

Purification and Filtration Solutions



3M™ Micro-Klean™ RT Series Filter Cartridges

All-polypropylene rigid thermal bonded filters

Advancing depth filtration through technological innovation

Micro-Klean RT series filters, manufactured using Solventum's rigid extrusion bonded technology, are all-polypropylene depth filter cartridges offering premium features.



Features and benefits

Features	Benefits
Rigid depth filter construction	<ul style="list-style-type: none"> • Reduces unloading at high differential pressure • Efficient removal of deformable materials • Consistently superior particle removal throughout filter life and at high flow rates (flux) • Low initial pressure drop for enhanced flow
Enhanced contaminant holding capacity	<ul style="list-style-type: none"> • Fewer filter change outs • Long filter life
Grooved cartridge with increased surface area	<ul style="list-style-type: none"> • Promotes fuller utilization of the depth-matrix • Long filter life
All-polypropylene construction	<ul style="list-style-type: none"> • Compatibility in a wide range of applications and operating conditions • No adhesives, binders, surfactants, lubricants
Food and beverage compliance	<p>Certain Micro-Klean RT products are compliant with:</p> <ul style="list-style-type: none"> • US FDA 21 CFR • EU food contact regulation (EC) 1935/2004 • other food contact regulations <p>Contact your Solventum representative for detailed declaration of compliance information for food contact applications.</p>
Core-less filter structure	<ul style="list-style-type: none"> • Ease of disposal via incineration or shredding
Continuous integral length filter element up to 40" (1016 mm)	<ul style="list-style-type: none"> • No bond joints to break • Easy to install

Micro-Klean RT series filter cartridges

The unique Micro-Klean RT series filter manufacturing process combines the superior process control with the quality assurance enabled by an ISO 9001 certified quality system to provide consistent product performance. Solventum's exclusive manufacturing process provides a high degree of fiber-to-fiber thermal bonding, without the use of binders, to produce a rigid, core-less, filter structure with the following properties:

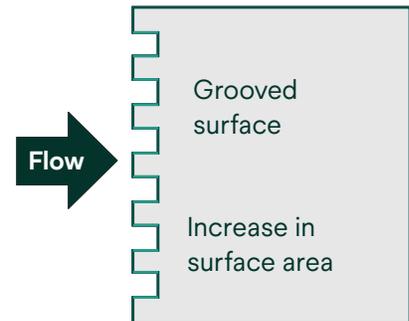
- Does not unload contaminants with increasing differential pressure like typical meltblown filters
- Allows grooves to be machined into the upstream surface, without tearing or melting the filter structure, providing more than double the effective surface area
- Exhibits exceptionally low differential pressure for a given filter rating

The filter's extended service life results in fewer filter change-outs while its enhanced flow characteristics can typically reduce the number of filters required to achieve a given flow rate. These combined features of Micro-Klean RT series filters can significantly reduce total filtration costs.

Consistent filtration throughout the service life of a depth-style filter depends on how well the filter's structure tolerates fluctuations in operating conditions – including contaminant loading and differential pressure. Flexible structures, such as those found in typical meltblown and string-wound filters, tend to compress and change porosity with increased pressure, while rigid structures do not (Photo 1). Media compression can result in short filter life because the pores collapse and ultimately close.

Media compression can also cause the filter to release already held particles. The robust Micro-Klean RT series filter captures and retains contaminant within its rigid filter matrix, even under increasing differential pressure. In addition, the unique depth filter structure of the Micro-Klean RT series filter provides a significant increase in contaminant holding capacity and provides greater flow capacity at a given pressure.

Unlike soft meltblown and string-wound filters that require core support, the Micro-Klean RT series filter is self-supporting and is grooved to provide greater than twice the surface area. The increase in surface area prevents premature blinding of the outer surface by large particles and gels and promotes fuller utilization of the depth-matrix. The result is significantly longer life than competitive cartridges.



Compressible



Rigid



Photo 1. – Compressible vs rigid structures @ 35 psid (2.4 bar)

Table 1. Micro-Klean RT series filter Specific Pressure Drop (SPD)

Nominal rating (µm)	Specific pressure drop per 10" Filter (psid/gmp-Cp)	Specific pressure drop per 10" Filter (mbar/lmp-Cp)
1	0.073	1.330
5	0.042	0.765
10	0.025	0.455
25	0.015	0.273
50	0.010	0.182
75	0.006	0.109

Micro-Klean RT series filter system sizing

To size a system of Micro-Klean RT series filters, flow vs. differential pressure data is provided in Table 1.

To calculate filter's clean pressure drop for Newtonian fluids, use the following formula in conjunction with the specific pressure drop values.

The specific pressure drop values may be effectively used when three of the four variables (viscosity, flow, differential pressure, and cartridge grade) are set.

Care must be taken when sizing Micro-Klean RT series filtration systems. Select a filter housing that will accept at least the required number of 10 inch filter elements, and verify that the total system flow does not exceed the maximum housing flow rating.

$$\frac{\text{psid [mbar]}}{\text{clean}} = \frac{\left(\text{total system gpm [lpm]} \right) \left(\text{viscosity in Cp} \right) \left(\text{SPD value from Table 1} \right)}{\left(\text{Equivalent number of 10" Cartridges in housing} \right)}$$

Applications

Industrial	Beverage can coolants, plating, desalination plants, pulp & paper, additives, process cooling water, parts washing, peroxide
Coatings	Resin manufacturers (water & solvent), trade and architectural paint, ink
Food and beverage	Bottled water, ready-to-drink beverages, soft drinks, juice
Oil and gas	Amine & glycol, prefiltration in waterflood, process cooling water, completion fluid
Chemical	PE-PP, intermediate grade chemicals, PVC-VCM, herbicides, pesticides
Electronics	Printed circuit boards, electronic capacitors, Pre-RO



Micro-Klean RT series filter cartridges specifications

Table 2. Micro-Klean RT series filter cartridges specifications

Construction	
Filter media, end connector	Polypropylene
Gaskets & O-ring options (see ordering guide)	Silicone, fluorocarbon, EPR, nitrile, and polyethylene
Operating conditions	
Maximum operating temperature	176 °F (80°C)
Maximum differential pressure	15 psid @ 176°F (1.0 bar @ 80°C) 25 psid @ 140°F (1.7 bar @ 60°C) 60 psid @ 68°F (4.1 bar @ 20°C)
Recommended change-out differential pressure	35 psid @ 68°F (2.4 bar @ 20°C)
Cartridge dimensions	
Inside diameter (nominal)	1.1" (28 mm)
Outside diameter (nominal)	2.6" (66 mm)
Length (nominal) see ordering guide	9 ¾" - 40" (248 - 1016 mm)

Chemical compatibility

The 100% polypropylene construction provides excellent chemical compatibility in many demanding process fluid applications. Compatibility is influenced by process operating conditions. Micro-Klean RT series cartridges should be tested under actual conditions to determine compatibility.

Table 3. Fluid compatibility

Chemical	Temperature	Chemical	Temperature	Chemical	Temperature
Acetic acid 20%	160°F (71°C)	Hydrogen peroxide	100°F (38°C)	Sodium carbonate	160°F (71°C)
Alkanolamines	140°F (60°C)	Methyl ethyl ketone	70°F (21°C)	Sodium hydroxide 70%	160°F (71°C)
Ammonium hydroxide 10%	160°F (71°C)	Mineral oil	70°F (21°C)	Sulfuric acid 20%	160°F (71°C)
Beach 5.5%	120°F (49°C)	Nitric acid 20%	120°F (49°C)	Sulfuric acid (70%)	160°F (71°C)
Ethylene glycol	160°F (71°C)	Potassium hydroxide	140°F (60°C)	Urea	160°F (71°C)

Application engineering

Solventum has a global team of market-focused scientists and engineers who excel in supporting and collaborating with end-users. Our technical teams are skilled in performing on-site bench-scale or in-house tests, and relating results to full scale manufacturing operations and optimizing cost of purification. When unique processing problems are encountered, our product and application specialists are equipped to identify solutions using either Solventum's broad array of existing products or potentially develop a custom solution for your application.

Filter housings

Solventum can provide housings to meet global applications and specifications and is supported by Solventum's global engineering team. For more information consult your local Solventum representative.



Ordering guide

3M™ Micro-Klean™ RT Series Filter Cartridges ordering guide

Cartridge type	Length	Grade	Material	Surface	Packaging	Ring support	End modification	Gasket/O-ring
Micro-Klean RT series filter	09 - 9 ¾"* 10 - 10" 19 - 19 ½"* 20 - 20" 29 - 29 ¼"* 30 - 30" 39 - 39" 40 - 40"	Y - 1 µm B - 5 µm C - 10 µm F - 25 µm L - 50 µm Q - 75 µm	16 - Polypropylene	G - Grooved	2 - Bulk	0 - None	B - 226 O-ring & spear C - 222 O-ring & spear F - 222 O-ring & flat cap N - None P - Polypropylene core extender Q - Cap without spring R - Cap with spring	A - Silicone B - Fluor-carbon C - EPR** D - Nitrile** G - Polyethylene*** N - None

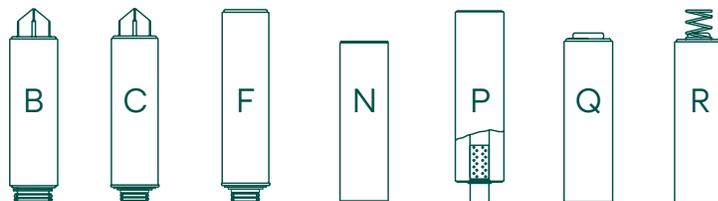
*Available with N (None), P, Q, and R end modifications only.

**Nitrile and EPR not for use in dairy and fatty food contact applications.

***Available with N (none) and R end modifications only

Certain Micro-Klean series filter cartridges have been tested and certified against NSF/ANSI/CAN 61. Contact your Solventum representative for additional information.

Cold water only:
Install this product in accordance with the instructions provided by the housing manufacturer.



Please note: The order guide above is for reference only. Not all combinations are available. Please consult with your representative to determine the appropriate part number for your application.

Intended Use: Micro-Klean RT products are intended for use in industrial, chemical, and food and beverage filtration applications of aqueous and non-aqueous fluids in accordance with the product instructions, specifications and where materials of construction are compatible.

Certain Micro-Klean RT products are compliant for use in food and beverage applications. For specific details regarding use or limitations for food contact applications please contact your Solventum representative for more information.

Since there are many factors that can affect a product's use, the customer and user remain responsible for determining whether the Solventum product is suitable and appropriate for the user's specific application, including user risk assessments and evaluation of the Solventum product in the user's application.

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