TECHNICAL INFORMATION

SPI Supplies
206 Garfield Avenue,
West Chester, PA 19380, USA

SPI-PORE POLYCARBONATE MEMBRANE FILTERS

Physical Properties of SPI-Pore™ Polycarbonate Membrane Filters

Thickness	6-14 µm
Variation of thickness within same pack	+/- 5%
Refractive Indices	Birefringent at 1.584, 1.625
Nominal tare weight	1.0 mg/cm^2
Variation of tare weight within same pack	+/- 5%
Water adsorption (%wt. gain 24 hr immersion)	0.24%
Residual Ash Weight average	0.92 micrograms/cm^2
Specific Gravity	0.94-0.97
Tensile Strength	<3000 psi (207 bar)
Autoclavable	Yes
Leachables	Negligible
Wetting Characteristics	Hydrophilic
(can be made all	or partially hydrophobic)
Wetting Agent	Polyvinyl pyrrolidone (PVP)
Brust strength, minimum	10 psi (0.7 bar)
Migration of Filter Media	Zero
Maximum Service Temperature	140°C (280°F)
Optical Properties	Translucent
	slight green tinge
(except the black membranes for epiflourescense work)	
Pressure specifications	2000 psi (properly supported)
	15-20 psi (not supported)

Hydrophilic characteristics:
Polycarbonate is inherently hydrophobic and in order to increase the wettability of the membrane surface all SPI-Pore membranes are given a final treatment with PVP (polyvinylpyrrolidone).

SPI-Pore™ Polycarbonate Membrane Filters are free of contaminants. And to assure the absence of such unwanted and distracting particles on the surface of the filter, of particular importance in epifluorescent microscopy and other critical analytical procedures, SPI-Pore membranes are produced under Class 100 conditions in critical manufacturing steps.

Membrane properties as a function of pore size

Pore Size (µm)	Pore Density (pores/cm^2)	Nominal Weight (mg/cm^2)	Nominal Thickness (µm)	Bubble Point[2] (psi)	Typical Water[a] (ml/min/cm^2)	FlowRates Air[b] (l/min/cm^2)
20	$4x10^4$	0.1	3	< 1	1100	80 [3]
14	$5x10^4$	0.6	6	< 1	2000	85 [3]
12	$1x10^5$	0.9	8	< 2	3000	85 [3]
10	$1x10^5$	1.1	10	< 2	1400	40 [3]
8	$1x10^5$	0.8	7	< 2	1300	40 [3]
5	$4x10^5$	1.1	10	3	650	40 [3]
3	$2x10^6$	0.9	9	5	600	50 [3]
2	$2x10^6$	1.1	10	7	170	22
1	$2x10^7$	1.1	11	14	170	25
0.8	$3x10^7$	0.9	9	18	120	20
0.6	$3x10^7$	1.0	9	24	83	10
0.4	$1x10^8$	1.0	10	36	41	10
0.2[1]	$3x10^8$	1.1	10	72	17	4
0.1	$4x10^8$	0.7	6	> 100	2	2
0.08	$4x10^8$	0.7	6	> 100	1	1
0.05	$6x10^8$	0.7	6	> 100	0.4	0.5
0.03	$6x10^8$	0.7	6	> 100	0.2	0.1
0.01	$6x10^8$	0.7	6	> 100	< 0.1	0.01

NOTES

[a] Initial flow rates in mL/min/cm² using prefiltered water at 10 psid (0.7 kg/cm²), ± 35% depending on test methodology.
[b] Initial flow rates in L/min/cm² using prefiltered air at 10 psid (0.7 kg/cm²).
[1] "Regular" flow grade. Low pore density grade available as special order with minimums.
[2] Calculated water bubble point, typical values (assuming 55° contact angle).
[3] Differential pressure, 5 psi (0.35 kg/cm²).

Additional Notes

Surface Finish:

There is a shiny and. "matte" side of the SPI Pore Polycarbonate Membrane Filter. The shiny side is typically used for most filtration applications. The peak-to-valley distance on the "matte" side is less than 0.3 µm. On the shiny side, the peak-to-valley distance is less than 0.1 µm. This is an ideal surface on which to collect and analyze samples for light, confocal, or any other kind of imaging device that would be visualizing captured particles on the substrate membrane filter.

Low Absorption and Adsorption:

SPI-Pore Polycarbonate Membrane Filters exhibit extremely low adsorption and adsorption losses, varying from 3 to 6%. This binding is also non-specific, important when filtering critical solutions. In comparison, tortuous pore cellulosic filters adsorb from 40-65% depending on the molecule.

Non-hydroscopic:

Since SPI-Pore Polycarbonate Membrane Filters are non-hygroscopic, they are particularly well suited for gravimetric analysis. They do not require drying when used directly out of the package. If they are wet, they can be dried rapidly and they will not pick up moisture from the air during weighing.

In addition, fluid absorption is minimal. For example, samples immersed in water for 24 hours have an average weight gain of only 0.24%. SPI-Pore Polycarbonate Membrane Filter membranes also will not generally absorb components from fluid solutions.

Revised: EER

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