



PolyPro[®] XL Filter Cartridges

with APT[™] construction for extra long life



Polypropylene pleated graded-density filter cartridges featuring APT Construction for Extended Filter Lifetime

CUNO's PolyPro XL filter cartridge represents a major advance in pleated polypropylene filter design and performance. Advanced Pleat Technology (APT) construction combines:

- Up to 50% more filter media (surface area) than competitive filters
- Graded-density media for optimum contaminant holding
- New cartridge design for increased flow and reduced pressure drop

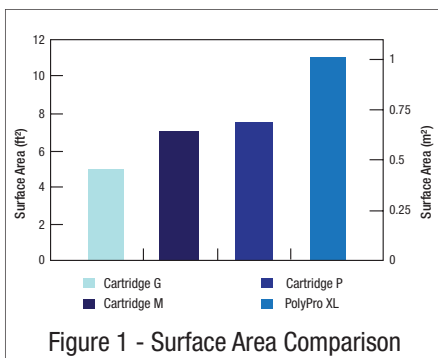
The result is a filter cartridge that lasts longer, performs better, and saves money.

PolyPro XL filters for Pharmaceutical and Biotechnology applications are available in the following versions :

- model PPG, delivered with quality control certificate (pH, extractables, LAL,...)
- model PTG with factory certified integrity testing

The APT Advantage

Surface area dictates just how long a filter will last and how it will perform. However, increasing surface area without considering the flow path between the media's pleats could result in flow restrictions and early media blinding. To achieve the optimum between surface area and performance, CUNO has designed PolyPro XL so that the pleating process and media support materials work together to provide enhanced flow characteristics and longer service life.



Features and benefits

Advanced Pleat Technology construction for extremely high surface area

- Higher product throughputs for extraordinarily long service life
- Lower total filtration operating costs
- Lower pressure drops for higher flow rates

Absolute-rated filter performance

- Consistent and reproducible contaminant removal
- Higher product quality and yields

Graded-density multi-layer filter media

- Selective entrapment of contaminant throughout the filter media to maximize filter life
- Higher contaminant holding capacity

Polypropylene cartridge components free of adhesives and surfactants

- Very low extractable levels for optimum filtrate purity
- Broad chemical compatibility for most aggressive process applications

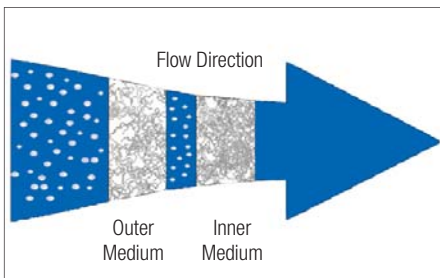
100% integrity tested versions available

- Assurance of safety and regulatory compliance in pharmaceutical, bioprocessing, and biological filtration
- Pre-qualification and assurance in critical applications
- Suitable for final filtration in many applications

Robust polypropylene cartridge construction

- Extends service life and compatible with a wide range of solvents and cleaning solutions





Graded-Density - the key to longer life

The PolyPro XL filter's graded-density media structure removes particles sequentially by size - the larger particles by the more open, outer medium and the smaller particles by the tighter, inner medium. The outer medium acts as a prefilter, while the inner provides the absolute removal specified by the cartridge rating. This construction effectively spreads the contaminant through the depth of the filter media resulting in extremely high contaminant capacity with lower pressure drop for longer service life.

Chemical Compatibility

Polypropylene construction provides chemical compatibility in many demanding process fluid applications. Compatibility is influenced by process operating conditions; in critical applications, cartridges should be tested under actual conditions to ensure correct selection.

Flow Characteristics and Sizing Options

Reduced cartridge change-out frequency

For a given process flow rate, the graded-density structure and maximum filter area decrease filter cartridge change-out frequency by 30 to 50 percent or more depending on the application.

Reduced filter housing costs

For new applications, the low pressure drops of the PolyPro XL filter allow smaller or fewer housings to be specified. Fewer filter cartridges and smaller housings provide lower capital and consumables costs, year after year.

Ideally, filter systems should be sized at an initial differential pressure of 0.5 to 1 psid (0.04 to 0.07 bar). Low flow rates further extend the life of the filter system. In most applications, doubling the filter area (reducing the flow rate per unit area by one-half) results in two and one-half times the throughput.

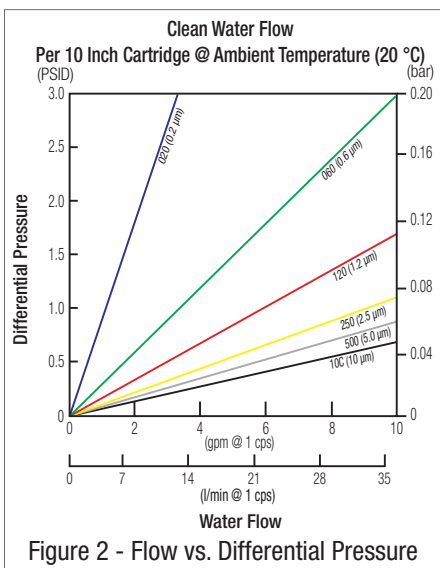
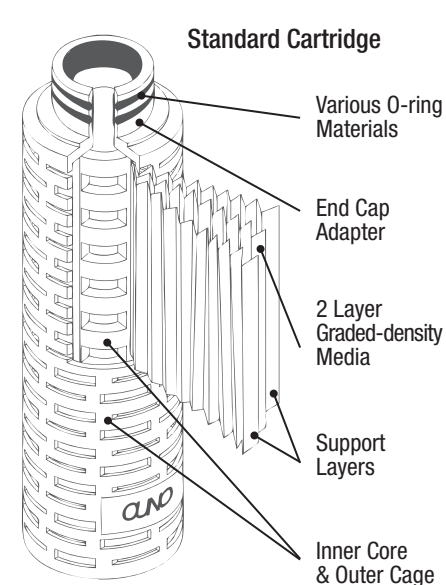


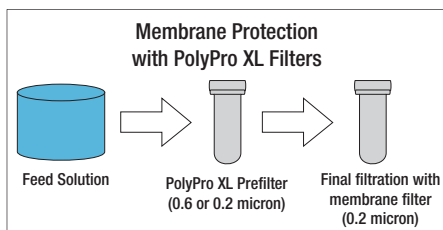
Figure 2 - Flow vs. Differential Pressure



| PolyPro XL Cartridge Specifications | |
|---------------------------------------|--|
| Materials | |
| Media | Graded-Density Pleated Polypropylene |
| Supports | Polypropylene |
| Core, Cage, End Caps | Polypropylene |
| Gasket and O-ring Options | Silicone, Fluorocarbon, Ethylene Propylene, Nitrile |
| Operating Conditions | |
| Maximum Operating Temperature | 60 °C (130 °F) continuous 80 °C (175 °F) short term |
| Maximum Forward Pressure Differential | 4 bar at 25 °C (60 psid at 77 °F) |
| Maximum Reverse Pressure Differential | 4 bar at 25 °C (60 psid at 77 °F) |
| Cartridge Dimensions | |
| Media area versions | Grade 060, 100, 120, 250: 0.82 m ² (8.8 ft ²) Grade 020 : 0.75 m ² (8.1 ft ²) Grade 10C : 0.51 m ² (5.5 ft ²) Grade 500 : 0.80 m ² (8.6 ft ²) |
| Diameter | 7 cm (2.75 inches) |
| Length | Nominal 10", 20", 30", and 40" |

Quality System ISO 9001:2000

Polypro XL filter cartridges are manufactured under an ISO 9001:2000 certified quality system. The quality system ensure that appropriate standards are met or exceeded to provide consistent, high quality products.



The PolyPro XL Filtration Advantage

In applications such as biological feed streams, serial filtration is often employed for economical filterability. A typical configuration could be a 0.6 μm PolyPro XL prefilter upstream of a 0.2 μm rated sterile membrane filter cartridge. In those instances where greater membrane protection is required, a 0.6 μm or a 0.2 μm rated PolyPro XL filter will provide longer final membrane life than competitive 0.6 μm rated products. The high surface area of PolyPro XL filters coupled with graded-density construction allows the process to run for extended periods of time before filter plugging and change-out.

PolyPro XL Filters - Engineered for Pharmaceuticals & Bioprocessing

Constructed from polypropylene media and support materials, the PolyPro XL series has ultra-low extractable levels and broad fluid compatibility, providing an ideal choice for a broad range of pharmaceutical applications. PolyPro XL filters can be used for general prefiltration, clarification, or as a final filter in appropriate applications. All component materials meet the requirements of USP Class VI Biological Tests for Plastics. PolyPro XL cartridges may be autoclaved or steamed-in-place (*in-situ*). Two versions of the pharmaceutical grade PolyPro XL filters are available - models PPG and PTG. Both are supplied with Certificates of Quality detailing the product attributes and qualification testing. Model PTG is integrity tested prior to shipment for applications where “factory integrity tested” provides added assurance.

- **Safety** - All component materials meet the requirements of USP Class VI Biological Tests for Plastics
- **Sterilisable** - may be autoclaved or steamed-in-place (*in-situ*)
- **Certificate of Quality** details the product attributes and qualification testing

Pharmaceutical, Bioprocess, & Biological Applications

PolyPro XL filter cartridges serve a broad range of prefiltration and clarification applications in pharmaceutical, biological, and bioprocess manufacturing where economy and reliability are critical. Recommended applications include:

- Parenterals (SVP and LVP), Membrane Protection, Ophthalmics, Orals, Topicals, Vaccines, and Serum
- Tissue Culture Media, Fermentation Feeds, and Intermediates
- Rinse Fluids and Pharmaceutical Fine Chemicals
- Blood Plasma Fractionation
- Reagents and Buffers, High Purity Water Systems, Air & Gas Pre- and Final filtration
- Diagnostics
- Cosmetics Manufacturing

Applications SUPPORT - SASS

CUNO’s Scientific Applications Support Services (SASS) is staffed by scientists and engineers, with state-of-the-art laboratory facilities. The SASS staff, familiar with a wide range of filtration and separation applications, work closely with the customer to recommend the most effective and economical CUNO filtration systems.



PolyPro XL Filter Cartridge Ordering Guide

| Model | Absolute Rating*** | Configuration | Nominal Length | End Modification | Gasket/O-ring Material |
|--------------|--|-----------------------------|--|---|--|
| PPG PTG** | 020* : 0.2 µm 060 : 0.6 µm 120 : 1.2 µm 250 : 2.5 µm 500 : 5.0 µm 10C : 10.0 µm | B = Cartridge 2.8" (7.1 cm) | 01 : 10" 02 : 20" 03 : 30" 04 : 40" | B - 226 O-ring with spear C - 222 O-ring with spear D - DOE flat gasket (10") E - DOE flat gasket (9 3/4") F - 222 O-ring with Flat Cap | A - Silicone B - Fluorocarbon C - EPR D - Nitrile H - Clear silicone |

* PTG020 not available with D & E end modifications

** Available in 020 (0.2 µm) and 120 (1.2 µm) ratings only.

*** Retention ratings determined by CUNO testing. The 0.2 micron rating has been extrapolated. For more information, contact your CUNO representative.

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