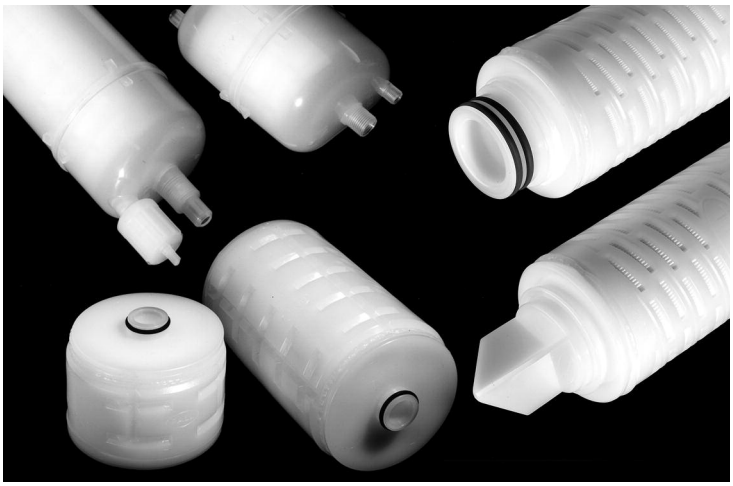
PALL Microelectronics

IonKleen™ SL Purifier



Description

The IonKleen™ SL purifier has been specifically designed for the removal of metal ions from organic solvents and mixtures of organic solvents and resins. It is well-suited for use with 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: High density polyethylene (HDPE); except DFA™ which has polypropylene hardware
- Support and drainage: High density polyethylene (HDPE)
- O-ring options: Teflon[1] encapsulated Viton[1], Kalrez[1] and Chemraz[2]

Removal Rating
- 0.45 µm nominal

Purifier Media Area
- ABD1: 0.58 m^2 / 6.2 ft^2
- DFA1 / DFA4201: 0.11m^2 / 170 in^2
- DFA2: 0.22m^2 / 340 in^2

Configurations
- Disposable filter capsule (DFA)
- Code 3 filter cartridge

Connections (DFA capsules)
Inlet, outlet / vent, drain
- ¼ in NPT / ⅛ in NPT
- ¼ in Swagelok[3] / ¼ in Swagelok
- 6 mm Pillarfitting[4] / 4 mm Pillarfitting
- 8 mm Pillarfitting / 4 mm Pillarfitting

Operating Conditions
- Maximum temperature: 40ºC / 104ºF
- Maximum forward/reverse differential pressure: 340 kPa @ 40ºC / 50 psid @ 104ºF

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 polymers) 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 E. I. du Pont de Nemours and Company
[2] Chemraz is a trademark of Greene, Tweed & Co.
[3] Swagelok is a trademark of Swagelok Co.
[4] Pillarfitting is a trademark of Nippon Pillar Packing Co., Ltd.

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)[5]		Recommended Flow Rate in ethyl lactate (2.8cP)	Removal Rating
DFA1 / DFA4201	1.3 L / min / psid	1.9 L / min / 10 kPa	600 mL / min	0.45 µm Nominal
DFA2	2.6 L / min / psid	3.8 L / min / 10 kPa	1.2 L / min	0.45 µm Nominal
ABD1SRP3EH1	6.7 L / min / psid	9.7 L / min / 10 kPa	3.2 L / min	0.45 µm Nominal

[5] For liquids with a viscosity differing from ethyl lactate (EL), divide the pressure drop by 2.8 and multiply by the viscosity in centipoise.

Part Numbering / Ordering Information

Part Number	Total Metal Ion Exchange Capacity[6] (90% Efficiency)	Length (mm / in)	Maximum Diameter (mm / in)	Configuration Code	O-Ring Size or Capsule Connection (Inlet / Outlet)
DFA1SRPESW44	> 16 meq	114.5 / 4.51	72 / 2.8	Disposable capsule	¼ in Swagelok
DFA1SRPENP64M	> 16 meq	116.8 / 4.6	72 / 2.8	Disposable capsule	6 mm Pillarfitting
DFA1SRPENP84M	> 16 meq	121 / 4.76	72 / 2.8	Disposable capsule	8 mm Pillarfitting
DFA2SRPENP84M	> 32 meq	199 / 7.83	72 / 2.8	Disposable capsule	8 mm Pillarfitting
DFA4201SRPE	> 16 meq	114.5 / 4.51	72 / 2.8	Disposable capsule	¼ in NPT
ABD1SRP3EH1[7]	> 80 meq	254 / 10	71 / 2.8	Code 3 cartridge	2-222 Teflon encapsulated Viton O-ring

[6] Typical mixed ionic challenge includes Na, Fe, Cu, Ca, and Zn, with typical influent level concentrations of 1 ppm or less.
[7] The above filter configurations are also available in 508 mm / 20 in and 762 mm / 30 in lengths. These can be ordered by changing the fourth digit in the part number to a 2 or a 3, respectively.

Unit conversion: 1 bar = 100 kilopascals

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