Conversion Factors

length

1 ft =	**0.3048** meters

mass

1 lb_m =	**0.45359237** kg
	16 ounces (avoir.)
	14.583333 ounces (troy)
	7000 grains
	0.03108095 slugs
	$5.0x10^{-4}$ tons (short, U.S.)
	$4.4642857x10^{-4}$ tons (long, UK)
	$4.5359237x10^{-4}$ tonnes (1000 kg)

temperature

°F =	**1.8 * °C + 32**
	°R - 459.67
	1.8 * °K - 459.67

pressure

1psi =	0.068947573 bar
	0.0068947573 MPa
	6.8947573 kPa
	0.068045964 atm
	0.070306958 kg_f/cm^2
	2.0360 in $Hg_{(32°F)}$ [1]
	2.0418 in $Hg_{(60°F)}$ [1]
	2.0360207 in Hg_{conv}
	51.714933 mm Hg_{conv} (torr)
	51,714.933 µm Hg_{conv} (microns)
	27.681 in $H_20_{(39.2°F)}$ [1]
	27.708 in $H_20_{(60°F)}$ [1]
	27.679905 in H_20_{conv}
	703.06958 mm H_20_{conv}

volume

1 ft^3 =	0.028316847 m^3
	28.316847 litre
	7.4805195 gal (liq. U.S.)

specific volume

1 ft^3/lb_m =	0.062427961 m^3/kg
	62.427961 cm^3/g
	7.4805195 gal (liq. U.S.)/lb_m

density

1 lb_m/ft^3 =	16.018463 kg/m^3
	0.016018463 g/cm^3
	0.13368056 lb_m/gal (liq. U.S.)

energy (work)

1 Btu_{IT} [2] =	778.16926 ft-lb_f

1055.0559 Joule (watt-sec)
0.29307107 watt-hr
251.99576 cal_{IT}
251.82723 cal_{th}
1.0550559×10^{10} ergs
0.99933123 Btu_{th}
1.0007717 $Btu_{(mean)}$
1.0043734 $Btu_{(39°F)}$
0.9997575 $Btu_{(59°F)}$
0.9996438 $Btu_{(60°F)}$

power

1 ton, refrigeration[3] = **12,000** Btu/hr
200 Btu/min
3.5168528 kW
4.7161772 hp (550 ft-lb_f/sec)
4.7142798 hp, electric
4.7815890 hp, metric (75 m-kg_f/sec)

specific enthalpy

1 Btu_{IT}/lb_m = **2.326** kJ/kg

specific entropy

1 Btu_{IT}/lb_m-°R = **4.1868** kJ/kg-°K

viscosity (absolute)

1 lb_f-sec/ft^2 = 47.88026 Pa-sec (N-sec/m^2)
478.8026 poise (dyne-sec/cm^2)
47,880.26 centipoise (mPa-sec)
32.17405 lb_m/ft-sec

[1]Conversion factors for mercury and water manometer pressure units are calculated using standard acceleration of gravity at the stated temperature. Additional digits are not justified as the definitions of the units do not take into account compressibility and changes in density caused by the revised temperature scale, ITS-90. Conversion factors for conventional mercury and water manometer pressure units, noted on this chart with subscript "conv", Hg_{conv} and H_20_{conv}, are based on ISO Standard 31-3:1992.

[2]The Fifth International Conference on the Properties of Steam (London, July 1956) defined the International Table calorie as 4.1868 J. Therefore, the exact conversion for the International Table Btu is **1.05505585262** kJ. The notation of International Table on this chart is subscript "IT", and the notation for thermochemical is subscript "th". The thermochemical Btu, Btu_{th}, is based on the thermochemical calorie, cal_{th}, where cal_{th} is defined as **4.184** J.

[3]*Ton, refrigeration* is defined as the rate of cooling provided by melting a ton of ice in one day, with the latent heat of fusion for water defined as 144 Btu/lb_m. A slightly more accurate value for the latent heat of fusion for water is 333.6 kJ/kg (143.4 Btu_{IT}/lbm). For conversion to other units, 1 ton refrigeration = 12,000 Btu_{IT}/hr is used.

Note: conversions in **bold** are exact