PTM/HT Filters
High Temperature PTFE Membrane

PTM/HT cartridge filters are made with Polytetrafluoroethylene (PTFE) membrane and high temperature polypropylene for cartridge hardware and membrane support. The filters are validated for sterilizing in elevated temperature gas and non-aqueous liquid applications (up to 221°F). Pore sizes range from 0.10 to 1.0 µm.

The hydrophobic PTM/HT filters resist wetting by airborne water droplets, making them ideal for air and gas applications. The broad chemical compatibility of the PTM filters makes them well suited for aggressive solvents and other non-aqueous liquids. Each cartridge module is individually tested using the water intrusion method before it is released from manufacture.

Critical Process provides unrivaled delivery times, technical consulting before purchasing, and very competitively priced high-performance products. Our comprehensive testing & analysis and validation services support your team whenever they need it. Your process experts partnering with our filtration experts is how we deliver your company’s solution right the first time.

PTM/HT sterilizing filters are recommended for:
- Compressed Air
- Pressurized Gases
- Fermentation Air
- Solvents

Sterilizing Filters
Tank Vent & Process Gas

CARTRIDGES – Nominal Dimensions
Length: 5 to 40 in. (12.7 to 101.6 cm)
Outside Diameter: 2.75 in. (7.0 cm)
Maximum Operating Parameters

<table>
<thead>
<tr>
<th>CARTRIDGES</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature (air/gas)</td>
<td>221 °F (105 °C)</td>
</tr>
<tr>
<td>Forward Differential Pressure</td>
<td>80 psid at 68 °F (5.52 bard at 20 °C) (Liquid and Gas)</td>
</tr>
<tr>
<td>Reverse Differential Pressure</td>
<td>50 psid at 68 °F (3.45 bard at 20 °C)</td>
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</tbody>
</table>

Sanitization & Sterilization

<p>| | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Filtered Hot Water*</td>
<td>90 °C (194 °F), 30 minutes, multiple cycles, max 3 psid forward flow</td>
</tr>
<tr>
<td>Inline Steam*</td>
<td>275 °F (135 °C), 30 min, 25+ cycles</td>
</tr>
<tr>
<td>Autoclave*</td>
<td>250 °F (121 °C), 30 min, 25+ cycles</td>
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</tbody>
</table>

Chemical Sanitization

Performed using industry standard concentrations of hydrogen peroxide, peracetic acid, sodium hypochlorite and other selected chemicals.

*For all elevated temperature procedures above, a stainless-steel support ring is required.

Filtration Area (Nominal)

<table>
<thead>
<tr>
<th>CARTRIDGES</th>
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<tbody>
<tr>
<td>Length</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5”</td>
</tr>
<tr>
<td></td>
<td>12.7cm</td>
</tr>
<tr>
<td>Area</td>
<td></td>
</tr>
<tr>
<td>3.8 ft²</td>
<td>0.10 µm ≤ 4.3</td>
</tr>
<tr>
<td>0.36m²</td>
<td>0.22 µm ≤ 5.6</td>
</tr>
<tr>
<td>0.45 N/A</td>
<td>0.45</td>
</tr>
<tr>
<td>1.0 N/A</td>
<td>0.41</td>
</tr>
</tbody>
</table>

Integrity Testing

<table>
<thead>
<tr>
<th>WATER INTRUSION SPECIFICATIONS (mL/10 min)</th>
<th>Length</th>
<th>5”</th>
<th>10”</th>
<th>20”</th>
<th>30”</th>
<th>40”</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.10 µm</td>
<td></td>
<td>≤ 4.3</td>
<td>≤ 10</td>
<td>≤ 20</td>
<td>≤ 30</td>
<td>≤ 40</td>
</tr>
<tr>
<td>0.22 µm</td>
<td></td>
<td>≤ 5.6</td>
<td>≤ 13</td>
<td>≤ 26</td>
<td>≤ 39</td>
<td>≤ 52</td>
</tr>
</tbody>
</table>

* Bubble Point for membrane wetted with 60% IPA / 40% water solution.
**Validation**

PTM/HT filters are validated using test procedures that comply with ASTM F 838-15(ae1) protocols for the determination of bacterial retention in filters used for liquid filtration. The challenge level is a minimum of $10^7$ organisms per cm$^2$ of filter media. CPF filters have $> 7$-log removal when challenged with the organisms listed below (0.10μm and 0.22μm meet the FDA definition of sterilizing grade filters).

- 0.10μm: *Brevundimonas diminuta*
- 0.22μm: *Brevundimonas diminuta*
- 0.45μm: *Serratia marcescens*

Validation Guides available upon request.

**Endotoxins**

The levels of bacterial endotoxins in aqueous extracts from PTM/HT filters are below current USP limits as specified for water for injection.

**Extractables**

PTM/HT filters typically exhibit low levels of non-volatile residues.

**Toxicity Compliance**

Materials used to construct the PTM/HT filters are non-toxic and meet the requirements for the MEM Elution Cytotoxicity Test and the requirements for Biological Reactivity Tests in the current version of the United States Pharmacopeia (USP) for Class VI - 121 °C Plastics.

**Non-Fiber Releasing**

PTM/HT filters comply with Title 21 CFR sections 210.3(b)(6) and 211.72, for non-fiber releasing filters.

**FDA Compliance**

Materials meet the requirements listed by the FDA as appropriate for use in articles intended for repeated food contact as specified in Title 21 CFR sections 174.5, 177.1500, 177.1520, 177.1630, 177.2440, and 177.2600 as applicable.
Water Flow Rates for PTM/HT Cartridges by Pore Size

Air/Gas Flow Rates for PTM/HT Cartridges by Pore Size

Flow rates for Cartridge filters are per 10-inch length. The test fluid is water or air at ambient temperature.
PTM/HT Filters Ordering Information

All Critical Process filters are configurable to meet customer specifications. Fill in the corresponding codes in the boxes below to build your Part Number.

To consult with one of our technical team members, request a quote or place an order: call (603) 880-4420 Ext. 106, or send an email to sales@criticalprocess.com

Cartridge Filters

- **Pore Size Code**
  - -10 = 0.10 μm
  - -20 = 0.22 μm
  - -40 = 0.45 μm
  - 1-0 = 1.0 μm

- **SS Ring**
  - S = Ring

- **Length**
  - 05 = 5 in. (12.7 cm)
  - 01 = 10 in. (25.4 cm)
  - 02 = 20 in. (50.8 cm)
  - 03 = 30 in. (76.2 cm)
  - 04 = 40 in. (101.6 cm)

- **O-Ring/Gasket Code**
  - S = Silicone
  - B = Buna
  - V = Viton (or FKM)
  - T = FEP Encapsulated Viton (or FKM)
  - E = EPDM
  - R = FEP Encapsulated Silicone

- **End Cap Code**
  - 0 = Flat Gasket, DOE
  - 2 = 2-222 O-ring/Plug
  - 5 = 2-222 O-ring/Flat
  - 6 = 2-226 O-ring/Flat
  - 8 = 2-226 O-ring/Spear
  - 9 = 2-226 O-ring/Spear

Housings

CPF offers Model CSH sanitary housings in Single-Round (Inline and T-Style) and Multi-Round (3, 6, 8, 12 and 21-round) configurations.