

ultra.klear PP

Absolute Rated Pleated Depth Filters



A range of absolute rated cartridge filters from ultrafilter GmbH Hilden, featuring the latest developments in meltblown polypropylene filter media technology, ultra.klear PP cartridges are based on a robust all polypropylene construction, offering removal ratings from 0.5 to 75 micron absolute.

The combination of up to eight separate filtration layers provides true depth filtration, within a pleated cartridge construction. This design will reduce fouling of the filter surface area caused by a broad spectrum of contaminants.

ultra.klear PP cartridges are ideally suited for the filtration of process fluids, that contain contaminants with a wide range of particle sizes.

The graded multi-layer polypropylene media provides prefiltration of the process fluid prior to the absolute rated final layer. The unique design of the ultra.klear PP cartridges helps to achieve lower running costs and a smaller process footprint.

The ultra.klear PP are also highly resistant to integrity failure caused by steam sterilisation and have excellent chemical compatibility characteristics.

They are suitable for applications ranging from bioburden reduction to the clarification of a wide range of process liquids and end products.

Applications

ultra.klear PP cartridges provide absolute filtration where reproducibility and consistency of performance are critical. Suitable for the filtration of aqueous and organic liquids, ultra.klear PP cartridges can be used as prefilters or final filters in the following applications:

- **Pharmaceuticals and Bioprocessing**
The structure of the filter media makes it ideally suited for the filtration of complex biological fluids (e.g. serum).
- **Foods and Beverages**
The clarification of beers, wines and spirits to a clear and bright finish without affecting taste or colour. Provides an alternative to plate and frame and other sheet formatted depth filters.
- **Process Water Systems**
The filtration of process water installations for removal of general contamination and resin fines.
- **Fine Chemicals**
The filtration of high grade chemicals including solvents, reagents, photographic emulsions, inks, paints and plating solutions.
- **Cosmetics**
The clarification of process water and intermediates for the finished product.

Features and Benefits

- ultra.klear PP cartridges**
 The combination of up to eight separate filtration layers provides true depth filtration, within a pleated cartridge construction, and resistance to fouling.
- Graded multi-layer media**
 The multi-layer media structure provides prefiltration of the process fluid prior to the absolute rated final layer. This combination provides economy of use and a smaller process footprint.
- Guaranteed removal ratings**
 ultra.klear PP cartridges are validated using the recognised industry standard modified OSU-F2 single pass test to Beta 5000 (99.98% efficiency).
- Suitable for steam and hot water sanitisation**
 ultra.klear PP cartridges are resistant to repeat steam sterilisation up to 135°C (275°F) and hot water cycles at up to 90°C (194°F).
- Environmentally friendly**
 ultra.klear PP filters are environmentally friendly, all spent cartridges can be readily incinerated to trace ash.
- Full traceability**
 All ultra.klear PP cartridges are identified with a batch serial number. Each ultra.klear PP cartridge is supplied with a Certificate of Quality and an operating instruction leaflet.

- Controlled manufacturing environment**
 ultra.klear PP cartridges are manufactured in an ISO Cleanroom environment by fully gownned staff, minimising the risk of contamination.

Cartridge Construction

The high quality robust all polypropylene construction of ultra.klear PP cartridges, allows for excellent chemical compatibility with a wide range of fluids.

The meltblown polypropylene media provides a bonded matrix thus eliminating fibre migration.

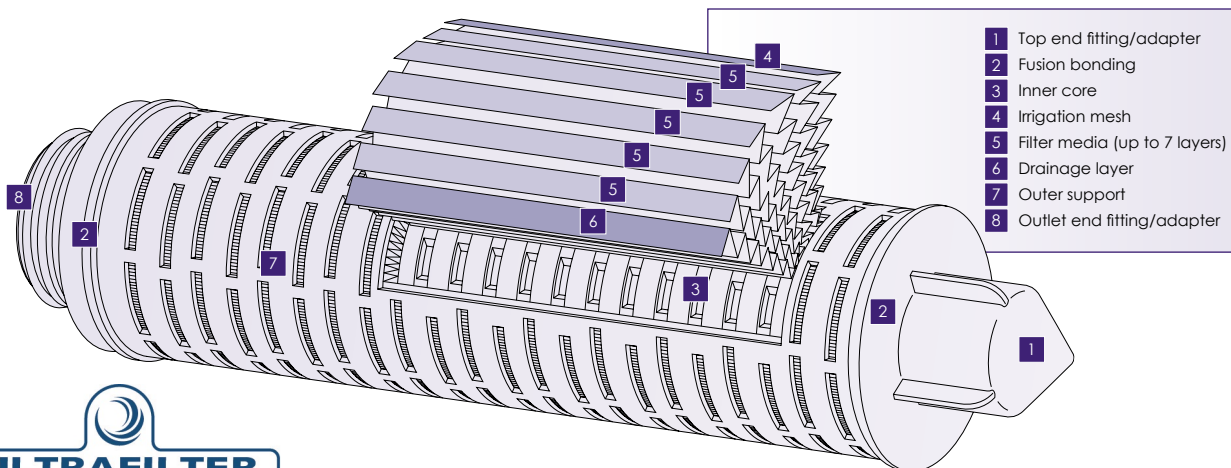
The inherent structural stability of the ultra.klear PP, prevents 'channelling' and avoids the risk of particle unloading even under impulse conditions.

The multi-layer combination of filter media, irrigation mesh and drainage material carefully pleated and thermally bonded maximises the filtration depth and ensures an efficient flow throughout the cartridge.

The ultra.klear PP fusion bonded construction ensures cartridge integrity. No surfactants or bonding agents are used, minimising extractables.

Table 1 Particle Retention Rating

Code	Pore Rating (microns)	Absolute Rating 99.98% Beta 5000 (microns)	Nominal Rating 99.90% Beta 1000 (microns)	Nominal Rating 90.00% Beta 10 (microns)
KP5	0.5	0.5	0.45	-
K01	1	1	0.7	-
K02	2	2	1.5	-
K03	3	3	2	-
K05	5	5	3	-
K10	10	10	8.5	2
K15	15	15	12	4
K20	20	20	13.5	<5
K30	30	30	20	7
K40	40	40	27.5	11
K75	75	75	65	20



Specifications

Materials of Manufacture

Filter media:	Polypropylene
Support layers:	Polypropylene
Inner core:	Polypropylene
Outer support:	Polypropylene
End fittings:	Polypropylene
Support ring:	Stainless steel

Cartridge Dimensions (Nominal)

Diameter:	70mm (2.8")
Length:	1 module (short): 125mm (5")
	1 module: 254mm (10"), 508mm (20")
	2 modules: 762mm (30"), 1016mm (40")

Cartridge Treatment

Standard:	Cleaned without further treatment.
Flushed:	Flushed with pyrogen-free water.
Rinsed:	Ultra-clean, pulse flushed to give a system resistivity of 18MΩ.cm.

Gaskets and O-Rings

Ethylene Propylene, PTFE encapsulated, Silicone, Viton, Nitrile or Polypropylene felt.

Maximum Differential Pressure

Normal flow direction at:

20°C (68°F):	6.0 bar (87lb/in²)
80°C (176°F):	4.0 bar (58lb/in²)
100°C (212°F):	3.0 bar (43lb/in²)
120°C (248°F):	2.0 bar (29lb/in²)
125°C (248°F):	1.5 bar (22lb/in²)

Reverse flow direction at:

20°C (68°F):	2.1 bar (30lb/in²)
80°C (176°F):	1.0 bar (15lb/in²)
100°C (212°F):	0.5 bar (7lb/in²)

Operating Temperature

Maximum continuous: 80°C (176°F)

Sterilisation

In situ steam 80 x 30 minute cycles at 135°C (275°F).

Hot water 200 x 20 minute cycles at 85-90°C (185-194°F).

Extractables

Minimum total extractables. Please refer to the ultra.klear PP Validation Guide.

Integrity Testing

ultra.klear PP filter cartridges are batch tested for integrity using the Bubble Point Test. Procedural details are available from ultrafilter GmbH, Hilden.

Clean Water Flow Rates

- Typical clean water flow rate:
A 254mm (10") ultra.klear PP single cartridge exhibits the flow-ΔP characteristics indicated below, for solutions with a viscosity of 1 centipoise.
- Other solutions:
For solutions with a viscosity of greater than 1 centipoise, multiply the indicated differential pressure by the viscosity in centipoise.

