



# International Filter Products

*Revolutionary systems for your industry*

## MZS Series PES 0.65µm/0.2µm – Dual Layer Filter Capsules

The MZS Series Pharmaceutical Grade Cartridges are designed for product sterility, provide excellent chemical compatibility and superior flow per unit area as compared to other membrane cartridges. MZS Series Pharmaceutical Grade Cartridges have been designed for final filtration in biopharmaceutical applications. The hydrophilic PES membrane does not require pre-wetting agents, thereby eliminating a potential source of contamination. Also, the PES membrane has low protein binding characteristics to maximize yields. No adhesives, binders, or surfactants are used in the manufacturing process. All cartridges are rinsed with pyrogen-free water to reduce extractables and downtime. All filter cartridges are 100% integrity tested to ensure filter performance and quality. MZS Series Pharmaceutical Grade Cartridges are well-suited for critical applications where superior flow and bacterial retention are required. The filters are manufactured in accordance with GMP and comply with <USP 797> guidelines. The filters are flushed with pharmaceutical-grade purified pyrogens-free water, and 100% integrity tested prior to dispatch. Our filters are free from animal-derived components. The raw materials can be traced by Lot Number and strictly regulated maintaining ISO 13485 & ISO 14001 quality standards.

### Application

- Buffers and Media
- LVP (Large Volume Parenteral)
- Vaccines
- Scale up processing
- Product Sterilization
- Fine Chemicals
- Biologics
- Ultrapure Water
- Fermentation Broths
- Pharmaceuticals
- Antibiotics
- Serums

## MZS Series Filter Cartridges with 226 O-Rings with Fin End Connection





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## Technical Data Sheet

### Micron Rating:

**Final Membrane:** 0.2  $\mu\text{m}$  PES [Sterilizing Grade Membrane]

**Pre-Filter:** Highly Asymmetric 0.65  $\mu\text{m}$  PES

### Effective Filtration Area:

**5 – inch:** 3.6  $\text{ft}^2$ , (0.33  $\text{m}^2$ )

**10 – inch:** 7  $\text{ft}^2$ , (0.65  $\text{m}^2$ )

**20 – inch:** 14  $\text{ft}^2$ , (1.3  $\text{m}^2$ )

**30 – inch:** 28  $\text{ft}^2$ , (2.6  $\text{m}^2$ )

**40 – inch:** 56  $\text{ft}^2$ , (5.2  $\text{m}^2$ )

### Materials of Construction:

**Membrane:** Pharmaceutical Grade PES (Polyethersulfone) Sterilizing Grade

**Membrane Feature:** Hydrophilic, Low Protein Binding, High Flow Rate

**Media Supports:** Polyester (PET)

**Shell, Cage, Core:** Gamma Stable Polypropylene

**End Caps:** Nylon

**O-Rings:** Silicone (Standard)

**Sealing:** Thermally Bonded

### Operating Conditions:

**Maximum Forward Differential Pressure:** 5.0 bar (72.5psi) at 72°F/22°C

2.0 bar (29psi) at 176°F/80°C

**Minimum Burst Pressure:** 8.3 bar (120psi) at 77°F/25°C

**Maximum Reverse Differential Pressure:** 3.0 bar (43.5psi) at 72°F/22°C

1.0 bar (14.5psi) at 176°F/80°C

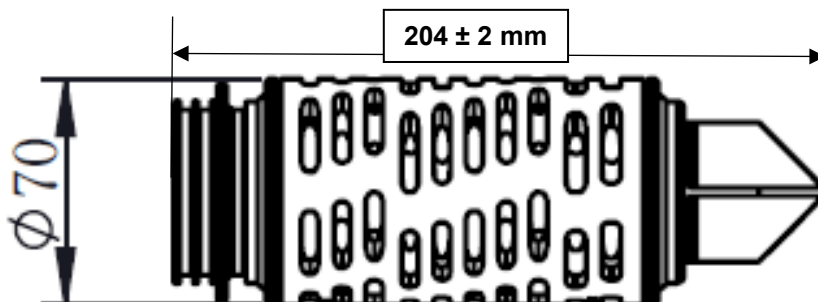
**Maximum Operating Temperature:** 176°F/80°C



# International Filter Products

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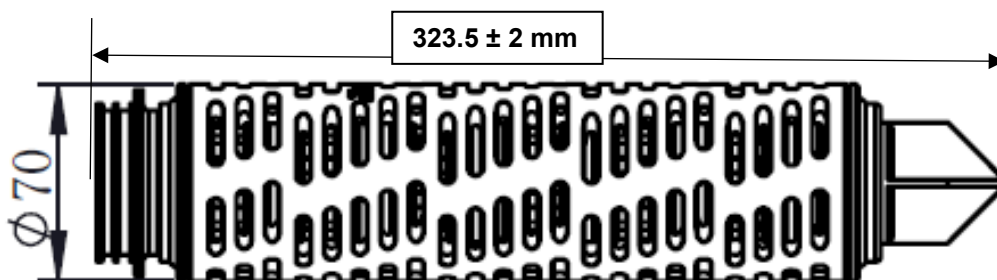
Nominal Dimension:



**MZS – 5 inches**

| Part Number | Internal Filter Length (inches) | End Modification              | Gasket Material |
|-------------|---------------------------------|-------------------------------|-----------------|
| MZXS2075S   | 5"                              | Code 7: 226 O-Ring with Spear | Silicone        |

- ❖ Find the complete list of available standard inlet and outlet fittings on page 8.
- ❖ ETO- Sterilization is available for all 5-inch cartridges. Add “-ETO” with the original Part Number



**MZS – 10 inches**

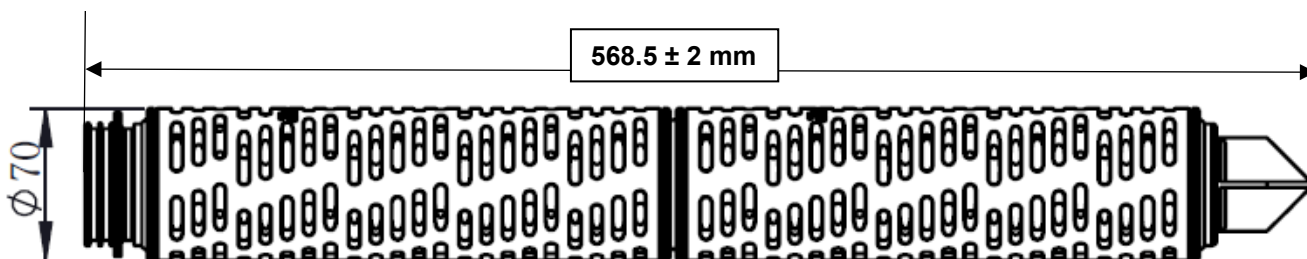
| Part Number | Internal Filter Length (inches) | End Modification              | Gasket Material |
|-------------|---------------------------------|-------------------------------|-----------------|
| MZXS2071S   | 10"                             | Code 7: 226 O-Ring with Spear | Silicone        |

- ❖ Find the complete list of available standard inlet and outlet fittings on page 8.
- ❖ ETO- Sterilization is available for all 10-inch cartridges. Add “-ETO” with the original Part Number



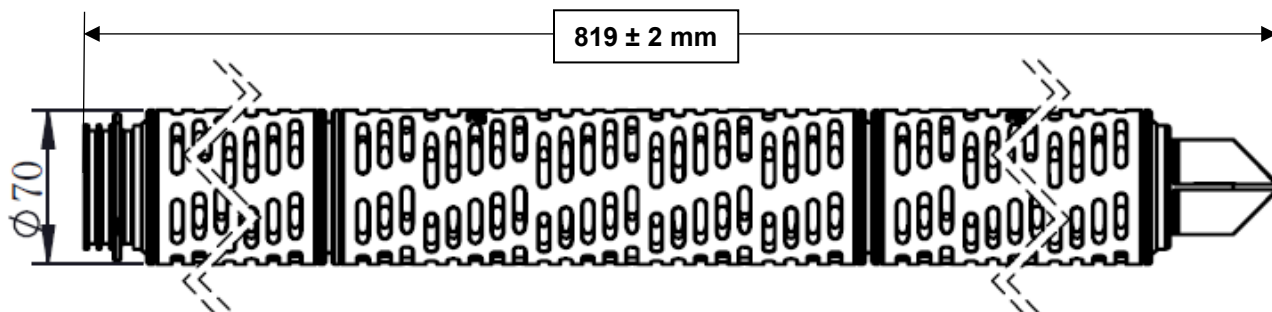
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**MZS – 20 inches**

| Part Number   | Internal Filter Length (inches) | End Modification              | Gasket Material |
|---|---------------------------------|-------------------------------|-----------------|
| MZXS2072S   | 20"                             | Code 7: 226 O-Ring with Spear | Silicone        |
| ❖ Find the complete list of available standard inlet and outlet fittings on page 8. |                                 |                               |                 |



**MZS – 30 inches**

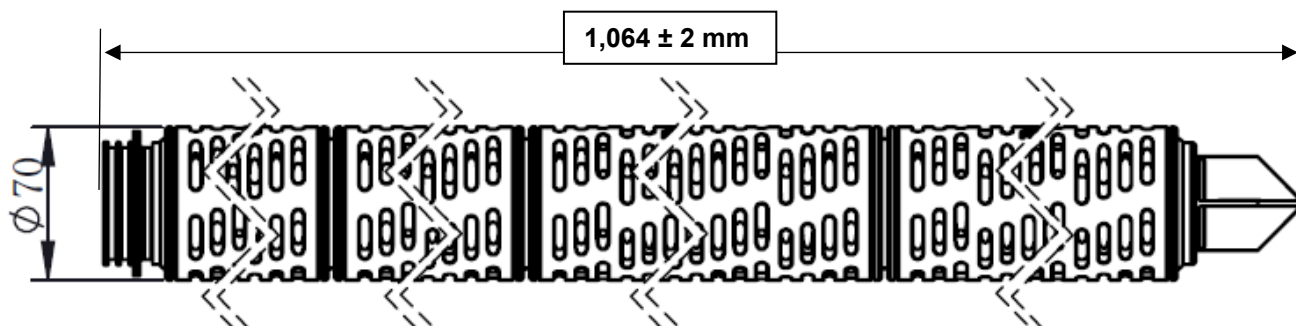
| Part Number   | Internal Filter Length (inches) | End Modification              | Gasket Material |
|---|---------------------------------|-------------------------------|-----------------|
| MZXS2073S   | 30"                             | Code 7: 226 O-Ring with Spear | Silicone        |
| ❖ Find the complete list of available standard inlet and outlet fittings on page 8. |                                 |                               |                 |





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MZS – 40 inches

| Part Number   | Internal Filter Length (inches) | End Modification              | Gasket Material |
|---|---------------------------------|-------------------------------|-----------------|
| MZXS2074S   | 40"                             | Code 7: 226 O-Ring with Spear | Silicone        |
| ❖ Find the complete list of available standard inlet and outlet fittings on page 8. |                                 |                               |                 |

## Typical Filtered Volume:

| Filter Size | Filter Area         | Volume to be Filtered (Thru-Put in Liters) |
|-------------|---------------------|--|
| 5"          | 0.33 m <sup>2</sup> | 60-240                                     |
| 10"         | 0.65 m <sup>2</sup> | 120-480                                    |
| 20"         | 1.3 m <sup>2</sup>  | 240-960                                    |
| 30"         | 2.6 m <sup>2</sup>  | 480-1,920                                  |
| 40"         | 5.2 m <sup>2</sup>  | 960-3,840                                  |

\*Volume Filtered is an estimated range for Sterile compounding, Pharmaceutical & Biological applications. The Filtration Volume is significantly influenced by your solution's viscosity, active ingredients, etc., properties. The best way to determine the exact filtration volume per filter is to try it with your solution.

## Regulatory Compliance

### Bacterial Retention:

Quantitative retention of 10<sup>7</sup> CFU/cm<sup>2</sup> *Brevundimonas diminuta* per ASTM methodology



# International Filter Products

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## Filter Integrity:

The finished product was sampled and shown to exhibit a minimum bubble point of  $\geq 18$  psi (1.2 bar) in 60%IPA / 40% water and  $\geq 50$  psi (3.5 bar) in DI Water (at 22°C).

## Physiochemical:

- USP Oxidizable Substances
- USP <645> Conductivity
- USP <643> Non-Volatile Residue
- Total Organic Carbon (TOC) Analysis

## Cleanliness:

- USP <85> Bacterial Endotoxin Test
- USP <788> Particulate Matter
- 21 CFR 210.72 and 2010.3 (b) (6) Fiber Shedding

## Biocompatibility:

- ASTM F756-17 Hemolysis
- USP <88> (USP Class VI Plastics) Biological Reactivity Tests, In Vivo
- USP <87> / ISO 10993-5, In Vitro Cytotoxicity
- 21 CFR 177 FDA Indirect Food Additive

## USP Bacterial Endotoxins:

A representative sample from the lot is tested to confirm that an aqueous extraction of the product contains <0.25 EU/mL as determined by the Limulus Amebocyte Lysate (LAL) Test.

## Sterilization:

- **Gamma Irradiation:** The filters can be **Gamma Sterilized up to 50kGy.**
- **Autoclave:** The filters can be autoclaved for up to 50 cycles at 125°C (257°F) for 30 minutes.





# International Filter Products

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- **Steam-in-place:** The filters can be sterilized by steam-in-place procedure up to 30 cycles at 135°C (275°F) for 30 minutes at less than 0.3 bar differential pressure.
- **Sanitization:** The filters can be sanitized by hot water or common chemicals that are compatible with filter components.

## **Animal-derived Components:**

No animal-derived material is intentionally added or used during the manufacture of PureFlo Z Series PES Capsules.

## **Human and Veterinarian Use:**

The product is safe for Human and Veterinarian use. CGMP CFR part 210 & 211, additional requirement of 21 CFR part 600 and 21 CFR part 680 are applicable to the aseptic manufacturing process.

## **RoHS:**

Restriction of Hazardous Substances (RoHS 3) Directive 2015/863

## **REACH:**

REACH (Registration, Evaluation, Authorization and Restriction of Chemicals) Article 57, Regulation No. 1907/2006)

## **Traceability:**

For traceability and easy identification:

- A Certificate of Conformance is provided with each capsule.
- Each filter bag and box are labeled with the product part number, lot number, and identifying characteristics.

Each capsule is engraved and labeled with the product part number, lot number, and identifying characteristics.

## **Shelf Life:**

The MZS cartridges have a shelf life of 3 years from the date of manufacture.





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## MZS - Series PES Cartridge

(Pharmaceutical Grade)

### Ordering Guide



| [1]   | [2]  | [3]  | [4]   | [5]  |
|---|--|--|---|--|
| Micron Rating<br>[Pre-Filter/Final Filter]  | End Modification   | Length   | O-Ring/Gasket Material  | Optional   |
| <ul style="list-style-type: none"> <li>S10 : 0.1 µm</li> <li>S20 : 0.2 µm</li> <li>ZS10 : 0.2/0.1 µm</li> <li>ZS20 : 0.45/0.2 µm</li> <li>XS10 : 0.45/0.1 µm</li> <li>XS20 : 0.65/0.2 µm</li> </ul> | <ul style="list-style-type: none"> <li>0 : 222 O-Ring Flat</li> <li>5 : 222 O-Ring Spear</li> <li>6 : 226 O-Ring Flat</li> <li>7 : 226 O-Ring Spear</li> </ul> | <ul style="list-style-type: none"> <li>1 : 10-Inch</li> <li>2 : 20-Inch</li> <li>3 : 30-Inch</li> <li>4 : 40-Inch</li> <li>5 : 5-Inch</li> </ul> | <ul style="list-style-type: none"> <li>S : Silicone</li> <li>E : EPDM</li> <li>N : Buna-N</li> <li>P : Peroxide Cured EPDM</li> <li>Q : Platinum Cured Silicon</li> <li>T : TEV or FEP Gasket</li> <li>V : Viton</li> </ul> | <ul style="list-style-type: none"> <li>-5 : SS Insert</li> </ul> |

#### Example:

**MZXS2072S1-5**

PureFlo MZS Series Cartridge, Highly Asymmetric Dual Layer PES 0.65µm / 0.2µm PES membrane (Sterilizing Grade), 20.0-inch Long, Filtration Area 1.3 m<sup>2</sup>, 226 O-Rings with Spear, Silicone Double O-Rings, Stainless Steel Insert

Part Number

Description

### Special Configuration:





# International Filter Products

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## Layer Option:

- Single Layer
- Dual Layer

## Micron Rating Option:

- S10 : 0.1  $\mu\text{m}$
- S20 : 0.2  $\mu\text{m}$
- ZS10 : 0.2/0.1  $\mu\text{m}$
- ZS20 : 0.45/0.2  $\mu\text{m}$
- XS10 : 0.45/0.1  $\mu\text{m}$
- XS20 : 0.65/0.2  $\mu\text{m}$

## End Modification Option:

- 0 : 222 O-Ring Flat
- 3 : 222 O-Ring w /tabs Spear
- 5 : 222 O-Ring Spear
- 6 : 226 O-Ring Flat
- 7 : 226 O-Ring Spear
- 8: 223 O-Ring Flat
- F : DOE Flat Gasket
- S : SOE Flat Gasket

## O-Ring/Gasket Material Option:

- S : Silicone
- E : EPDM
- N : Buna-N
- P : Peroxide Cured EPDM
- Q : Platinum Cured Silicon
- T : TEV or FEP Gasket
- V : Viton

