

BTM Filters

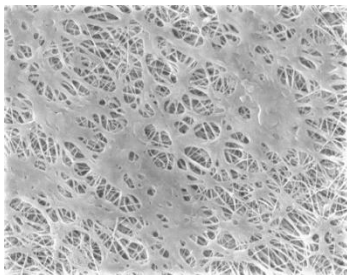
PTFE Membrane



BTM cartridge and capsule filters are constructed with a Polytetrafluoroethylene (PTFE) membrane and are used for bioburden control in non-aqueous liquids, process gases and tank vent filtration. Pore sizes range from 0.10 to 5.0 μm and filter sizes scale from laboratory to full production using identical materials to ensure consistent results.

These single layer, hydrophobic filters are optimized for flow and throughput, and resist wetting by airborne water droplets, making them ideal for air and gas applications. BTM bioburden control filters protect processes and extend the life of sterilizing filters. 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.



BTM bioburden control filters are recommended for:

- Compressed Air
- Pressurized Gases
- Fermentation Air
- Solvents
- Tank Vents

Bioburden Control

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)



CAPSULES – Nominal Dimensions

Length: 2 to 30 in. (5.1 to 76.2 cm)

Outside Diameter: 3.50 in. (8.9 cm)

Maximum Operating Parameters

| | CARTRIDGES | CAPSULES |
|---------------------------------------|---|---|
| Liquid Operational Pressure | N/A | 80 psi at 68 °F (5.52 bard at 20 °C) |
| Gases Operational Pressure | N/A | 60 psi at 68 °F (4.14 bar at 20 °C) |
| Operating Temperature (water) | 180 °F at 30 psid (82 °C at 2.07 bard) | 110 °F at 30 psid (43 °C at 2.07 bard) |
| Forward Differential Pressure | 80 psid at 68 °F (5.52 bard at 20 °C) (Liquid and Gas) | Liquid - 80 psid at 68 °F (5.52 bard at 20 °C) Gas - 60 psi at 68 °F (4.14 bar at 20 °C) |
| Reverse Differential Pressure | 50 psid at 68 °F (3.45 bard at 20 °C) | 50 psid at 68 °F (3.45 bard at 20 °C) |
| Recommended Changeout Pressure | 35 psid (2.41 bard) | 35 psid (2.41 bard) |

Sanitization & Sterilization

| | | |
|------------------------------|--|------------------------------------|
| Filtered Hot Water* | 90 °C (194 °F), 30 minutes, multiple cycles, max 3 psid forward flow | N/A |
| Inline Steam* | 275 °F (135 °C), 30 min, 25+ cycles | N/A |
| Autoclave* | 250 °F (121 °C), 30 min, 25+ cycles | 250 °F (121 °C), 30 min, 5+ cycles |
| Chemical Sanitization | Performed using industry standard concentrations of hydrogen peroxide, peracetic acid, sodium hypochlorite and other selected chemicals. | |

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

Filtration Area (Nominal)

| | CAPSULES | CARTRIDGES AND CAPSULES | | | | CARTRIDGES |
|--------|---------------------|-------------------------|---------------------|----------------------|----------------------|----------------------|
| Length | 2" | 5" | 10" | 20" | 30" | 40" |
| | 5.08cm | 12.7cm | 25.4cm | 50.8cm | 76.2cm | 101.6cm |
| Area | 1.2 ft ² | 3.3 ft ² | 7.0 ft ² | 14.0 ft ² | 21.0 ft ² | 28.0 ft ² |
| | 0.11m ² | 0.31m ² | 0.65m ² | 1.30m ² | 1.95m ² | 2.60m ² |

Integrity Testing

| PORE SIZE | BUBBLE POINT MINIMUM* | |
|-----------|-----------------------|------|
| | PSIG | BARG |
| μm | | |
| 0.10 | 21 | 1.45 |
| 0.22 | 15 | 1.03 |
| 0.45 | 9 | 0.62 |
| 1.0 | 6 | 0.41 |
| 3.0 | 2 | 0.14 |
| 5.0 | 1 | 0.07 |

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

Construction Materials

| | |
|---|---|
| Filtration Media | Polytetrafluoroethylene (PTFE) Membrane |
| Media Support | Polypropylene |
| End Caps, Center Core, Outer Support Cage, Capsule Housing | Polypropylene |
| Sealing Method | Thermal Bonding |
| O-Rings/Gaskets Cartridges only | Buna, Viton® (or FKM), EPDM, Silicone, FEP Encapsulated Silicone, FEP Encapsulated Viton (or FKM) |

High Temperature cartridge configuration is available.

Validation

BTM 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 filters are challenged with the organisms listed below.

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 BTM filters are below current USP limits as specified for water for injection.

Extractables

BTM filters typically exhibit low levels of non-volatile residues.

Toxicity Compliance

The materials used to construct BTM 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.

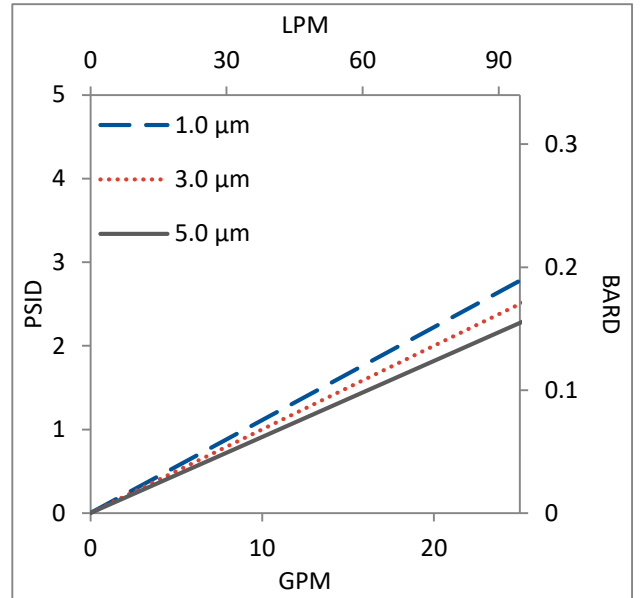
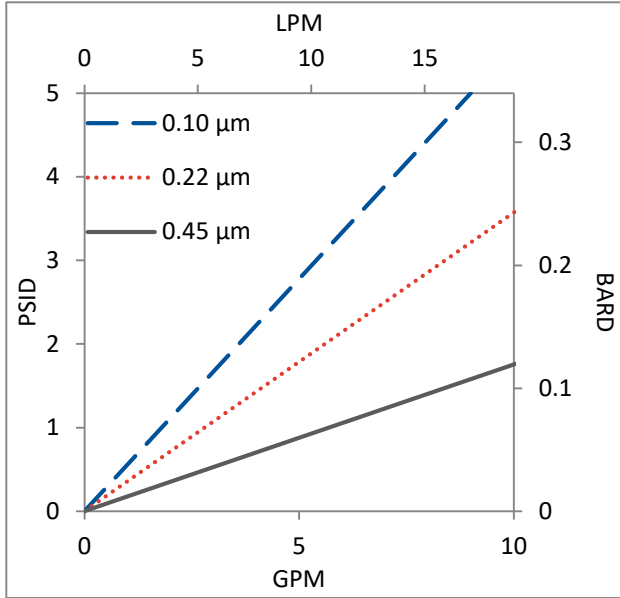
Non-Fiber Releasing

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

FDA Compliance

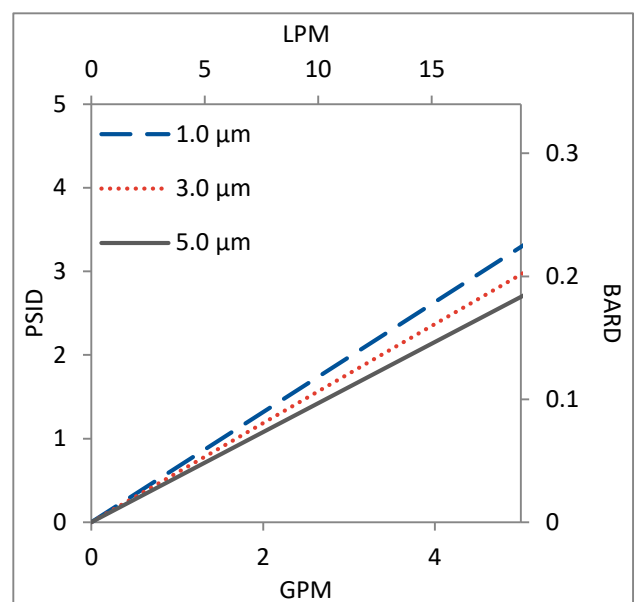
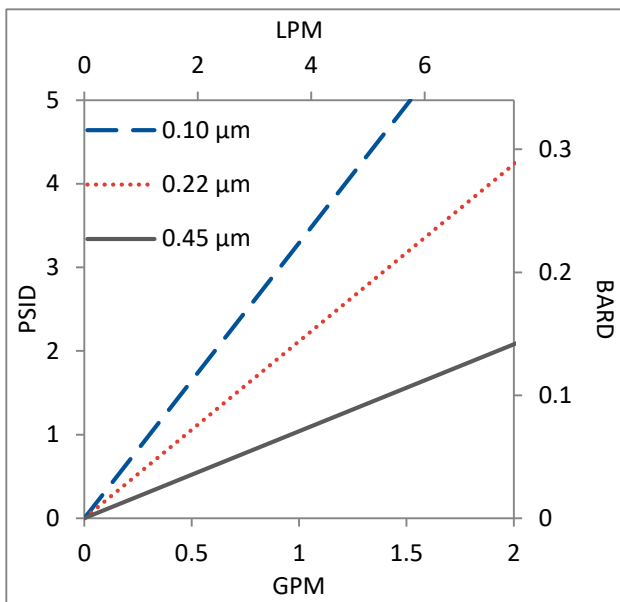
Materials meet the requirements listed by the FDA as appropriate for use in articles intended for repeated food contact as specified in Title 21 CFR sections 174.5, 177.1500, 177.1520, 177.1630, 177.2440, and 177.2600 as applicable.

Flow Rates for BTM Cartridges by Pore Size



Flow rates for Cartridge filters are per 10-inch length. The test fluid is water or compressed air at ambient temperature.

Flow Rates for BTM Capsules by Pore Size



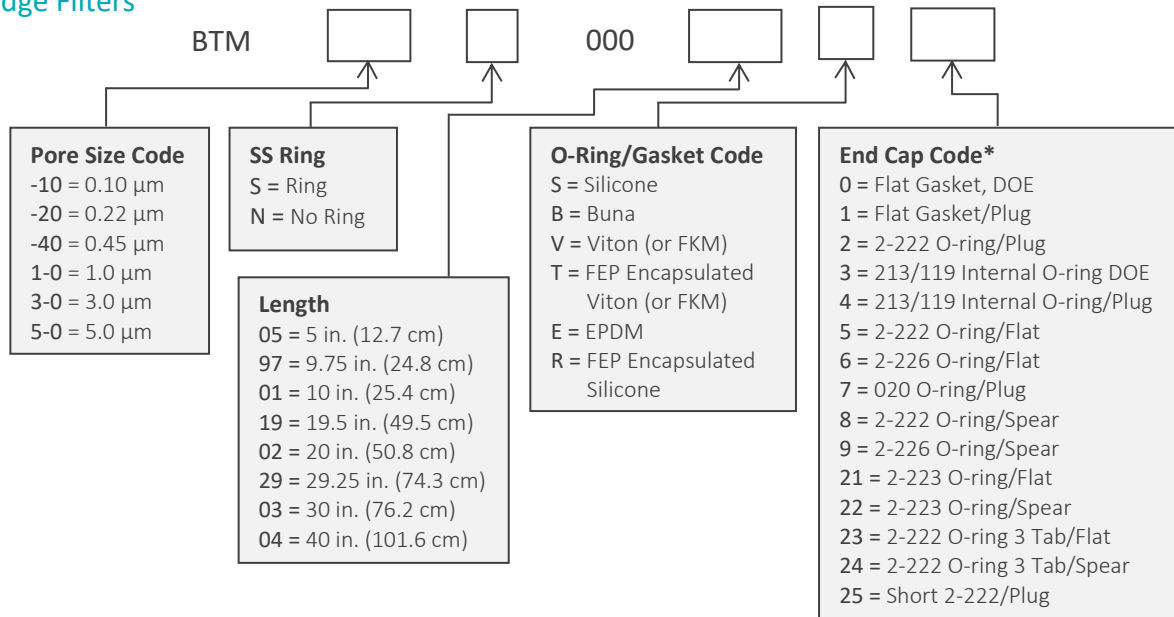
Flow rates for Capsule filters are per square foot of membrane area. The test fluid is water or compressed air at ambient temperature. Flows are tested using a 2" capsule filter with ½" FNPT inlet and outlet ports. Rates will vary based on end configuration of the capsule.

BTM 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.

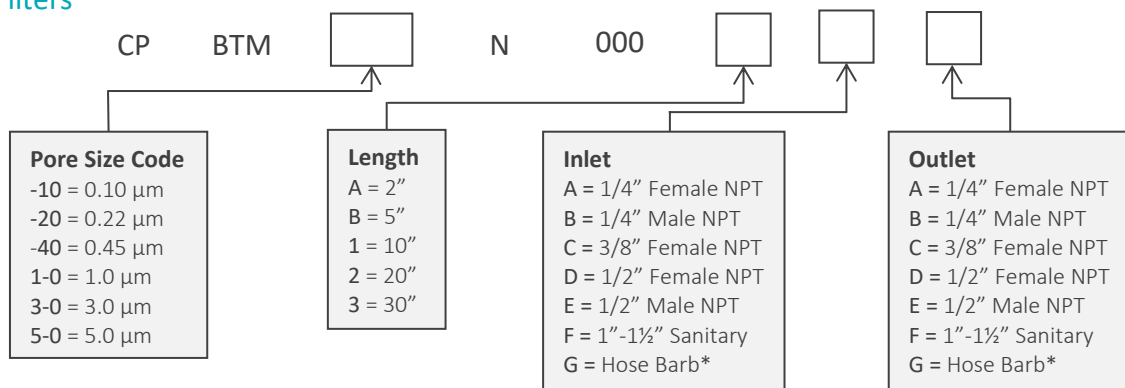
To consult with one of our technical team members, request a quote or place an order:
call (603) 880-4420 Ext. 106, or send an email to sales@criticalprocess.com

Cartridge Filters



*Additional end configurations available

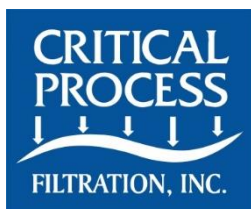
Capsule Filters



*Fits hoses/tubes with inner diameter 11/32 to 9/16 inches

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.



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Data Sheet BTMDS Rev-