



Viresolve[®] Barrier Micro Filter

User Guide

Notice

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Introduction

Viresolve® Barrier Micro Filters are typically used for process optimization and filtration of small batch volumes of chemically defined cell culture media. This manual applies to the following filters:

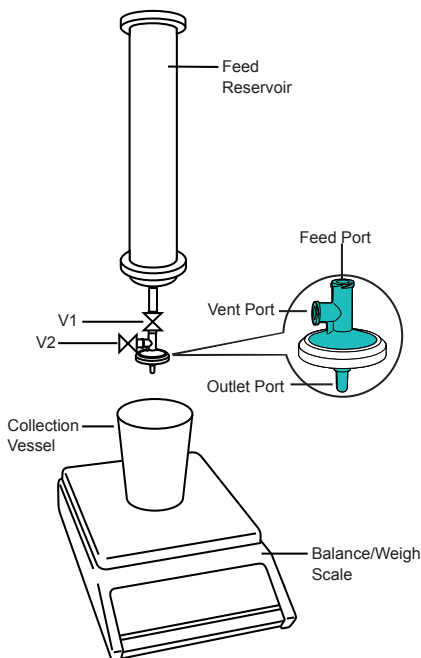
Viresolve® Barrier Micro Filter Process Development Kit	
Catalog No.	VBMSPDKNB9
Color	Solid Teal with White Overmold 
Primary Intended Use	Process Development Optimization, scale-up, etc.

Installing the Filter

Viresolve® Barrier Micro filters are provided gamma irradiated.

Testing should be conducted with a user supplied pump at a constant flow rate or a constant pressure. A low volume, constant pressure holder (Catalog number VIRUSVMAX or equivalent) is recommended for constant pressure testing of Viresolve® Barrier Micro Filters. This user guide provides instructions for conducting testing at a constant pressure. Contact Technical Service for instructions on testing at a constant flow rate.

1. Remove caps from all filters. Attach a two-way luer valve to both the feed port (V1) and vent port (V2) of the filter. Connect the feed vessel to the luer valve on the feed port. Close both luer valves.
2. Position a filtrate collection vessel and a weighing balance (to record filtrate mass) beneath the filter. Fill the feed vessel with at least 125 mL of Milli-Q® water, water for injection (WFI) or equivalent.
3. Record the temperature of the fluid.
4. Purge the system by following the filter purging sequence.



Purging the Filter

Purging is recommended to remove air from the filter before use.

1. Open V2. Open V1 until fluid begins to drain from V2 (approximately five seconds).
2. Close V2. Close V1.

Flushing and Wetting

Milli-Q® water, WFI or equivalent is required to wet and flush the filters.

1. After purging the filter, attach an air supply to the feed reservoir. Avoid introducing air into the water, as this may hinder wetting and flushing of the filter.
2. Pressurize the system to 2.07 bar (30 psi).
3. Record the tare of the collection vessel.
4. Open V1 and start recording the elapsed time and the weight of the filtrate collected. Record the weight every minute, for at least ten minutes, until a stable flow rate is observed for three consecutive minutes. Close V1 to stop the flow. Record fluid temperature. Calculate the temperature corrected flow rate ($Q_{25^{\circ}\text{C}}$) for water (see **Flow Rate Calculation**).
5. Slowly depressurize the system and remove the air supply. NOTE: Rapid depressurization after flushing/wetting may damage the filter.
6. Empty the feed vessel. Open V1 to ensure all liquid is drained from the filter. Close V1.

Flow Rate Calculation

Flow Rate at 25 °C and 2.07 bar (30 psi): ≥ 3.2 mL/min.

Calculate the temperature-corrected flow rate ($Q_{25^{\circ}\text{C}}$) using this equation: $Q_{25^{\circ}\text{C}} = Q_p * F$

Where:

Q_p is the filtrate flow rate in mL/ min. (may assume a density of 1 g/cc for water to convert weight to volume)

F is the Temperature Correction Factor from Table 1.

Table 1. Temperature Correction Factor (F)*

T (°F)	T (°C)	F	T (°F)	T (°C)	F
104.0	40	0.734	71.6	22	1.072
102.2	39	0.748	69.8	21	1.098
100.4	38	0.762	68.0	20	1.125
98.6	37	0.777	66.2	19	1.152
96.8	36	0.793	64.4	18	1.181
95.0	35	0.808	62.6	17	1.212
93.2	34	0.825	60.8	16	1.243
91.4	33	0.842	59.0	15	1.276
89.6	32	0.859	57.2	14	1.310
87.8	31	0.877	55.4	13	1.346
86.0	30	0.896	53.6	12	1.383
84.2	29	0.915	51.8	11	1.422
82.4	28	0.935	50.0	10	1.463
80.6	27	0.956	48.2	9	1.506
78.8	26	0.978	46.4	8	1.551
77.0	25	1.000	44.6	7	1.598
75.2	24	1.023	42.8	6	1.648
73.4	23	1.047	41.0	5	1.699

***Based on Water Fluidity Relative to 25 °C (77 °F)**

Fluidity Value $F = (\mu_{T^{\circ}\text{C}} / \mu_{25^{\circ}\text{C}})$ or $(\mu_{T^{\circ}\text{F}} / \mu_{77^{\circ}\text{F}})$

If the filter does not meet the specification listed above, check the water temperature and pressure and repeat the $Q_{25^{\circ}\text{C}}$ measurement. If

the value falls outside the recommended range stated above, replace the filter and start over.

Note If the filter does not meet specification, store in a beaker of 2 to 8 °C water and notify your local representative.

Filtering Cell Culture Media

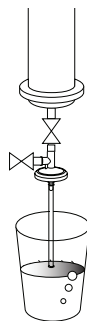
1. Add the desired volume of media to the feed vessel. Record the media temperature. Follow the purge procedure. Attach the air supply and pressurize the feed vessel to 2.07 bar (30 psi). Avoid introducing air into the media, as this may hinder filter performance.
2. Place a clean, empty collection vessel beneath the micro filter outlet port on the weigh scale. Record the tare of the collection vessel.
3. Open V1 and start recording the mass of the filtrate collected at desired time intervals. Stop the process (close V1) when the target conditions (e.g. volume, flux) have been reached.
4. Slowly depressurize the feed vessel and remove the air supply.
NOTE: Rapid depressurization after filtration may damage the filter.

Integrity Testing (optional)

Note The filter must be fully wetted with water or buffer before performing this test.

The filter filtration area is approximately 3.3 cm². The diffusional flow rate is too low to measure accurately, therefore a gross pass/fail integrity test is recommended.

1. Place a beaker of water beneath the outlet port of the filter. Attach one end of the filtrate tubing to the outlet port and immerse the other end in the beaker of water.
2. Attach the air supply to the feed vessel. Open the inlet air valve and pressurize the system to 0.3 bar (5 psi). Open V1 and V2 to drain any liquid. Close V2. Increase pressure to 3.5 bar (50 psi).
3. After five minutes have elapsed, watch for bubbles exiting the immersed filtrate tubing. After observing for one minute, no bubbles should be visible exiting an integral filter.
4. Slowly release the pressure in the feed vessel and close V1. NOTE: Rapid depressurization after integrity testing may damage the filter.
5. Disconnect the filter. If the filter is integral, discard it. If the filter is not integral, store it in a beaker of 2 to 8° C water and notify your local representative.



Integrity Test

Standard Warranty

The applicable warranty for the products listed in this publication may be found at www.millipore.com/terms (within the “Terms and Conditions of Sale” applicable to your purchase transaction).

Technical Assistance

For more information, contact the office nearest you or visit the Technical Service page at www.emdmillipore.com/techservice. Worldwide contact information is available at www.emdmillipore.com/offices.