Micro-Klean™ G Series

Depth Filter Cartridges

The Micro-Klean G Series filter cartridge is the result of continuing research and engineering efforts by 3M Purification. The Micro-Klean G Series cartridges incorporate state-of-the-art fibre technology and engineering design advances. Produced in a variety of construction materials, this true graded density filter cartridge offers superior performance advantages and economics.

Construction

Micro-Klean G Series cartridges are produced using fibres of controlled diameters and a patented manufacturing process that generates a true graded density depth cartridge. The cartridge provides open areas between the fibres that are progressively smaller and more numerous towards the inside diameter. This graded pore structure traps larger particles on the outer portion of the cartridge while smaller particles are captured as they progress through tortuous passageways in the cartridge wall.

All fibres in this graded density structure are resin impregnated and polymerized to bond each filter into place producing a rigid, self-supporting structure. This rigid structure provides consistent filtration performance under varying pressures and eliminates the need for a centre-supporting core.

Throughout the manufacturing cycle, testing, evaluation, and statistical process control are utilized to monitor Micro-Klean production. Our concern for product consistency ensures that the Micro-Klean G Series cartridge provides the reproducible results that today's critical applications demand.

The right micron rating for each filtration need

The Micro-Klean G Series cartridges are available in a wide range of nominal micron rating to fulfil almost all filtration requirements. From 1 µm to 150 µm nominal, Micro-Klean G Series range is able to perform excellent pre-filtration or final filtration in various industrial market segments. Please refer to the ordering guide located at the end of this brochure to find the right micron rating for your application.

Applications

- Paint, varnishes, solvent recovery
- Process water
- Photographic emulsions
- Oxide slurries
- Inks & dyes
- Plastics
- Organic solvents (alcohols, ketones, ethers...) and hydrocarbons
- Magnetic media

Features & Benefits

- Highly efficient particle removal
- High dirt-holding capacity thus reducing filtration costs
- Ability to withstand high differential pressures (Delta P), hard structure not subject to collapse failure.
- Support core eliminated resulting in greater compatibility
- Reproductible filtration characteristics
- Customized shapes and sizes available upon request

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Micro-Klean G Series: the right cartridge to fit your application

The right formulation for each application

Micro-Klean G Series technology combines rigid structure and depth filtration in one cartridge to provide optimum performance in life and efficiency. The Micro-Klean G Series range is available in several formulations to fit your applications:

a) Formulation 3

This formulation includes cellulose fibres and a phenolic resin. These cartridges are recommended for strong reducing agents and medium to low pH range solutions. Used for photographic emulsions, oxide slurries, inks, process water, dye, plastics, and solvents.

b) Formulation 8

This formulation includes acrylic fibres and a phenolic resin. General purpose cartridges usable on practically all applications, except potable water and food products. This cartridge has excellent resistance to acids. Can be used on inorganic acids and acid salts with concentration up to 10% at room temperature. They are also highly resistant to alkaline solutions at ambient temperature.

A whole range of standard dimensions

The Micro-Klean G Series manufacturing process allows virtually all kind of configurations to fit in a variety of housings.

a) Double open ended version

Multiple of 9" ¾ or 10" are available from 1 module to 4 modules as standard. Double open ended cartridges are supplied without or with flat Volara gasket. This flat gasket (NG version) is more recommended for the tighter micron ratings (i.e. 1 & 5 µm nominal).

b) Single open ended version

Standard single open ended configurations are now available for retrofitting all kind of existing housings in the market:

- Option B : Code 7 with 226 O-ring.
- Option C : Code 8 with 222 O-ring.
- Option F : Code 3 with 222 O-ring.
- Option R : Spring on top with or without flat gasket.

The B, C, and F end caps are available with the following O-ring material : Silicone, Fluorocarbon, EPR, Nitrile, PTFE encapsulated Silicone, PTFE encapsulated Viton.

c) Customized shapes and special sizes

Special lengths up to 70" are available upon request.

Micro-Klean G Series Filters for Air and Gas applications

Entrained moisture oil and particles in air lines will jam pneumatic tools, clog nozzles and valves render air brakes inoperative and raise all kinds of troubles. The results are : interrupted production, workpiece spoilage, inaccurate gauging and high maintenance costs. Air line contamination exists with the humidity in the air brought in be the compressor, oil from the compressor, and with dirt and rust from the connections and pipes. If the pneumatic circuit is vital for the installation, it is necessary that the air stream be cleared of these contaminants. Removal of all moisture and particles by Micro-Klean G Series cartridges is really positive and complete. Full protection of the circuit is assured when the filter is located as close to the point of use of air and gas as possible. To operate under satisfactory conditions, a circuit should also be equipped with a filter at the compressor. It will remove the excessive amounts of moisture and oil, and extend the life of smaller filters located at the point of use. Please refer to your 3M Purification representative for sizing Micro-Klean G Series in gas applications.

Waste management

Micro-Klean G Series cartridges contain no metal or plastic cores. They can be incinerated, shredded, or crushed after use to reduce overall disposal costs.

Note on housings

3M Purification offers a wide range of standard housings and engineered systems to meet your requirements. For further info on engineering capabilities, please contact us.

Rigid graded density Micro-Klean G Series

Micro-Klean G Series filter cartridges are manufactured using an exclusive proprietary process that achieves a true "graded density" fibre structure with a clean and smooth inside diameter. Each fibre is locked in this arrangement by a thermosetting resin binder to create a rigid structure, eliminating the need for a metal or plastic centre core. Larger particles are trapped in the outer area and finer particles towards the inner area. Figure 1 illustrates how in a graded-density structure the overall effect is to clarify and retain particles by size as they progress through the cartridge.

Micro-Klean G Series : High surface area

Micro-Klean G Series cartridges also feature an optimised groove pattern that increases the surface area by over 65% when compared to smooth cylindrical cartridges (see Figure 2). The grooved surface prevents premature blinding of the outer surface by large particles and allows full utilization of the depth structure. Maximum surface area with a true graded density Micro-Klean G Series can provide 3 times or greater service life than competitive filter cartridges.

Reproducible cost effective filtration

Micro-Klean G Series is manufactured to rigid specifications and subjected to stringent process and quality controls to ensure consistency in filtration performance and ultimately, end-user process consistency - run after manufacturing run.

Micro-Klean G Series specifications

Materials of construction				
MK Formulation	**Nominal Rating (µm)**	**Available grades**	**Fibres**	**Resin**
3	3 5 25 50	A3 B3 F3 L3	Cellulose/Glass Cellulose Cellulose Cellulose	Phenolic
8	1 3 5 10 25 50 75 100 125 150	Y8 A8 B8 C8 F8 L8 Q8 V8 W8 X8	Acrylic Acrylic Acrylic Acrylic Acrylic Acrylic Acrylic Acrylic/Rayon Acrylic/Rayon Acrylic/Rayon	Phenolic

Operating parameters

- Maximum operating temperature
  - * Standard: 120 °C - Formulation 3 and 8
  - * With polyethylene gasket: 93 °C
  - * With polypropylene bonds and end modifications: 82 °C
- Maximum differential pressure: 4,8 bar @ 82 °C
- Recommended change-out differential pressure: 2,4 bar

Dimensions (nominal)

- Inside diameter: 26,9 mm (1 1/16") - Outside diameter: 65,9 mm (2 19/32")
- Cartridge length: from 248 to 1016 mm (9 ¾" through 40")
  Special length available on request.

Micro-Klean G Series: rigid, graded density cartridge

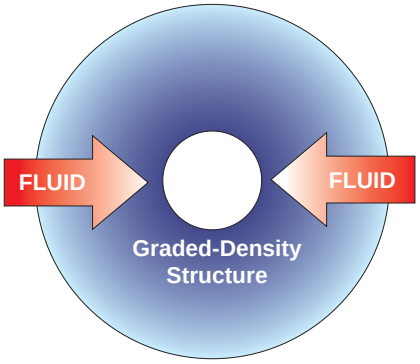

Figure 1: Graded density structure

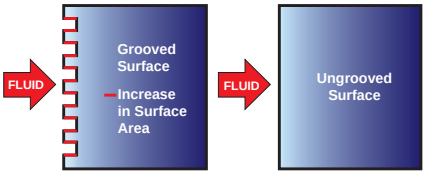

Figure 2 : Surface area comparison

Flow rate : pressure drop data			
Nominal Rating	**Grade**	**Specific ΔP, 10" Cartridge (mbar/lpm)**	**Max. Aqueous Flow Rate/10" (lpm)**
1 µm	Y8	5.93	18.9
3 µm	A8	3.71	18.9
5 µm	B8	2.32	18.9
10 µm	C8	1.3	18.9
25 µm	F8	0.65	22.7
50 µm	L8	0.41	22.7
75 µm	Q8	0.26	22.7
100 µm	V8	0.17	30.3
125 µm	W8	0.07	30.3
150 µm	X8	0.06	30.3
3 µm	A3	2.78	18.9
5 µm	B3	1.48	18.9
25 µm	F3	1.19	22.7
50 µm	L3	0.72	22.7

Micro-Klean G Series Ordering Guide

Standard Products:

Range	Finishing	Cartridge Length	Nominal Micron Rating	Formulation *	DOE or SOE version	Gasket material
MK	G = Grooved	DOE 78 = 9 ¾” 80 = 10”	Y = 1 µm A = 3 µm B = 5 µm C = 10 µm F = 25 µm L = 50 µm Q = 75 µm V = 100 µm W = 125 µm X = 150 µm	3 = cellulose fibre & phenolic resin 8 = acrylic fibre & phenolic resin	DOE length Module “ “ = 9 ¾” or 10” 2 = 19 ½” or 20” 3 = 29 ¼” or 30” 4 = 39” or 40”	“ “ = no gasket NG = with flat Polyethylene Gasket
		SOE 10 = 10” 20 = 20” 30 = 30” 40 = 40”			SOE end cap B = Code 7 Pall (226 O-ring) C = Code 8 Pall (222 O-ring) F = Code 3 Pall (222 O-ring)	O-ring material A = Silicone B = Fluorocarbon C = EPR D = Nitrile K = PTFE encapsulated viton X = PTFE encapsulated silicone
					R = Spring on top version	N = no gasket G = with flat Polyethylene Gasket

* Remark on available grades: Formulation 3: A3, B3, F3, L3 Formulation 8: all grades available

- Cartridges are packed in partitioned boxes and branded with the micron rating and formulation.

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Data may be subject to change without further notice.

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