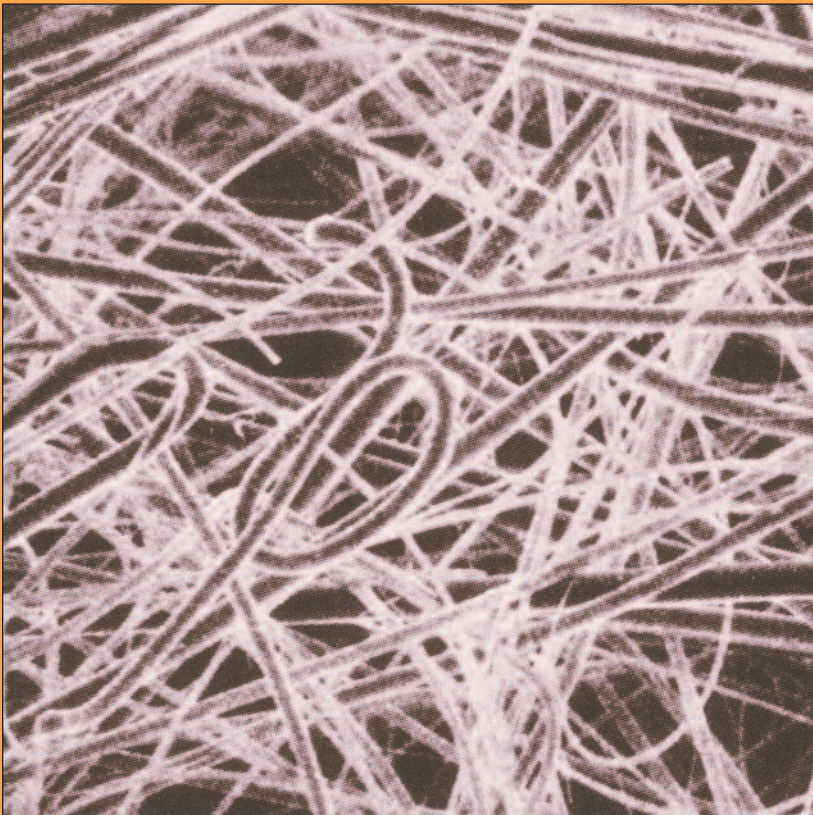


PREFILTERS/DEPTH TYPE MEDIA

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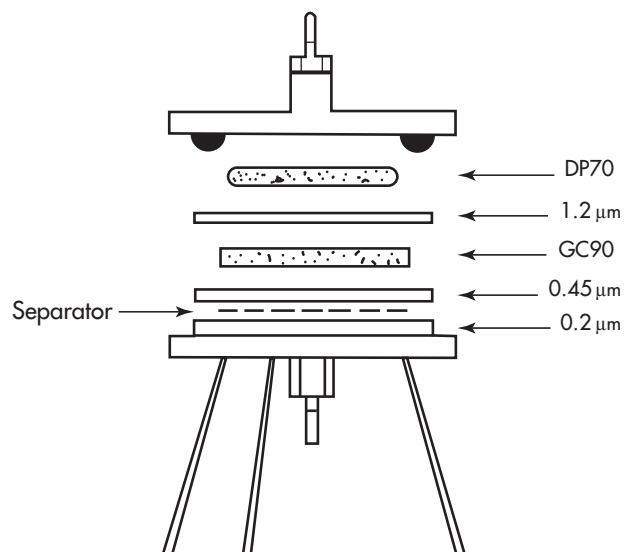
Prefilters/Depth Type Media – Introduction

The term “prefilter” refers to any type of filter that precedes the final barrier. This type of filter is often prepared from depth-type media, a random matrix of glass, cellulose, quartz or PTFE fibers. This fiber matrix may or may not include binder to maintain integrity. Because these filters trap particles within the matrix, they have a very high particle loading capacity. However, this type of filter does not have a clearly defined pore rating, only a nominal designation.

Not all depth-type filters are used as prefilters: these can be used in a wide variety of applications, such as water and air pollution analysis, liquid clarification, and cell harvesting.

Generally, a prefilter should be slightly smaller than the membrane filter it is preceding, but full sized prefilters are recommended if used alone.

Filter Holder Model	Recommended Prefilter Diameter (mm)	
	used upstream of membrane	used alone
Vacuum Type:		
KG 25, KGS 25	16	25
KG 47, KGS 47, KSF 47, KGS 47 TF	35	47
KG 90, KGS 90	70	90
Pressure Type:		
KS 13	8	13
KS 25, KS 25 F, PP 25	21	25
KS 47, KST 47, KS 47 F	35	47
PP 47, PFA 47	42	47
LS 25	25	25
LS 47	47	47
LS 47 HP	38	47



A typical serial stack incorporating Prefilters, Membranes and Polyester Mesh Separators.

Cellulose Fiber Filters

- **Cellulosic:** Random matrix of cellulose fibers
- **Inert** to organic solvents
- **No binder**
- **Thermostable:** To 180°C in a non-reactive oil, 120°C maximum in air

APPLICATIONS

- Clarify fluids containing coarse particles
- Preliminary prefilter, prolongs membrane life

Note: Not suitable for hot dilute or cold concentrated acids. Caustic liquids cause fibers to swell. Also not recommended for viscous material.

SPECIFICATIONS AND APPLICATIONS

Grade	Thickness (mm)	Applications
No. 27	0.68	Filtration of soft drinks and other beverages Clarification of oils and fats Filtration of paints and petroleum products
No. 1640	0.40	Remove activated charcoal from alcohol containing beverages Polishing filter for water treatment Clarifying filtration of fine particulates
No. 1650	0.57	Remove activated charcoal from alcohol containing beverages Polishing filter for water treatment Clarifying filtration of fine particulates Withstands higher pressures and flow rates than No. 1640

ORDERING INFORMATION: CELLULOSE FIBER FILTERS

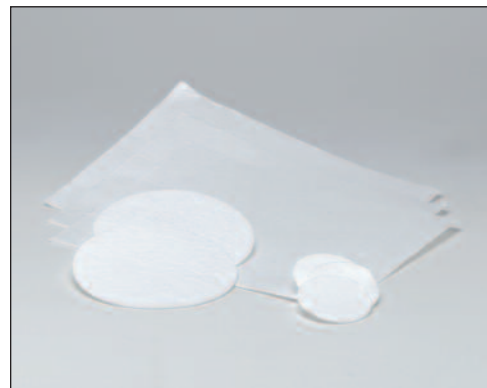
- Available in disks in the following diameters (mm): 76, 124, 257
- Package of 100
- Order by specifying first the grade of filter then the diameter, e.g. N01650257MM, N02776MM

Glass Fiber Filters

- **Dense**
- **Highly resistant** to chemical attack, biologically inert
- **Easily sterilized:** Can be baked or autoclaved
- **Store indefinitely:** Unaffected by humidity

APPLICATIONS

- Use as a prefilter to extend membrane life
- Water/air pollution analysis
- Liquid clarification
- Cell harvesting



Twelve grades of glass fiber filters are available in diameters from 10–293 mm.

ORDERING INFORMATION: GLASS FIBER FILTERS

Grade	DP70	GA55	GA100	GA200	GB100R	GB140	GC50	GC90	GD120	GF75	GS25
	Quantity/package										
10–150 mm diameter disks	50	100	100	50	100	100	100	100	50	100	100
257–293 mm diameter disks	50	50	50	50	50	50	50	50	50	50	50
8 x 10 inch sheets	S	100	S	S	50	S	S	S	S	S	S

S = Special order

Available in disks in the following diameters (mm): 10, 13, 16, 20, 21, 22, 24, 25, 26, 35, 37, 45, 47, 50, 55, 70, 75, 90, 102, 110, 124, 125, 150, 257, 293.

Order by specifying first the grade of filter then the diameter, e.g. GC5090MM, GA558X10IN.

Quartz Fiber Filters

- **Highly resistant** to chemical attack, biologically inert
- **High Purity:** Very low trace metal content, does not adsorb nitrous and sulfur dioxides; Grade QR100 is pre-fired at 1000°C for 2 hours to reduce organic contamination
- **Easily sterilized:** Can be baked or autoclaved
- **Store indefinitely:** Unaffected by humidity

APPLICATIONS

- Sample acidic gases at high (>500°C) temperatures
- Air pollution analysis

ORDERING INFORMATION: QUARTZ FIBER FILTERS

Grade	QR200	QR100
	Quantity/package	
21 – 150 mm diameter disks	50	100
8 x 10 inch sheets	S	50

S = Special order

Available in disks in the following diameters (mm): 21, 24, 26, 37, 45, 47, 55, 70, 90, 110, 125, 150.

Order by specifying first the grade of filter then the diameter, e.g. QR200125MM, QR10021MM.

SPECIFICATIONS: GLASS/QUARTZ FIBER

Grade	Applications/Characteristics	Weight (g/m ²)	Thickness (mm)	Nominal Rating (µm)	Water Flow Time ¹ (sec)
GA55	General purpose paper Air pollution monitoring	55	0.21	0.6	23
GF75	Most retentive grade offered Collection of IgC or other very fine protein precipitates Clarifying chemically aggressive solutions TCLP (EPA method 1311) – use with KST 142	75	0.35	0.3	84
GA100	General purpose paper Filtration of precipitated proteins or cells Air pollution monitoring	110	0.44	1.0	11
GA200	Thick filter recommended for filtering viscous fluids such as liquid sugars and gels	175	0.74	0.8	15
GB100R	High and low volume aerosols for airborne dust and metal contaminants Low trace metal content of As, Pb and Cd DNA/RNA and protein precipitates	95	0.40	0.6	15
GB140	Compared to GB-100R: thicker, greater wet strength, slower filtration speed Industrial waste analysis Low absorption, limited wet strength and loading capacity	140	0.56	0.4	58
GC50	Prefilter for membrane filter (0.45 µm or smaller) Scintillation counting Suspended solids analysis of industrial waters and wastewater	48	0.19	0.5	28
GC90	High wet strength Clinical screening	100	0.30	0.5	20
GD120	Prefilter for membrane filter (1.2 µm or smaller) High wet strength, very high loading capacity	123	0.51	0.9	14
GS25	Limited dirt holding capacity High wet strength Prefilter for 0.65 µm or smaller membrane	70	0.22	0.6	15
DP70	High wet strength Very high loading capacity Dust measurement	170	0.52	0.6	20
QR200	Filtration at elevated temperatures Low adsorption Monitor airborne particulates	200	1.0	-	-
QR100	Superior chemical resistance, does not absorb acid gases	85	0.38	-	-

1. Flow time is the time in seconds to filter 100 mL of distilled water at 20°C under pressure supplied by a 10 cm water column through a 10 cm² section of filter.

Gas Collection Efficiency (%) at 0.3 µm DOP	Pressure Drop (mm H ₂ O/5 cm/sec)	Binder*	Maximum Operating Temperature (°C)	Conversion				
				Whatman	Schleicher & Schuell	Pall	Millipore	Ahlstrom
99.9	34	None	500	GF/A	31		APFA	111
99.999	170	None	500	GF/F	20		APFF	151
96	20	None	500					
99.9	36	None	500					
99.99	31	None	500	EPM2000	1HV	A/E (Use for air)		
99.99	113	None	500	GF/B	32		APFB	121
99.99	53	None	500	GF/C 934 AH	30/25	A/E (Use for water)	AP-40/ APFC	131
99.99	43	Organic	120				AP15	
97	17	None	500	GF/D	40		APFD	141
99.9	33	Organic	120				AP20	164
-	53	Organic	120					
99.9	35	Inorganic	1000					
99.99	46	None	1000	QM-A		Micro Quartz		

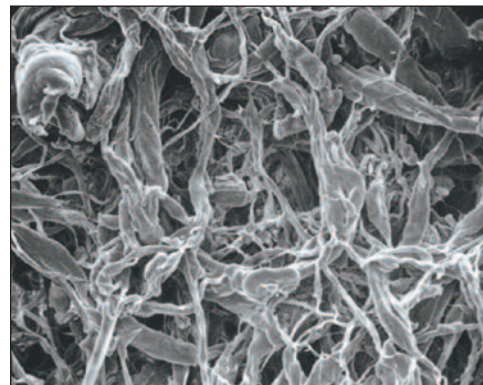
*Binder 1. Organic – Acrylic Acid Ester Emulsion
 2. Inorganic – Alumina

PTFE Filters

- **Pure PTFE fibers are sintered** to improve handling characteristics and to minimize fiber slough-off for minimal downstream contamination
- **Hydrophobic**
- **Porosity:** High air permeability with minimal pressure drop
- **Thermostable:** maximum operating temperature 260°C

APPLICATIONS

- Aqueous and nonaqueous filtration
- Filter hot acids and strong solvents
- Venting air and gases



PTFE Filter

SPECIFICATIONS

Grade	Weight (g/m ²)	Thickness (mm)	Porosity (%)	Pressure Drop (kPa)	Pressure Drop (psi)	DOP retention (% 0.3 μm)	Retentive pore, liquid (μm)
PF100	500	1.00	77	0.059	0.00856	70	10
PF060	240	0.50	75	0.069	0.01001	75	6
PF050	210	0.36	73	0.26	0.0377	85	5
PF040	500	0.95	75	0.21	0.03045	95	4
PF020	500	0.54	54	1.6	0.232	99.9	2

ORDERING INFORMATION: PTFE FILTERS

Grade	PF100	PF060	PF050	PF040	PF020
	Quantity/package				
10 – 90 mm diameter disks	10*	10*	10*	10	10
110 – 150 mm diameter disks	10	10	10	5	5
8 x 10 inch sheets	10	10	10	10	10

*55, 70, 90 mm are 20 disks per package.

- **Disks:** Available in the following diameters (mm): 13, 25, 37, 47, 55, 70, 90, 110, 125, 150
- **Sheets:** Available in 8 x 10 inch sheets
- Additional sizes available upon request
- Order by specifying first the grade of filter then the size, e.g. PF100257MM, PF04025MM

See also Phase Separating Filters on page 38.

Polyester Mesh Separators

- **Prevent pore blinding** by placing a polyester mesh separator between two membranes in series
- **Improve performance:** Increase liquid flow rate and throughput
- **Mesh Size:** 28 mesh

Note: Order same size recommended for prefilters.

ORDERING INFORMATION: POLYESTER MESH SEPARATORS

Diameter (mm)	10	16	22	26	35	37	76	124	257
Quantity per package	50	50	50	50	50	50	25	25	25

Specify code DS followed by diameter, e.g. DS124MM, DS16MM.