

# PHYSICAL PROPERTIES & CHEMICAL COMPOSITION

## Metal Alloys Used in Eaton Strainers

### Carbon Steel – ASTM A-216 Grade WCB

Tensile Strength: ..... 70,000 lb/sq in  
 Yield: ..... 36,000 lb/sq in  
 Elongation: ..... 22%

#### Chemical Composition:

C (Carbon) ..... 0.30%  
 Si (Silicon) ..... 0.60%  
 P (Phosphorus) ..... 0.04%  
 S (Sulfur) ..... 0.045%  
 Mn (Manganese) ..... 1.00%  
 Residual Elements ..... 1.00% max

### Aluminum Bronze – ASTM B-148 Grade C95400

Tensile Strength: ..... 75,000 lb/sq in  
 Yield: ..... 30,000 lb/sq in  
 Elongation: ..... 12%

#### Chemical Composition:

Cu (Copper) ..... 85%  
 Fe (Iron) ..... 4%  
 Al (Aluminum) ..... 11%

### Stainless Steel – ASTM A-351 Grade CF8M

Tensile Strength: ..... 70,000 lb/sq in  
 Yield: ..... 30,000 lb/sq in  
 Elongation: ..... 30%

#### Chemical Composition

C (Carbon) ..... 0.08% max  
 Si (Silicon) ..... 1.5%  
 P (Phosphorus) ..... 0.040%  
 Cr (Chromium) ..... 18.0 - 21.0%  
 Ni (Nickel) ..... 9.0 - 12.0%  
 Mn (Manganese) ..... 1.50%  
 S (Sulfur) ..... 0.04%  
 Mo (Molybdenum) ..... 2.0 - 3.0%

### Cast Iron – ASTM A-126 Class B

Tensile Strength: ..... 31,000 lb/sq in  
 Compressive Strength: ..... 109,000 lbs/sq in  
 Tensile Modulus: ..... 15 x 10<sup>6</sup> lb/sq in

#### Chemical Composition:

C (Carbon) ..... 3.20 - 3.40 %  
 Si (Silicon) ..... 2.10 - 2.30%  
 P (Phosphorus) ..... 0.15 - 0.30%  
 S (Sulfur) ..... 0.08 - 0.12%  
 Mn (Manganese) ..... 0.50 - 0.80%

### Ductile Iron - ASTM A-395 Grade 60 -40 -18

Tensile Strength: ..... 60,000 lb/sq in  
 Yield: ..... 40,000 lb/sq in  
 Elongation: ..... 18%

#### Chemical Composition:

C (Carbon) ..... 3.20 - 4.0%  
 Si (Silicon) ..... 1.80 - 2.80%  
 P (Phosphorus) ..... 0.08% max.  
 S (Sulfur) ..... 0.03% max.  
 Mn (Manganese) ..... 0.03% max.

### Bronze - ASTM B-62

Tensile Strength: ..... 30,000 lb/sq in  
 Yield: ..... 14,000 lbs/sq in  
 Elongation: ..... 20%

#### Chemical Composition:

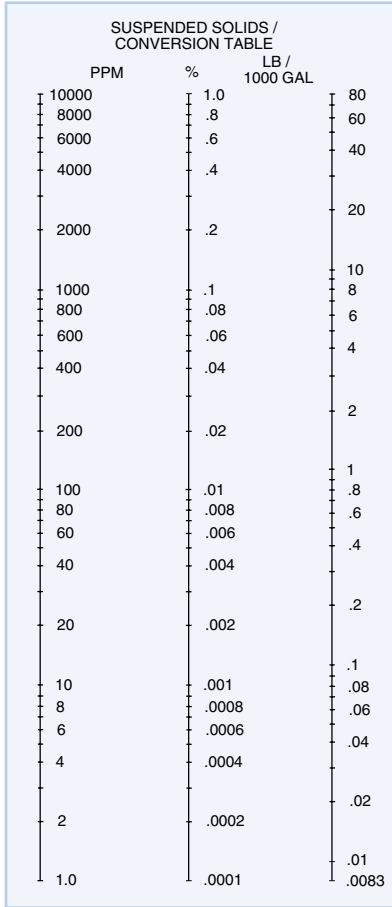
Cu (Copper) ..... 85.0%  
 Sn (Tin) ..... 5.0%  
 Pb (Lead) ..... 5.0%  
 Zn (Zinc) ..... 5.0%  
 Ni (Nickel) ..... 1.0% max.  
 Fe (Iron) ..... 0.3% max.  
 P ( Phosphorus) ..... 0.05% max.

## Viscosity Equivalents

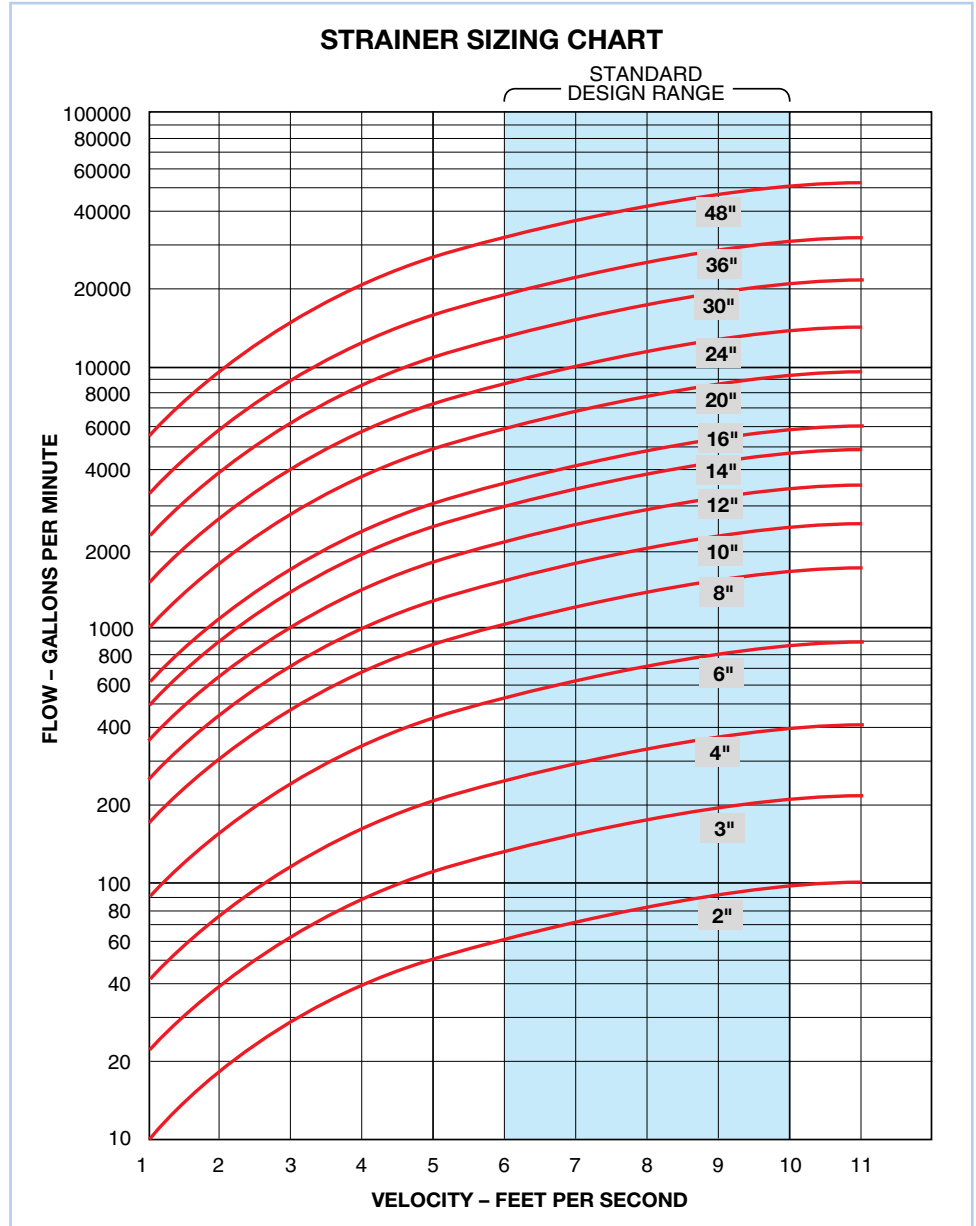
SSU (Saybolt Seconds Universal)	Centipoise	Engler Degrees 20°C	Redwood Standard
30	1	—	—
50	5	2	44
100	20	3.5	88
200	40	16	175
300	65	30	263
400	85	43	350
500	105	57	440
600	130	72	525
700	150	90	615
800	175	115	700
900	195	132	790
1000	210	150	880
2000	425	350	1750
3000	625	540	2600
4000	860	740	3500
5000	1050	930	4550
6000	1300	1120	5250
7000	1500	1320	6150
8000	1700	1510	7300
9000	1920	—	—
10000	2150	—	—

# TECHNICAL DATA

## Suspended Solids / Conversion Chart



## Strainer Sizing Chart



## Strainer Basket Opening Equivalents

Mesh	Inches	Millimeters	Microns	Perf	Inches	Millimeters	Microns
400	0.0015	0.0381	38	1/32	0.033	0.838	838
300	0.0018	0.0457	45	3/64	0.045	1.143	1143
250	0.0024	0.0609	60	1/16	0.070	1.778	1776
200	0.0027	0.0686	68	3/32	0.094	2.387	2387
150	0.0041	0.1041	104	1/8	0.125	3.175	3175
100	0.0065	0.1651	165	5/32	0.150	3.810	3810
80	0.007	0.1778	177	3/16	0.1875	4.762	4762
60	0.009	0.2286	228	1/4	0.250	6.350	6350
40	0.015	0.8636	380	3/8	0.375	9.525	9525
20	0.034	0.8636	862	1/2	0.500	12.700	12700

# TECHNICAL DATA

## Cv Calculation for Liquid, Gas, Steam and Vapor

### Liquid

$$C_v = GPM \left( \frac{G}{\Delta P} \right)^{1/2}$$

### Gas

$$C_v = \frac{SCFH}{963} \left( \frac{GT}{\Delta P (P_2 + P_1)} \right)^{1/2}$$

### Steam and Vapor

$$C_v = \frac{\text{lb/hr}}{63.3} \left( \frac{1}{\Delta P \times (\text{lb/CF})} \right)^{1/2}$$

For gas, steam and vapor, values used for  $\Delta P$  cannot exceed  $1/2 P_1$  (PSIA) and  $P_2$  cannot be less than  $1/2 P_1$  (PSIA). lb/CF is at exit conditions. T is abs T °Rankine.

### Saturated Steam Table

PSIA	°F	PSIA	°F
30	250.34	200	381.82
60	292.71	300	417.33
100	327.83	400	444.58
150	358.43	600	486.21

## Flow Velocity Conversion Factor

$$\text{Velocity in Ft/Sec} = \frac{\text{GPM} \times 0.4085}{\text{ID}^2 \text{ in Inches}}$$

## Flow Conversion Factors

M <sup>3</sup> /hr	=	3.671 I.G.M.
I.G.P.M.	=	41.14 Barrels/Day
T.P.H.	=	3.74 I.G.P.M. ÷ S.G.
I.G.P.M.	=	1.2 U.S. G.P.M.
I.G.P.M.	=	4.54 Liters/Min
Liter/Min	=	0.22 I.G.P.M.
U.S. G.P.M.	=	0.833 I.G.P.M.
Barrel	=	35 Imp. Gallons
Barrel	=	42 U.S. Gallons

## Volume Conversion Factors

To Obtain: Multiply By:	U.S. Gallon	Imperial Gallon	U.S. Pint	U.S. Pound Water	U.S. Cubic Foot	U.S. Cubic Inch	Liter	Cubic Meter
<b>U.S. Gallon</b>	1	0.833	8.0	8.337	0.13368	231.0	3.78533	0.003785
<b>Imperial Gallon</b>	1.2009	1	9.60752	10.0	0.16054	277.42	4.54596	0.004546
<b>U.S. Pint</b>	0.125	0.1041	1	1.042	0.01671	28.875	0.473168	0.000473
<b>U.S. Pound Water</b>	0.11995	0.1	0.9596	1	0.016035	27.708	0.45405	0.00454
<b>U.S. Cubic Foot</b>	7.48052	6.22888	59.8442	62.365	1	1728.0	28.31702	0.028317
<b>U.S. Cubic Inch</b>	0.004329	0.00361	0.034632	0.03609	0.0005787	1	0.016387	0.0000164
<b>Liter</b>	0.2641779	0.2199756	2.113423	2.202	0.0353154	61.02509	1	0.001000
<b>Cubic Meter</b>	264.170	219.969	2113.34	2202	35.31446	61023.38	999.972	1

To convert from one unit to another, locate the starting unit in the left hand column. Multiply by the factor shown horizontally to the right under the desired unit.

## Pressure Conversion Factors

To Obtain: Multiply By:	Pound Sq. In.	Pound Sq. Ft.	Atmosphere	Kilogram Sq. Cm.	Inch Water	Foot Water	Inch Mercury	mm Mercury	Bar
<b>Pound/Sq. In.</b>	1	144.0	0.068046	0.070307	27.7276	2.3106	2.0360	51.7150	0.06895
<b>Pound/Sq. Ft.</b>	0.0069545	1	0.000473	0.000488	0.1926	0.01605	0.014139	0.35913	0.000479
<b>Atmosphere</b>	14.696	2116.22	1	1.0332	407.484	33.9570	29.921	760.0	1.01325
<b>Kilograms/Sq. Cm.</b>	14.2233	2048.16	0.96784	1	394.27	32.864	28.959	735.558	0.9807
<b>Inch Water</b>	0.03607	5.194	0.002454	0.00254	1	0.08333	0.0734	1.865	0.00249
<b>Foot Water</b>	0.43278	62.3205	0.029449	0.03043	12.0	1	0.8811	22.381	0.02984
<b>Inch Mercury</b>	0.49115	70.726	0.033421	0.03453	13.617	1.1349	1	25.40	0.03386
<b>mm Mercury</b>	0.019337	2.7845	0.0013158	0.0013595	0.5361	0.04468	0.03937	1	0.001333
<b>Bar</b>	14.5038	2088.55	0.98692	1.0197	33.51	402.1	29.53	750.0	1

To convert from one unit to another, locate the starting unit in the left hand column. Multiply by the factor shown horizontally to the right under the desired unit.