete Tests prüfen sollte. Et0 Sterilisation ist möglich, es sind aber noch keine Studien durchgeführt worden. PTFE wird durch Strahlung zerstört.

Filtrationsanlagen:

Belüftungsfilter: Der Anschluss; der nach aussen offen bleibt, ist mit dem Etikett oder dem Richtungspfeil gekennzeichnet. Der andere Anchluss wird an dem Behälter befestigt. Ist die Abluft mit Feuchtigkeit gesättigt, dann ist der Belüftungsfilter in vertikaler Position anzubringen, damit die angesammelte Feuchtigheit en den Behälter zurückfließen kann und nicht das Filtergehäuse anfüllt (und blockiert).

Überprüfung der Integrität

Wasser-Durchbruchdruck (Water Breakthrough Pressure, WBT): Die PTFE-Membran ist hydrophob. Diese Eigenschaft ermöglicht die Durchführung einer einfachen, aber praktischen Prüfung, bei der für die Feststellung der Gesamtintegrität der Filtereinheit Wasser verwendet wird. Dieses Verfahren eignet sich besonders gut für die Prüfung von Filtereinheiten "in situ", wenn sie als Belüftungsfilter verwendet werden. Den **Filterauslaß** mit sterilem Wasser füllen. Für die Dauer von 15 Sekunden einen Druck von 5.0 psi (0.3 bar) anwenden. Eine intakte Membran muß das Wasser halten. Die Prüfung hat keinen sicheren Aussagewer t in Bezug auf die Porengröße. Nach Alkoholbenutzung kann kein WBT Durchgeführt werden.

Technical Data: *Steri*VENT Filters for Sterile Venting

*The Steri*VENT family of VENT filter devices has been designed with a PTFE membrane and polypropylene housing.

Consistent filtration devices provide greater labour efficiency while ensuring consistent filtration performance when compared to assembled reusable filter housings.

Compact designs provide a highly effective filtration area in a small size.

Light weight is extremely important for vents. (Heavy filters can cause collapsed tubing, stopping the intake of air).

Manufactured in Clean Room.

Product Number	Name	PTFE Membrane	EFA[3] Cm²	Description Housing	Connections[2]	Qty/Pk
2103	*Steri*VENT 500	0.2 µm	500	Capsule 36 (Vented)	SB ⅜ to ½" (10 to 12 mm)	1
2107	*Steri*VENT 2000	0.2 µm	2000	Capsule 150 (Vented)	SB ⅜ to ½" (10 to 12 mm)	1
2108	*Steri*VENT 2000S	0.2 µm	2000	Capsule 150 (Vented)	1½" (38 mm) Sanitary	1

Maximum Pressure
Housing Burst: 60 psi
Operating: 29 psi (2 bar)

Materials of Construction
Housing & Supports: Polypropylene
Filter Media: PTFE 0.2 µm

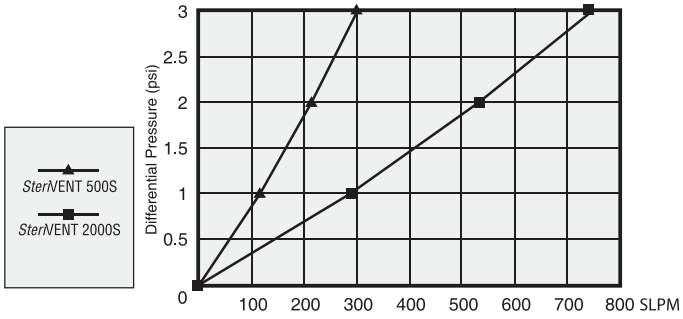
Flow Direction: Bi-directional. (Atmosphere connection is indicated by the label or the flow arrow.)

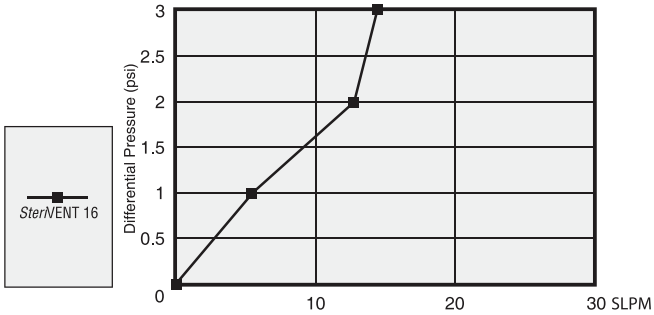
Connections: See specific product

Autoclaving: Autoclave at 121°C (132°C Max) for 20 minutes. Multiple autoclave cycles are possible, however reuse is the responsibility of the operator, who should protect the device from cross contamination and detect loss of integrity by appropriate testing.

Integrity Testable: WBT, Water Breakthrough - Test from **Outlet side only** - See instructions.

*Steri*VENT, Typical Flow Rates in Air[1]





[1] Typical Values
[2] SB = Stepped Hose Barb. The tubing ID is specified for each SB
[3] EFA = Effective Filtration Area.

*Steri*VENT Filters' Retention and Hydrophobicity

Retention of aqueous solutions by hydrophobic microporous membranes is a function of their WBT value, rather than the pore size.[4] Liquid water presented to the surface of a hydrophobic membrane at a pressure lower than the WBT pressure will be blocked by the membrane. Water in its vapor form may pass through a hydrophobic membrane as single molecules, which may condense again to form a liquid on the downstream side. However, it has been reported that no viable organisms have been found on the downstream side of hydrophobic membranes presented with a biological challenge at pressures below the WBT pressure.[1, 2, 3 and 4]

Particle retention of membrane filters in air streams is more efficient than in liquid streams by a factor of 10 or more.[2, 6] Retention of particles in liquids is principally by mechanical entrapment while retention in air is by interception, inertial impaction, diffusion, gravitational setting, and electrostatic attraction.[5]

HIMA Challenge Test

*Steri*VENT products pass the HIMA Challenge Test for sterilizing-grade filters. They retain >10^7 CFU/cm² *Brevundimonas diminuta* per ASTM F838-83. The microbial retention of *Steri*VENT capsules is correlated to 100% integrity testing during manufacturing.

Legal.

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