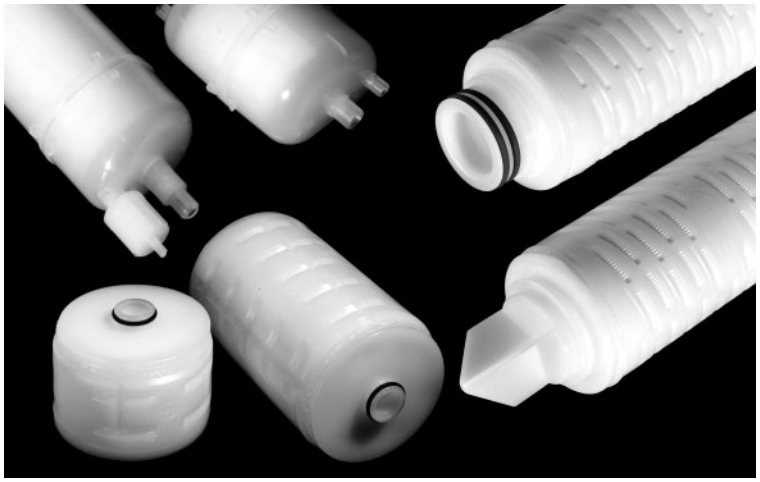
IonKleen™-SL Purifier



Description

The IonKleen™-SL Purifier has been specifically designed for the removal of metal ions from organic solvents or mixtures of organic solvents and resins. It is ideally suited for use in raw materials used in the production of photoresists and for ultra high purity solvent applications. By utilizing ion exchange groups which are covalently bonded directly to the surface of a traditional membrane filter, the IonKleen-SL purifier provides spontaneous and immediate metal removal from various base solvents and resin solvent mixtures.

- 90% metal removal
- Simplifies purification techniques
- High capacity
- Shipped dry
- Manufactured in a cleanroom environment

Specifications

Materials

- Medium: Modified ultra high molecular weight polyethylene (UHMWPE)
- Core, cage, end caps; support, and drainage: High density polyethylene (HDPE); except DFA™ which has polypropylene hardware
- O-ring options: Teflon[1] encapsulated Viton[1], Kalrez[1] and Chemraz[2]

Removal Ratings

- 0.45 µm nominal
- 0.07 µm (Falcon® Filter[3])

Purifier Media Area

- 47 mm disk: 2.1 in^2 / 13.5 cm^2
- DFA: 170 in^2 / 0.11 m^2
- ABD1: 6.2 ft^2 / 0.58 m^2
- Falcon® Filter: 294 in^2 / 0.19 m^2

Configurations

- Disposable filter capsule (DFA, MIR)
- Falcon 16 filter cartridge
- Code 3 filter cartridge

Operating Conditions

- Maximum temperature: 104ºF / 40ºC
- Maximum forward/reverse differential pressure: 50 psid @ 104ºF / 3.4 bar @ 40ºC

Recommended Applications

The IonKleen-SL Purifier is recommended for solvent point-of-use purification and for use in purifying the precursor materials (solvents, resins and surfactants) used in the manufacture of photoresists. It has also shown positive results in the purification of bulk and point-of-use IPA dispense.

[1] Viton, Teflon and Kalrez are registered trademarks of DuPont Dow Elastomers
[2] Chemraz is a trademark of Greene Tweed & Co.
[3] Falcon 16 cartridges have an additional 0.07 µm filtration layer

Typical Performance

Solvent: PGMEA (Single Pass)

Chemical Elements	Detection Limit (ppb)	Influent Level (ppb)	Effluent Level (ppb)
Al	0.1	0.9	< D.L.
B	2.0	< D.L.	< D.L.
Ca	3.0	3.5	< D.L.
Cr	0.5	< D.L.	< D.L.
Cu	0.5	6.8	< D.L.
Fe	2.0	12	< D.L.
Pb	0.1	2.9	< D.L.
Li	0.05	< D.L.	< D.L.
Mn	0.1	0.2	< D.L.
Ni	0.1	< D.L.	< D.L.
Na	0.1	310	0.6
Sn	< 1.0	< D.L.	< D.L.
Ti	1.0	< D.L.	< D.L.
Zn	0.5	690	< D.L.

Pressure Drop vs. Liquid Flow Rate

Part Number	Pressure Drop (2.8 cP)		Recommended Flow Rate for EL (2.8 cP)	Removal Rating
MIR47SM4	16.0 mL / min / psid	23 mL / min / 100 mbar	7.0 mL / min	0.45 µm Nominal
DFA1SRPESW44	1.3 L / min / psid	1.9 L / min / 100 mbar	600 mL / min	0.45 µm Nominal
ABD1SRP3EH1	6.7 L / min / psid	9.7 L / min / 100 mbar	3.2 L / min	0.45 µm Nominal
MCD9116SRPUG007EH11	1.3 L / min / psid	1.9 L / min / 100 mbar	600 mL / min	0.07 µm Absolute

Part Numbering / Ordering Information

Part Number	Capacity[4]	Total Metal Ion Exchange (in / mm) (90% Efficiency)	Nominal Length (in / mm)	Maximum Diameter	Configuration Code	O-Ring Size or Capsule Connection
MIR47SM4	> 0.07 meq	2.8 / 70	2.6 / 65	47 mm capsule	¼" Swagelok[5] in/out	
DFA1SRPESW44	> 16 meq	4.5 / 115	2.8 / 72	Disposable capsule	¼" Swagelok in/out	
ABD1SRP3EH1	> 80 meq	10 / 254	2.8 / 71	Code 3 cartridge	2-222 Teflon Encapsulated Viton O-ring	
MCD9116SRPUG007EH11	> 16 meq	2.0 / 52	2.62 / 66	Falcon 16 cartridge	015 single Kalrez O-ring designed to fit existing pumps	

[4] Typical mixed ionic challenge includes Na, Fe, Cu, Ca, and Zn, with typical influent level concentrations of 1 ppm or less.
[5] Swagelok is a registered trademark of Swagelok Co.

Unit conversion: 1 bar = 100 kilopascals

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