

## High Purity Water Information

Because of varying conditions, information is to be used as a guideline only.

### LABORATORY WATER REQUIREMENT STANDARDS

#### (ACS) American Chemical Society

Specific resistance ..... Not less than 0.5 megohm/cm  
Silicate (as SiO<sub>2</sub>) ..... Not more than 0.01 ppm  
Heavy metals (e.g. Pb)..... Not more than 0.01 ppm

#### (NCCLS) National Committee for Clinical Laboratory Standards

Characteristics	Type I	Type IIA	Type IIB	Type III
CFU/ml	<10.00	10.0	1000	N/A
Resistivity (megohms/cm)	10.00	1.0	1.0	0.1
Particulate Matter	0.22	N/A	N/A	N/A
Organics	Act. Carbon	N/A	N/A	N/A

#### (ASTM) American Society for Testing and Materials Laboratory Grade Water

Type	Type I	Type II	Type III	Type IV
Max. Conductivity (micromhos-cm)	0.06	1.0	1.0	5.0
Min. Resistivity (megohm/cm)	16.66	1.0	1.0	0.2
pH	—	—	6.2-7.5	5.0-8.0

#### Electronic Grade Water

Type	E-I	E-II	E-III	E-IV
Resistivity, minimum, Megohm @ 25°C	17.00	10.00	1.0	0.1
Copper*	0.002	0.01	0.1	1.0
Chloride*	0.020	0.20	2.0	20.0
Dissolved gases*	0.010	0.10	0.5	0.5
Potassium*	0.001	0.01	0.1	1.0
SiO <sub>2</sub> (total)*	0.001	0.01	0.1	1.0
Sodium*	0.001	0.01	0.1	1.0
Total solids*	0.050	0.50	5.0	50.0
Fixed solids (Inorganic)*	0.010	0.10	1.0	10.0
Volatile solids (Organic)*	0.04	0.40	4.0	40.0
Zinc*	0.001	0.01	0.1	1.0

Note: \*mg/l

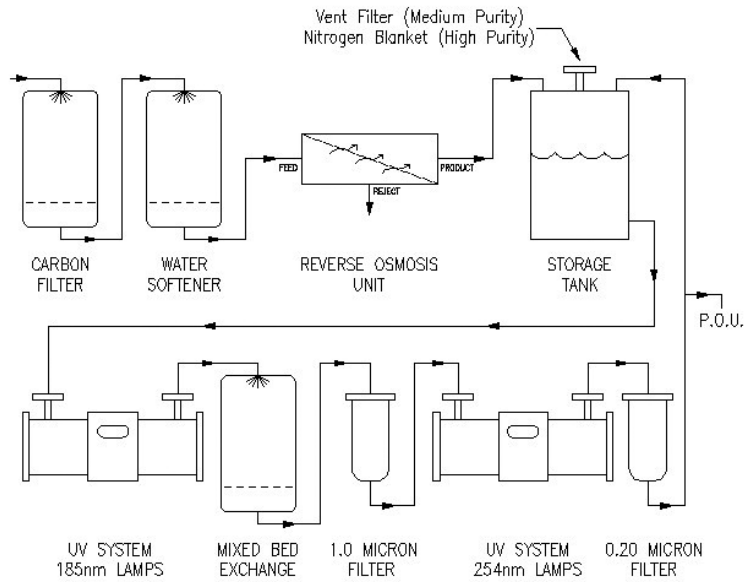
Particle count (>1 micron), Maximum/ml	2	10	100	500
Micro-organisms (Maximum/100ml)	1	10	100	100

Total organic carbon*	0.075	0.50	1.0	2.0
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Note: \*mg/l

#### (USP) United States Pharmacopoeia XXI Standards

Type	USP Purified	Water for Injection
Chloride, mg/l	2.0	2.0
Total Solids, mg/l	10	10
Micro-organisms	—	—
		Max. per 100 ml
pH	5-7	5-7
Sulfates, mg/l as SO <sub>4</sub>	5.0	4.0
Ammonia, mg/l as NH <sub>3</sub>	0.3	0.3
Calcium, mg/l	4.0	4.0
CO <sub>2</sub> mg/l @ 25°C	5.0	5.0
Heavy Metals, mg/l as Cu	1.0	1.0
Oxidizable substances as O <sub>2</sub>	0.8	0.8
Pyrogens	—	Absent by Rabbit
Test		



### CONDUCTIVITY - RESISTIVITY CHART

CONDUCTIVITY MICROMHOS/cm @ 25°C	RESISTIVITY OHMS-cm @ 25°C	DISSOLVED SOLIDS PARTS /MILLION (PPM)	APPROXIMATE GRAINS/GALLON (GPG) AS CaCO <sub>2</sub>
0.056	18,000,000	0.0277	0.00164
0.059	17,000,000	0.0294	0.00170
0.063	16,000,000	0.0313	0.00181
0.067	15,000,000	0.0333	0.00193
0.072	14,000,000	0.0357	0.00211
0.077	13,000,000	0.0384	0.00222
0.084	12,000,000	0.0417	0.00240
0.091	11,000,000	0.0455	0.00263
0.100	10,000,000	0.0500	0.00292
0.111	9,000,000	0.0556	0.00322
0.125	8,000,000	0.0625	0.00368
0.143	7,000,000	0.0714	0.00415
0.161	6,000,000	0.0833	0.00485
0.200	5,000,000	0.100	0.00585
0.250	4,000,000	0.125	0.00731
0.333	3,000,000	0.167	0.00971
0.500	2,000,000	0.250	0.0146
1.00	1,000,000	0.500	0.0292
1.11	900,000	0.556	0.0322
1.25	800,000	0.625	0.0368
1.43	700,000	0.714	0.0415
1.67	600,000	0.833	0.0485
2.00	500,000	1.00	0.0585
2.50	400,000	1.25	0.0731
3.33	300,000	1.67	0.0971
5.00	200,000	2.50	0.146
10.00	100,000	5.00	0.292
11.1	90,000	5.56	0.322
12.5	80,000	6.25	0.368
14.3	70,000	7.14	0.415
16.7	60,000	8.33	0.485
20.0	50,000	10.0	0.585
25.0	40,000	12.5	0.731
33.3	30,000	16.7	0.971
50.0	20,000	25.0	1.46
100.0	10,000	50.0	2.92
111	9,000	55.6	3.22
125	8,000	62.5	3.68
143	7,000	71.4	4.15
167	6,000	83.3	4.85
200	5,000	100	5.85
250	4,000	125	7.31
333	3,000	167	9.71
500	2,000	250	14.6
1,000	1,000	500	29.2
1,110	900	556	32.2
1,250	800	625	36.8
1,430	700	714	41.5



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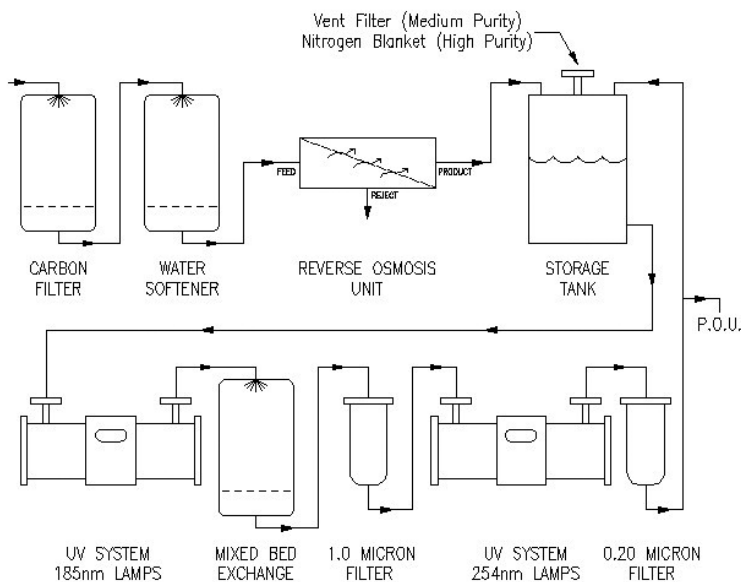
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