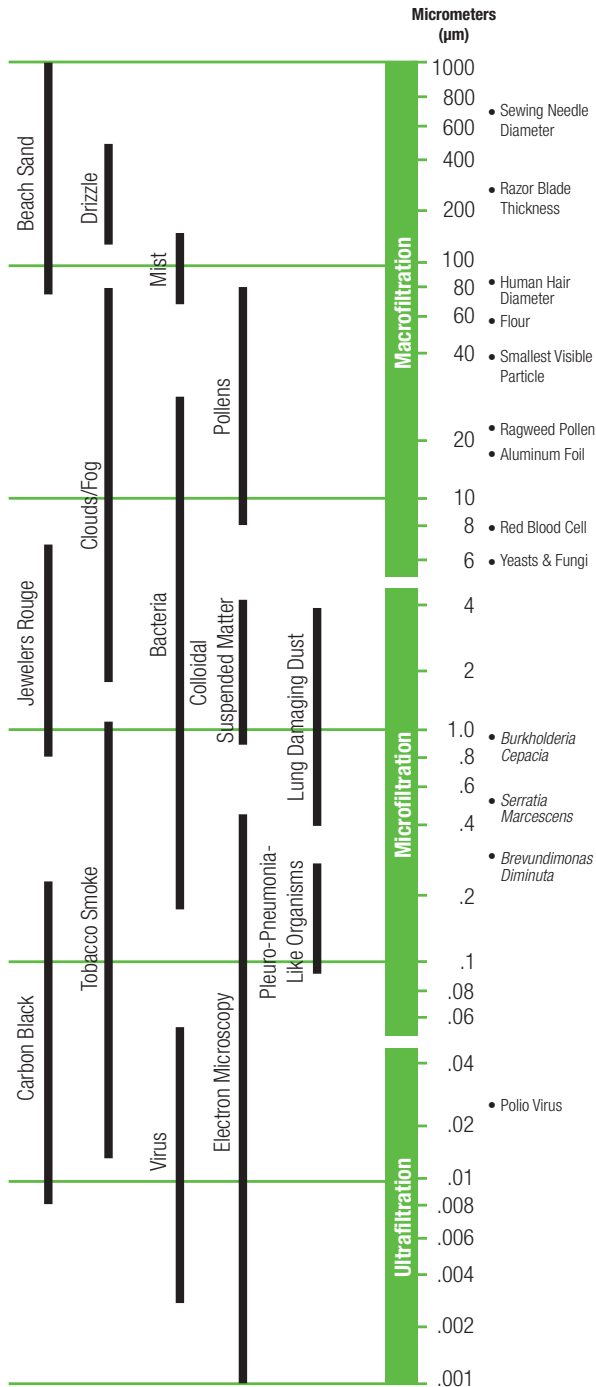


## A Key to the Relative Size of Particles



## Cascada™ Lab Water Purification Systems High-quality Lab Water on Demand

Today's research and diagnostic laboratories require purified water that does not impact test results. As testing equipment becomes more sensitive and industry regulations become more stringent, life science and analytical labs must have complete confidence that their point-of-use water systems will provide optimum water quality, every time. Cascada systems employ Pall's advanced water purification technologies to achieve the highest purity water through a series of separation and purification steps in a single benchtop box. A range of configurations supports diverse laboratory needs from critical, sensitive applications to general use.



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## Laboratory Water Guide



Filtration. Separation. Solution.™

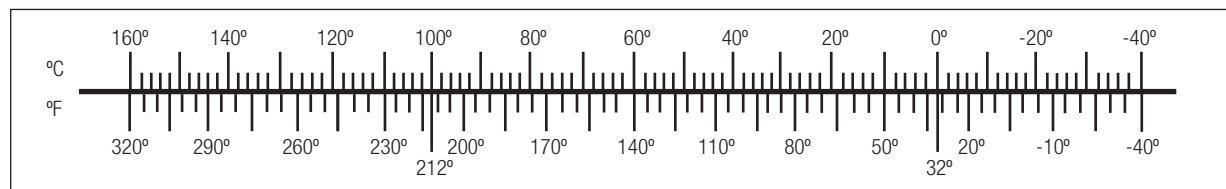
## Conductivity and Resistivity (NaCl and CaCO<sub>3</sub> solutions at 25 °C)

Grains/Gal* as CaCO <sub>3</sub>	ppm as CaCO <sub>3</sub>	ppm NaCl	Conductivity μS/cm	Resistivity Megohm/cm
99.3	1700	2000	3860	0.00026
74.5	1275	1500	2930	0.00034
49.6	850	1000	1990	0.00050
24.8	425	500	1020	0.00099
9.93	170	200	415	0.0024
7.45	127.5	150	315	0.0032
4.96	85.0	100	210	0.0048
2.48	42.5	50	105	0.0095
0.992	17.0	20	42.7	0.023
0.742	12.7	15	32.1	0.031
0.496	8.5	10	21.4	0.047
0.248	4.25	5.0	10.8	0.093
0.099	1.70	2.0	4.35	0.23
0.074	1.27	1.5	3.28	0.30
0.048	0.85	1.00	2.21	0.45
0.025	0.42	0.50	1.13	0.88
0.0099	0.17	0.20	0.49	2.05
0.0076	0.13	0.15	0.38	2.65
0.0050	0.085	0.10	0.27	3.70
0.0025	0.042	0.05	0.16	6.15
0.00099	0.017	0.02	0.098	10.2
0.00070	0.012	0.015	0.087	11.5
0.00047	0.008	0.010	0.076	13.1
0.00023	0.004	0.005	0.066	15.2
0.00012	0.002	0.002	0.059	16.9
0.00006	0.001	0.001	0.057	17.6
none	none	none	0.055	18.2**

1 grain per gal = 17.1 ppm (CaCO<sub>3</sub>)

\*\* theoretical maximum

## Fahrenheit/Centigrade Temperature Conversion Chart



32 °Fahrenheit = 0 °Centigrade    0 °Fahrenheit = -17.8 °Centigrade

## ASTM (D1193-06) Reagent-Grade Water Specifications

	ASTM Type			
	I <sup>a</sup>	II <sup>b</sup>	III <sup>c</sup>	IV
Max. Spec. Conductance (micromhos/cm)	0.056	1.0	0.25	5.0
Min. Spec. Resistance (megohms-cm) at 25 °C	18	1.0	4	0.2
Max. Silicate (μg/L)	3	3	500	—
Max. Total Organic Carbon (μg/L)	50	50	200	—
Potassium Permanganate Reduction (min.)	—	—	—	—
Max. Sodium (μg/L)	1	5	10	50
Max. Chlorides (μg/L)	1	5	10	50
Hardness	—	—	—	—
Max. Ammonia	—	—	—	—
Max. Bacterial Growth (cfu/mL)	*	*	*	*
pH	—	—	—	5.0-8.0
Max. CO <sub>2</sub> (mg/L)	—	—	—	—

\*Microbiological contamination – when bacterial levels need to be controlled, reagent grade types should be further classified as follows:

	Type A	Type B	Type C
Total Bacteria Count cfu/100 mL	1	10	1000
Endotoxin, EU/mL	< 0.03	0.25	no specification

<sup>a</sup>ASTM Type I – requires use of a 0.2 μm filter.

<sup>b</sup>ASTM Type II – prepared by distillation.

<sup>c</sup>ASTM Type III – requires use of a 0.45 μm membrane filter.

## Pharmacopeia Standards for Purified Water (United States/European Pharmacopoeia)

Parameter	USP 27	EP (5th Ed.)
Conductivity	< 1.3 (μS/cm @ 25 °C)	< 4.3 (μS/cm @ 20 °C)
TOC	< 500 ppb	< 500 ppb
Nitrates	—	< 0.2 ppm
Heavy Metals	—	< 0.1 ppm
Bacteria (guideline)	< 100 cfu/mL	< 100 cfu/mL