PTM Mini-Capsule filters consist of a Polytetrafluoroethylene (PTFE) membrane and is validated for sterilizing the most stringent gas filtration applications and non-aqueous liquids. Pore sizes range from 0.10 to 5.0 µm. Additional filter devices scale from laboratory to full production using identical materials to ensure consistent results.

The hydrophobic PTM Mini-Capsule filters resist wetting by airborne water droplets, making them ideal for air and gas applications. The broad chemical compatibility of these PTFE-based 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 Mini-Capsule filters are recommended for:
- Compressed Air
- Pressurized Gases
- Fermentation Air
- Solvents

**Sterilizing Filters**

**Tank Vent & Process Gas**

**MINI-CAPSULES – Nominal Dimensions**
- Body Length: 2.85 in. (7.2 cm)
- Overall Length – 3.75 to 5.19 in. (9.5 to 13.2 cm)
- Outside Diameter: 2.95 in. (7.5 cm)
Maximum Operating Parameters

<table>
<thead>
<tr>
<th>MINI-CAPSULES</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Liquid Operational Pressure</strong></td>
<td>80 psi at 68 °F (5.52 bar at 20 °C)</td>
</tr>
<tr>
<td><strong>Gases Operational Pressure</strong></td>
<td>60 psi at 68 °F (4.14 bar at 20 °C)</td>
</tr>
<tr>
<td><strong>Operating Temperature (water)</strong></td>
<td>110 °F at 30 psid (43 °C at 2.07 bar)</td>
</tr>
<tr>
<td><strong>Forward Differential Pressure</strong></td>
<td>50 psid at 68 °F (3.45 bar at 20 °C)</td>
</tr>
<tr>
<td><strong>Reverse Differential Pressure</strong></td>
<td>40 psid at 68 °F (2.76 bar at 20 °C)</td>
</tr>
<tr>
<td><strong>Recommended Changeout Pressure</strong></td>
<td>35 psid (2.41 bar)</td>
</tr>
</tbody>
</table>

Sanitization & Sterilization

<table>
<thead>
<tr>
<th>Autoclave</th>
<th>250 °F (121 °C), 30 min, 5+ cycles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical Sanitization</td>
<td>Performed using industry standard concentrations of hydrogen peroxide, peracetic acid, sodium hypochlorite and other selected chemicals.</td>
</tr>
</tbody>
</table>

Integrity Testing

<table>
<thead>
<tr>
<th>PORE SIZE</th>
<th>BUBBLE POINT MINIMUM*</th>
</tr>
</thead>
<tbody>
<tr>
<td>µm</td>
<td>PSIG</td>
</tr>
<tr>
<td>0.10</td>
<td>22</td>
</tr>
<tr>
<td>0.22</td>
<td>18</td>
</tr>
<tr>
<td>0.45</td>
<td>9</td>
</tr>
<tr>
<td>1.0</td>
<td>6</td>
</tr>
<tr>
<td>3.0</td>
<td>2</td>
</tr>
<tr>
<td>5.0</td>
<td>1</td>
</tr>
</tbody>
</table>

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

Filtration Area (Nominal)

<table>
<thead>
<tr>
<th>Area</th>
<th>0.43 ft²</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>400 cm²</td>
</tr>
</tbody>
</table>

Construction Materials

<table>
<thead>
<tr>
<th>Filtration Media</th>
<th>PTFE Membrane</th>
</tr>
</thead>
<tbody>
<tr>
<td>Media Support</td>
<td>Polypropylene</td>
</tr>
<tr>
<td>End Caps, Center Core, Outer Support Cage, Mini-Capsule Housing</td>
<td>Polypropylene</td>
</tr>
<tr>
<td>Sealing Method</td>
<td>Thermal Bonding</td>
</tr>
</tbody>
</table>
Validation
PTM Mini-Capsule 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 Mini-Capsule filters are below current USP limits as specified for water for injection.

Extractables
PTM Mini-Capsule filters typically exhibit low levels of non-volatile residues.

Toxicity Compliance
Materials used to construct the PTM Mini-Capsule 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 Mini-Capsule 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.
Flow rates for Mini-Capsule filters are per filter. The test fluid is water at ambient temperature. Flows are tested using a mini-capsule filter with ½" Sanitary inlet and outlet ports. Rates will vary based on end configuration of the mini-capsule.

**Water**

**Flow Rates for PTM Mini-Capsules by Pore Size**

Flow rates for Mini-Capsule filters are per filter. The test fluid is water at ambient temperature. Flows are tested using a mini-capsule filter with ½" Sanitary inlet and outlet ports. Rates will vary based on end configuration of the mini-capsule.

**Air**

Flow rates for Mini-Capsule filters are per filter. The test fluid is compressed air at ambient temperature. Flows are tested using a mini-capsule filter with ½" Sanitary inlet and outlet ports. Rates will vary based on end configuration of the mini-capsule.
PTM Mini-Capsule 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

**Mini-Capsule Filters**

- **Pore Size Code**
  - -10 = 0.10 μm
  - -20 = 0.22 μm
  - -40 = 0.45 μm
  - 1-0 = 1.0 μm
  - 3-0 = 3.0 μm
  - 5-0 = 5.0 μm

- **Inlet**
  - 1 = 1/8” Hose Barb
  - 2 = 1/4” Hose Barb
  - 3 = 1/2” Hose Barb
  - 4 = Luer Lock
  - 5 = 1/2” Sanitary*
  - 6 = 1/4” MNPT

- **Inlet Vent Port**
  - 1 = 1/8” Hose Barb
  - 2 = 1/4” Hose Barb
  - 3 = 1/2” Hose Barb
  - 4 = Luer Lock
  - 6 = 1/4” MNPT

- **Outlet**
  - 1 = 1/8” Hose Barb
  - 2 = 1/4” Hose Barb
  - 3 = 1/2” Hose Barb
  - 3B = 1/2” Hose Barb with Filling Bell
  - 4 = Luer Lock
  - 5 = 1/2” Sanitary*
  - 6 = 1/4” MNPT

- **Outlet Vent Port**
  - 1 = 1/8” Hose Barb
  - 2 = 1/4” Hose Barb
  - 3 = 1/2” Hose Barb
  - 4 = Luer Lock
  - 6 = 1/4” MNPT

*When choosing the Sanitary Inlet/Outlet, the Luer Lock option is required for the Vent Port.