

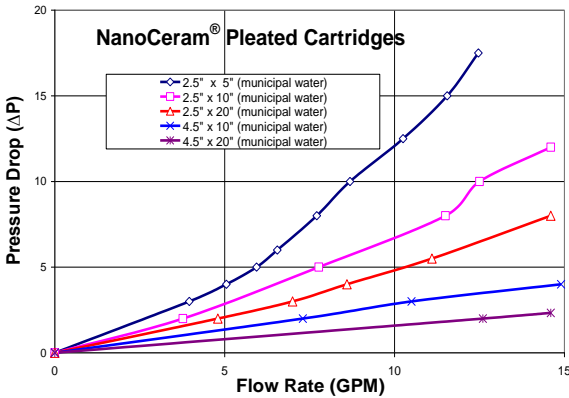


## NanoCeram® “P” Series Pleated Filter Cartridges

### Features and Benefits

Thermally bonded blend of microglass fibers & cellulose infused with nanoalumina fibers in a non-woven matrix creates an electropositively-charged depth filter media. When assembled into a pleated cartridge, NanoCeram® offers a unique combination of efficiency, capacity, flowrate & low pressure drop at levels unmatched in today’s filtration marketplace. In addition, all NanoCeram filter cartridges are assembled from only FDA-compliant materials.

- Silt Density Index (SDI):  $\leq 0.5$
- Turbidity Reduction:  $< 0.01$  NTU until Terminal  $\Delta P$  (40psi)
- Low  $\Delta P$ :  $< 1.5$ psi @ 4gpm (Part No. P2.5-10)
- Efficiency: 99.9% reduction of  $0.2\mu$  particulate (monodispersed latex spheres)
- Flow Rate:  $5\text{mL}/\text{cm}^2/\text{min}$  @ 4gpm (Part No. P2.5-10)
- Dirt Holding Capacity (DHC):  $572 \text{ mg}/\text{in}^2$  (A2 Fine Test Dust)
- Cyst Retention:  $> 5$  LRV
- Bacteria (*Klebsiella terrigena*):  $> 5$  LRV
- Temperature Range: 39 - 135° F (4 - 57°C)
- Maximum Pressure: 70 psi (4.83 bar)
- Effective pH Range: 5 - 10



### Applications

Primary filtration in lieu of ultraporous and microporous membranes

Prefiltration for:

- Reverse Osmosis (R.O.)
- Ultrafiltration
- Microfiltration
- Ultraviolet (UV)
- Ozonation
- Chlorination

Food, Beverage & Bottled Water

Pharmaceutical & Biomedical

Cosmetics & Personal Care

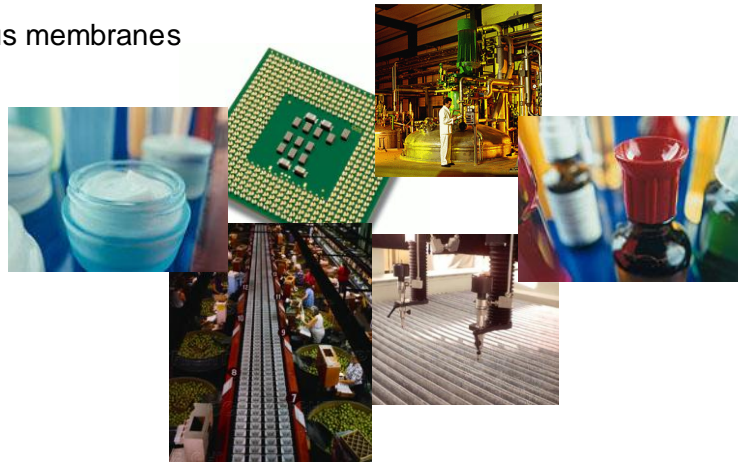
Microelectronics

Power Generation

Machining (including EDM)

Potable:

- Municipal
- Point-of-Entry (POE)
- Point-of-Use (POU)
- Personal



Each NanoCeram® pleated filter cartridge is designed to satisfy the most difficult requirements in water treatment. By using the scientific principal of electropositive attraction/capture, NanoCeram® technology leads to a rapid and highly efficient adsorption of virtually all particle sizes. NanoCeram®’s media has a high capacity for particles as large as tens of microns or as small as a few nanometers. Each NanoCeram® Filter Cartridge exhibits a rating of  $0.2\mu$  . . . a rating typically associated with ultraporous membranes. Yet NanoCeram® flow rates are hundreds of times greater than such membranes.

## NanoCeram<sup>®</sup> P Series:

Part No.		P2.5-5 2.5" x 5"	P2.5-10 2.5" x 10"	P2.5-20 2.5" x 20"	P2.5-30 2.5" x 30"	P2.5-40 2.5" x 40"	P4.5-10 4.5" x 10"	P4.5-20 4.5" x 20"	P4.5-40 4.5" x 40"
Filter Surface Area	(in <sup>2</sup> )	200	490	1020	1530	2030	1,195	2,450	5,040
	(ft <sup>2</sup> )	1.4	3.4	7.1	10.6	14.1	8.3	17	35
	(cm <sup>2</sup> )	1,290	3,160	6,600	9,870	13,100	7,710	15,800	32,500
	(m <sup>2</sup> )	0.129	0.316	0.66	0.99	1.31	0.771	1.58	3.25
<b>Dirt Holding Capacity</b>	<b>(mg)</b>	<b>114400</b>	<b>280280</b>	<b>583440</b>	<b>875160</b>	<b>1161160</b>	<b>683540</b>	<b>1401400</b>	<b>2882880</b>
<b>Electroadsorptive (active) Surface Area</b>	(in <sup>2</sup> )	<b>8.8 x 10<sup>6</sup></b>	<b>2.16 x 10<sup>7</sup></b>	<b>4.88 x 10<sup>7</sup></b>	<b>6.73 x 10<sup>7</sup></b>	<b>8.93 x 10<sup>7</sup></b>	<b>5.26 x 10<sup>7</sup></b>	<b>1.08 x 10<sup>8</sup></b>	<b>2.22 x 10<sup>8</sup></b>
	(ft <sup>2</sup> )	<b>61,000</b>	<b>149,700</b>	<b>339,000</b>	<b>467,000</b>	<b>620,000</b>	<b>356,000</b>	<b>750,000</b>	<b>1,540,000</b>
	(cm <sup>2</sup> )	<b>5.70 x 10<sup>7</sup></b>	<b>1.39 x 10<sup>8</sup></b>	<b>3.15 x 10<sup>8</sup></b>	<b>4.34 x 10<sup>8</sup></b>	<b>5.76 x 10<sup>8</sup></b>	<b>3.31 x 10<sup>8</sup></b>	<b>6.97 x 10<sup>8</sup></b>	<b>1.43 x 10<sup>9</sup></b>
	(m <sup>2</sup> )	<b>5,700</b>	<b>13,900</b>	<b>31,500</b>	<b>43,400</b>	<b>57,600</b>	<b>33,100</b>	<b>69,700</b>	<b>143,000</b>
Diameter x Length	(in) (cm)	2.75 x 4.8 7 x 12.2	2.75 x 9.75 7 x 24.8	2.75 x 20 7 x 50.8	2.75 x 30 7 x 76.2	2.75 x 40 7 x 101.6	4.45 x 9.75 11.3 x 24.8	4.45 x 20 11.3 x 50.8	4.45 x 40 11.3 x 101.6
Suggested Flow Rate	(GPM)	2	4	8	12	16	10	20	40
	(LPM)	7.5	15	30	45	60	38	76	152
Peak Flow Rate *	(GPM)	5	10	20	30	40	25	50	100
	(LPM)	19	38	76	114	151	95	189	380

\*Peak Flow Rate based on initial flow using new filter cartridge and clean water during laboratory testing.

## Turbidity Reduction & Silt Density Index (SDI<sub>30</sub>):

Manufacturer	Type	Flow Rate (GPM)	Type of water	Turbidity, NTU		SDI <sub>30</sub> <sup>a</sup>
				in	out	
Argonide (NanoCeram <sup>®</sup> )	P2.5-10 2.5" x 10"	4	A2 dust <sup>b</sup> in RO water	252.00	<0.01	0.2 ± 0.3 <sup>c</sup>
			Municipal tap water	0.87	<0.01	0.5 ± 0.1 <sup>d</sup>
"A"	1µ Absolute 2.5" x 10"	4	A2 dust <sup>b</sup> in RO water	239.00	60.00	ND <sup>e</sup>
			Municipal tap water	0.54	0.10	4.4 ± 0.2 <sup>f</sup>
	0.35µ Standard 2.5" x 10"	4	A2 dust <sup>b</sup> in RO water	239.00	55.00	ND <sup>e</sup>
			Municipal tap water	0.57	0.14	4.6 ± 0.2 <sup>f</sup>
"B"	1µ Standard 2.5" x 20"	4	Municipal tap water	1.3 ± 0.1 <sup>g</sup>	0.4 ± 0.1 <sup>g</sup>	N/A
			A2 dust <sup>b</sup> in RO water	243.00	23.00	ND <sup>e</sup>
	1µ Absolute 2.5" x 10"	4	Municipal tap water	1.3 ± 0.3 <sup>g</sup>	<0.01 <sup>h</sup>	5.5 ± 0.2 <sup>f</sup>
			5µ Standard 2.5" x 20"	4	Municipal tap water	1.5 ± 0.7 <sup>g</sup>
"C" *	0.1µ Hollow Fiber Membrane 6.5" x 85" Module	22	N/A	N/A	<0.08	< 2.0 - 3.0

\* Manufacturer's published specifications.

### Notes:

- Silt Density Index (SDI<sub>30</sub>);
- ISO 121030-1, A2 Fine Test Dust available from PTI technology Inc.;
- Average of six measurements;
- Average of four measurements;
- Not done since turbidity of filtered water is unacceptable high (expected to be less than 1 NTU);
- Average of three measurements;
- Average over 3 hrs test;
- During first 30 minutes of run;
- After 30 minutes of continuous water run.