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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.

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

Reproducible filtration characteristics

Customized shapes and sizes available upon request



Applications

Paint, varnishes, solvent recovery

Process water

Photographic emulsions

Oxide slurries

Inks & dyes

Plastics

Organic solvents (alcohols, ketones, ethers...) and hydrocarbons

Magnetic media

3M

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" $\frac{3}{4}$ 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 μ m 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 by 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	A3	Cellulose/Glass	Phenolic
	5	B3	Cellulose	
	25	F3	Cellulose	
	50	L3	Cellulose	
8	1	Y8	Acrylic	Phenolic
	3	A8	Acrylic	
	5	B8	Acrylic	
	10	C8	Acrylic	
	25	F8	Acrylic	
	50	L8	Acrylic	
	75	Q8	Acrylic	
	100	V8	Acrylic/Rayon	
	125	W8	Acrylic/Rayon	
	150	X8	Acrylic/Rayon	

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 3/4" through 40")
Special length available on request.

Micro-Klean G Series: rigid, graded density cartridge

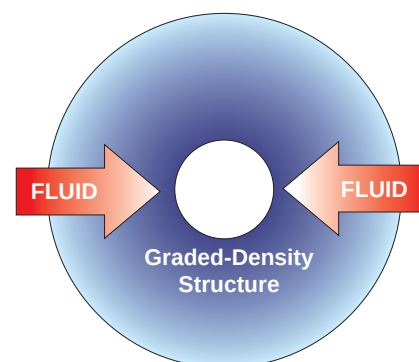


Figure 1: Graded density structure

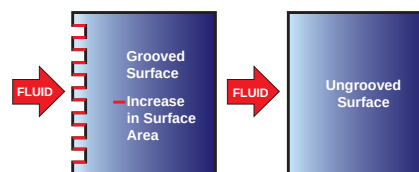


Figure 2 : Surface area comparison

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) R = Spring on top version	O-ring material A = Silicone B = Fluorocarbon C = EPR D = Nitrile K = PTFE encapsulated viton X = PTFE encapsulated silicone 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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3M Purification MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Since a variety of factors can affect the use and performance of a 3M Purification product in a particular application, some of which are uniquely within the user's knowledge and control, user is responsible for determining whether or not the 3M Purification product is fit for a particular purpose and suitable for user's method of application.

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WARRANTY

Seller warrants its equipment against defects in workmanship and material for a period of 12 months from date of shipment from the factory under normal use and service and otherwise when such equipment is used in accordance with instructions furnished by Seller and for purposes disclosed in writing at the time of purchase, if any. Any unauthorised alteration or modification of the equipment by Buyer will void this warranty. Seller's liability under this warranty shall be limited to the replacement or repair, F.O.B., point of manufacture, of any defective equipment or part which, having been returned to the factory, transportation charges prepaid, has been inspected and determined by Seller to be defective. THIS WARRANTY IS IN LIEU OF ANY OTHER WARRANTY, EITHER EXPRESSED OR IMPLIED, AS TO DESCRIPTION, QUALITY, MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE OR USE, OR ANY OTHER MATTER. Under no circumstances shall Seller be liable to Buyer or any third party for any loss of profits or other direct or indirect costs, expenses, losses or consequential damages arising out of or as a result of any defects in or failure of its products or any part or parts thereof or arising out of or as a result of parts or components incorporated in Seller's equipment but not supplied by the Seller.

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For more contact addresses visit our website www.3M.eu/filtration or www.3Mpurification.com/international.

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The below 3M Cuno Mikroklean G-series cartridge filters are all the models that are potentially possible in all variations.
Please note that not all models are actually produced or on stock and some model numbers and names have become obsolete.
Nevertheless this should help as cross reference table chart for Cuno filters nomenclature.

Micro-Klean G-series

MKG78Y32NG	MKG80Y32NG	MKG10Y3BA	MKG20Y3BA	MKG30Y3BA	MKG40Y3BA	MKG40X3BC	MKG30Q8RN	MKG10W3CD	MKG10F3RG	MKG78V8RN	MKG80V8RN	MKG78B8RN
MKG78Y33NG	MKG80Y33NG	MKG10Y3BB	MKG20Y3BB	MKG30Y3BB	MKG40Y3BB	MKG40X3BD	MKG30Q8RG	MKG10W3CK	MKG10L3RN	MKG78V8RG	MKG80V8RG	MKG78B8RG
MKG78Y34NG	MKG80Y34NG	MKG10Y3BC	MKG20Y3BC	MKG30Y3BC	MKG40Y3BC	MKG40X3BK	MKG30V8RN	MKG10W3CX	MKG10L3RG	MKG78W8RN	MKG80W8RN	MKG78C8RN
MKG78A32NG	MKG80A32NG	MKG10Y3BD	MKG20Y3BD	MKG30Y3BD	MKG40Y3BD	MKG40X3BA	MKG30V8RG	MKG10W3FA	MKG10Q3RN	MKG78W8RG	MKG80W8RG	MKG78C8RG
MKG78A33NG	MKG80A33NG	MKG10Y3BK	MKG20Y3BK	MKG30Y3BK	MKG40Y3BK	MKG40X3CB	MKG30W8RN	MKG10W3FB	MKG10Q3RG	MKG78X8RN	MKG80X8RN	MKG78F8RN
MKG78A34NG	MKG80A34NG	MKG10Y3BX	MKG20Y3BX	MKG30Y3BX	MKG40Y3BX	MKG40X3CB	MKG30W8RG	MKG10W3FC	MKG10V3RN	MKG78X8RG	MKG80X8RG	MKG78F8RG
MKG78B32NG	MKG80B32NG	MKG10Y3CA	MKG20Y3CA	MKG30Y3CA	MKG40Y3CA	MKG40X3CC	MKG30X8RN	MKG10W3FD	MKG10V3RG	MKG10Y3RN	MKG10Y8RN	MKG80B8RN
MKG78B33NG	MKG80B33NG	MKG10Y3CB	MKG20Y3CB	MKG30Y3CB	MKG40Y3CB	MKG40X3CD	MKG30X8RG	MKG10W3FK	MKG10W3RN	MKG10Y3RG	MKG10Y8RG	MKG80B8RG
MKG78B34NG	MKG80B34NG	MKG10Y3CC	MKG20Y3CC	MKG30Y3CC	MKG40Y3CC	MKG40X3CK	MKG40Y8RN	MKG10W3FX	MKG10W3RG	MKG10A3RN	MKG10A8RN	MKG80C8RN
MKG78C32NG	MKG80C32NG	MKG10Y3CD	MKG20Y3CD	MKG30Y3CD	MKG40Y3CD	MKG40X3CX	MKG40Y8RG	MKG10X3BA	MKG10X3RN	MKG10A3RG	MKG10A8RG	MKG80C8RG
MKG78C33NG	MKG80C33NG	MKG10Y3CK	MKG20Y3CK	MKG30Y3CK	MKG40Y3CK	MKG40X3FA	MKG40A8RN	MKG10X3BB	MKG10X3RG	MKG10B3RN	MKG10B8RN	MKG80F8RN
MKG78C34NG	MKG80C34NG	MKG10Y3CX	MKG20Y3CX	MKG30Y3CX	MKG40Y3CX	MKG40X3FB	MKG40A8RG	MKG40V3FB	MKG10F8RG	MKG10B3RG	MKG10B8RG	MKG80F8RG
MKG78F32NG	MKG80F32NG	MKG10Y3FA	MKG20Y3FA	MKG30Y3FA	MKG40Y3FA	MKG40X3FC	MKG30Q3RN	MKG40V3FC	MKG10L8RN	MKG10C3RN	MKG10C8RN	MKG10F3FA
MKG78F33NG	MKG80F33NG	MKG10Y3FB	MKG20Y3FB	MKG30Y3FB	MKG40Y3FB	MKG40X3FD	MKG30Q3RG	MKG40V3FD	MKG10L8RG	MKG10C3RG	MKG10C8RG	MKG10F3FB
MKG78F34NG	MKG80F34NG	MKG10Y3FC	MKG20Y3FC	MKG30Y3FC	MKG40Y3FC	MKG40X3FK	MKG30V3RN	MKG40V3FK	MKG10Q8RN	MKG10L3BK	MKG20L3BK	MKG10F3FC
MKG78L32NG	MKG80L32NG	MKG10Y3FD	MKG20Y3FD	MKG30Y3FD	MKG40Y3FD	MKG40X3FX	MKG30V3RG	MKG40V3FX	MKG10Q8RG	MKG10L3BX	MKG20L3BX	MKG10F3FD
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MKG78L34NG	MKG80L34NG	MKG10Y3FX	MKG20Y3FX	MKG30Y3FX	MKG40Y3FX	MKG30X3BD	MKG30W3RG	MKG20C3RN	MKG10V8RG	MKG10L3CC	MKG20L3CB	MKG10F3FX
MKG78Q32NG	MKG80Q32NG	MKG10A3BA	MKG20A3BA	MKG30A3BA	MKG40A3BA	MKG30X3BK	MKG30X3RN	MKG20C3RG	MKG10W8RN	MKG10L3CC	MKG20L3CC	MKG20F3FA
MKG78Q33NG	MKG80Q33NG	MKG10A3BB	MKG20A3BB	MKG30A3BB	MKG40A3BB	MKG30X3BX	MKG30X3RG	MKG20F3RN	MKG10W8RG	MKG10L3CD	MKG20L3CD	MKG20F3FB
MKG78Q34NG	MKG80Q34NG	MKG10A3CB	MKG20A3CB	MKG30A3CB	MKG40A3CB	MKG30X3CA	MKG40Y3RN	MKG20F3RG	MKG10X8RN	MKG10L3CK	MKG20L3CK	MKG20F3FC
MKG78V32NG	MKG80V32NG	MKG10A3BD	MKG20A3BD	MKG30A3BD	MKG40A3BD	MKG30X3CB	MKG40Y3RG	MKG20L3RN	MKG10X8RG	MKG10L3CX	MKG20L3CX	MKG20F3FD
MKG78V33NG	MKG80V33NG	MKG10A3BK	MKG20A3BK	MKG30A3BK	MKG40A3BK	MKG30X3CC	MKG40A3RN	MKG20L3RG	MKG10Q3BB	MKG10L3FA	MKG20L3FA	MKG20F3FK
MKG78V34NG	MKG80V34NG	MKG10A3BX	MKG20A3BX	MKG30A3BX	MKG40A3BX	MKG30X3CD	MKG40A3RG	MKG20Q3RN	MKG10Q3BK	MKG10L3FB	MKG20L3FB	MKG20F3FX
MKG78W32NG	MKG80W32NG	MKG10A3CA	MKG20A3CA	MKG30A3CA	MKG40A3CA	MKG30X3CK	MKG30B3RN	MKG20B8RG	MKG10Q3BD	MKG10L3FC	MKG20L3FC	MKG20F3FA
MKG78W33NG	MKG80W33NG	MKG10A3CB	MKG20A3CB	MKG30A3CB	MKG40A3CB	MKG30X3CX	MKG30B3RG	MKG20C8RN	MKG10Q3BK	MKG10L3FD	MKG20L3FD	MKG30F3FB
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MKG78X32NG	MKG80X32NG	MKG10A3CD	MKG20A3CD	MKG30A3CD	MKG40A3CD	MKG30X3FB	MKG30C3RG	MKG20F8RN	MKG10Q3CA	MKG10L3FX	MKG20L3FX	MKG30F3FD
MKG78X33NG	MKG80X33NG	MKG10A3CK	MKG20A3CK	MKG30A3CK	MKG40A3CK	MKG30X3FC	MKG30F3RN	MKG20F8RG	MKG10Q3CB	MKG10L3BK	MKG20L3BK	MKG30F3FK
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MKG78C83NG	MKG80C83NG	MKG10B3BK	MKG20B3BK	MKG30B3BK	MKG40B3BK	MKG20X3CK	MKG10W3BA	MKG20Q3FX	MKG20Q3CC	MKG30L3FK	MKG40L3FK	MKG40Q3RN
MKG78C84NG	MKG80C84NG	MKG10B3BX	MKG20B3BX	MKG30B3BX	MKG40B3BX	MKG20X3CX	MKG10W3BB	MKG20V3BA	MKG20Q3CD	MKG30L3FX	MKG40L3FX	MKG40Q3RG
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MKG78F83NG	MKG80F83NG	MKG10B3CB	MKG20B3CB	MKG30B3CB	MKG40B3CB	MKG20X3FB	MKG10W3BD	MKG20V3BC	MKG20Q3CC	MKG40X3RG	MKG10V3CC	MKG20V8RG
MKG78F84NG	MKG80F84NG	MKG10B3CC	MKG20B3CC	MKG30B3CC	MKG40B3CC	MKG20X3FC	MKG10W3BK	MKG20V3BD	MKG30Q3BB	MKG40W3CC	MKG10V3CD	MKG20W8RN
MKG78L82NG	MKG80L82NG	MKG10B3CD	MKG20B3CD	MKG30B3CD	MKG40B3CD	MKG20X3FD	MKG10W3BX	MKG20V3BK	MKG30Q3BC	MKG40W3CD	MKG10V3CK	MKG20W8RG
MKG78L83NG	MKG80L83NG	MKG10B3CK	MKG20B3CK	MKG30B3CK	MKG40B3CK	MKG20X3FK	MKG10W3CA	MKG20V3BX	MKG30Q3BD	MKG40W3CK	MKG10V3CX	MKG20X8RN
MKG78L84NG	MKG80L84NG	MKG10B3CX	MKG20B3CX	MKG30B3CX	MKG40B3CX	MKG20X3FX	MKG10W3CB	MKG20V3CA	MKG30Q3BK	MKG40W3CX	MKG10V3FA	MKG20X8RG
MKG78Q82NG	MKG80Q82NG	MKG10B3FA	MKG20B3FA	MKG30B3FA	MKG40B3FA	MKG20X3CB	MKG20W3BA	MKG30Q3FX	MKG20Q3DB	MKG40W3FA	MKG10V3FB	MKG20B3RN
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