

Thermal resistance (degree per unit of heat transferred per unit time)..... R

$$R = \frac{t_1 - t_2}{q} = \frac{L}{kA}$$

Thermal resistivity..... $1/k$

Vaporization values at constant pressure, Differences between values for saturated vapor and saturated liquid at the same pressure.....*Subscript* t_g

Velocity..... V

Volume (total)..... V

Volume per unit time, Rate at which quantity of material passes through a machine, Quantity of heat per unit time, Quantity of heat per unit weight..... q

Weight of a major item, Total weight..... W

Weight rate, Weight per unit of power, Weight per unit of time..... w

Work (total)..... W

CONVERSION EQUATIONS*

Heat, Power and Work

1 ton refrigeration	= { 12,000 Btu per hour 200 Btu per minute
Latent heat of ice	= 143.4 Btu per pound
1 Btu	= { 778.3 ft-lb 0.2930 Int. whr 252.0 I.T. calorie
1 Int. watthour	= { 2656 ft-lb 3.413 Btu 3600 Int. joules 860 I.T. calories
1 Int. kilowatthour	= { 3,413 Btu 3.517 lb water evaporated from and at 212 F
1 Int. kilowatt (1000 watts)	= { 1.341 hp 56.88 Btu per minute 44,267 ft-lb per minute
1000 I.T. calories } 1 I.T. Kilocalorie }	= { 3.968 Btu 3088 ft-lb 1.1628 Int. whr
1 horsepower	= { 0.7455 Int. kw 42.40 Btu per minute 33,000 ft-lb per minute 550 ft-lb per second
1 boiler horsepower	= { 33,475 Btu per hour 9.809 Int. kw

Weight and Volume

1 gal (U. S.)	= { 231 cu in. 0.1337 cu ft
1 British or Imperial gallon	= 277.42 cu in.
1 cu ft	= { 7.481 gal 1728 cu in.
1 cu ft water at 60 F (in vacuo.)	= 62.37 lb
1 cu ft water at 212 F (" ")	= 59.83 lb
1 gal water at 60 F (" ")	= 8.338 lb
1 gal water at 212 F (" ")	= 7.998 lb
1 lb (avdp)	= { 16 oz 7000 grains
1 bushel	= 1.244 cu ft
1 short ton	= 2000 lb

*Checked in 1944 by National Bureau of Standards. Abbreviations Int. and I.T. refer to International and International (Steam) Table respectively.

Pressure

1 lb per square inch	= { 144 lb per square foot 2.0422 in. mercury at 62 F 2.309 ft water at 62 F 27.71 in. water at 62 F
1 oz per square inch	= { 0.1276 in. mercury at 62 F 1.732 in. water at 62 F
1 atmosphere	= { 14.696 lb per square inch 2116 lb per square foot 33.94 ft water at 62 F 30.01 in. mercury at 62 F 29.921 in. mercury at 32 F
1 in. water at 62 F (in vacuo)	= { 0.03609 lb per square inch 0.5774 oz per square inch 5.197 lb per square foot
1 ft water at 62 F (in vacuo)	= { 0.4330 lb per square inch 62.37 lb per square foot
1 in. mercury at 62 F (in vacuo)	= { 0.4897 lb per square inch 7.835 oz per square inch 1.131 ft water at 62 F 13.57 in. water at 62 F

Metric Units

1 cm	= 0.3937 in.
1 in.	= 2.540 cm
1 m	= 3.281 ft
1 ft	= 0.3048 m
1 sq cm	= 0.1550 sq in.
1 sq in.	= 6.452 sq cm
1 sq m	= 10.76 sq ft
1 sq ft	= 0.09290 sq m
1 cu cm	= 0.06102 cu in.
1 cu in.	= 16.39 cu cm
1 cu m	= 35.31 cu ft
1 cu ft	= 0.02832 cu m
1 liter	= 1000 cu cm = 0.2642 gal
1 kg	= 2.205 lb (avdp)
1 lb	= 0.4536 kg
1 metric ton	= 2205 lb (avdp)
1 gram	= 0.002205 lb (avdp)
1 kilometer per hour	= 0.6214 mph
1 gram per square centimeter	= { 0.02905 in. mercury at 62 F 0.3942 in. water at 62 F
1 kg per sq cm (metric atmosphere)	= 14.22 lb per square inch
1 gram per cubic centimeter	= { 0.03613 lb per cubic inch 62.43 lb per cubic foot
1 dyne	= 0.00007233 poundals
1 absolute joule	= { 10,000,000 ergs 0.7376 ft-lb
1 Int. joule	= 0.7378 ft-lb
1 metric horsepower	= { 75 kg-m per second 0.986 hp (U. S.)
1 I. T. kilocalorie per kilogram	= 1.8 Btu per pound
1 I.T. calorie per square centimeter	= 3.687 Btu per square foot
1 I.T. calorie per second per square centimeter for a temperature gradient of 1 deg C per centimeter	= { 2903 Btu per hour per square foot for a temperature gradient of 1 deg F per inch of thickness.