

## Tables and Conversion Factors

### FLOWRATE\*

	Bed volumes/min	Gal.U.S./ Cubic.ft./min.	Gal.(Imp.)/ Cubic.ft./min.	Pounds H <sub>2</sub> O/ Cubic.ft./min.
1 Bed volume/min	1	7.48	6.24	62.4
1 Gal.(U.S)/Cubic.ft./min.	0.134	1	0.833	8.33
1 Gal.(Imp.)/Cubic.ft./min	0.161	1.20	1	10
1 Pound H <sub>2</sub> O/Cubic.ft./min.	0.016	0.12	0.10	1

\* To convert flow rate per volume to flow rate per unit area, multiply flow rate per unit volume by resin volume and divide by cross sectional area.

### CAPACITY\* AND REGENERATION LEVEL

	Meq/ml.	Pound equiv./ Cubic.ft.	Kilograins (as CaCO <sub>3</sub> )/Cubic.ft.	Grams CaO/liter	Grams CaCO <sub>3</sub> /liter
1 Meq/ml.	1	0.0624	21.8	28	50
1 Pound equiv./Cubic.ft.	16.0	1	349	449	801
1 Kilograin (as CaCO <sub>3</sub> )/Cubic.ft.	0.0459	0.00286	1	1.28	2.29
1 Grams CaO/liter	0.0357	0.00223	0.779	1	1.79
1 Gram CaCO <sub>3</sub> /liter	0.0200	0.00125	0.436	0.560	1

\*Capacity on a dry weight basis may be calculated as follows

$$\text{gm meq / gm of dry resin} = 6,240 \times \frac{\text{gm. meq / ml}}{\text{Wet density in lbs.Cubic.ft x \% Solids}}$$

### UNITS OF MASS

	Pounds	Grams	Kilograms	Grains	Kilograins
1 Pound	1	453.6	0.4536	7000	7
1 Gram	0.0022	1	0.001	15.43	0.01543
1 Kilogram	2.2	1000	1	15430	15.43
1 Grain	0.000143	0.065	0.000065	1	0.001
1 Kilograin	0.143	65	0.065	1000	1

### UNITS OF DENSITY

	Pounds/Cubic.ft.	Grams/liter	Pounds/Gal. (U.S.)	Pounds/Gal. (Imp)
1 pound/Cubic.ft.	1	16	0.134	0.160
1 Gram/liter	0.0624	1	0.00834	0.010
1 Pound/Gal (U.S.)	7.48	120	1	1.2
1 Pound/Gal.( Imp.)	6.24	100	0.834	1

## SCREEN EQUIVALENTS

U.S. Standard			Tyler Standard			British Standard		
Sieve No	Opening		Meshes per Inch	Opening		Meshes per Inch	Opening	
	mm	Inches		mm	Inches		mm	Inches
12	1.68	0.0661	10	1.65	0.065	10	1.68	0.0660
14	1.41	0.0555	12	1.40	0.055	12	1.40	0.0553
16	1.19	0.0469	14	1.17	0.046	14	1.20	0.0474
18	1.00	0.0394	16	0.991	0.039	16	1.00	0.0395
20	0.84	0.0331	20	0.833	0.0328	18	0.853	0.0336
25	0.71	0.0280	24	0.701	0.0276	22	0.699	0.0275
30	0.59	0.0232	28	0.589	0.0232	25	0.599	0.0236
35	0.50	0.0197	32	0.495	0.0195	30	0.500	0.0197
40	0.42	0.0165	35	0.417	0.0164	36	0.422	0.0166
45	0.35	0.0138	42	0.351	0.0138	44	0.353	0.0139
50	0.297	0.0117	48	0.295	0.0116	52	0.295	0.0116
60	0.250	0.0098	60	0.246	0.0097	60	0.251	0.0099
70	0.210	0.0083	65	0.208	0.0082	72	0.211	0.0083
80	0.177	0.0070	80	0.175	0.0069	85	0.178	0.007
100	0.149	0.0059	100	0.147	0.0058	100	0.152	0.006
200	0.074	0.0029	200	0.074	0.0029	200	0.076	0.003
325	0.044	0.0017	325	0.043	0.0017	240	0.066	0.0026

**COMMON CONVERSION FACTORS FOR ION EXCHANGE CALCULATIONS**

To convert from	to	Multiply by
<b>CAPACITY</b>		
Kgrs/ft <sup>3</sup> ( as CaCO <sub>3</sub> )	g CaO/l	1.28
kgrs/ft <sup>3</sup> ( as CaCO <sub>3</sub> )	g CaCO <sub>3</sub> /l	2.29
kgrs/ft <sup>3</sup> ( as CaCO <sub>3</sub> )	eq / l	0.0458
g CaCO <sub>3</sub> /l	kgrs/ft <sup>3</sup> ( as CaCO <sub>3</sub> )	0.436
g CaO/l	kgrs/ft <sup>3</sup> ( as CaCO <sub>3</sub> )	0.780
<b>FLOW RATE</b>		
U.S. gpm/ft <sup>3</sup>	BV/hr	8.02
U.S. gpm/ft <sup>2</sup>	m/hr	2.45
U.S.gpm	m <sup>3</sup> /hr	0.227
BV/min	U.S. gpm/ft <sup>3</sup>	7.46
<b>PRESSURE DROP</b>		
psi/ft	mH <sub>2</sub> O/m resin	2.30
	g/cm <sup>2</sup> /m	230
<b>REGENERANT CONCENTRATION</b>		
lbs/ft <sup>3</sup>	g/l	16.0
<b>DENSITY</b>		
lbs/ft <sup>3</sup>	g/l	16.0
<b>RINSE REQUIREMENTS</b>		
U. S. gal/ft <sup>3</sup>	BV	0.134

**TEMPERATURE**

$$^{\circ}\text{F} = 1.8^{\circ}\text{C} + 32$$