

CONVERSION FACTORS AND CONSTANTS

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MASS AND DENSITY

1 kg	= 2.2046 lb	1 lb	= 0.4536 kg
1 g/cm ³	= 10 ³ kg/m ³	1 lb/ft ³	= 0.016018g/cm ³
1 g/cm ³	= 62.428 lb/ft ³	1 lb/ft ³	= 16.018 kg/m ³

LENGTH

1 cm	= 0.3937 in.	1 in.	= 2.54 cm
1 m	= 3.2808 ft	1 ft	= 0.3048 m

VELOCITY

1 km/h	= 0.62137 mile/h	1 mile/h	= 1.6093 km/h
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VOLUME

1 cm ³	= 0.061024 in ³	1 in ³	= 16.387 cm ³
1 m ³	= 35.315 ft ³	1 ft ³	= 0.028317 m ³
1 L	= 10 ⁻³ m ³	1 gal	= 0.13368 ft ³
1 L	= 0.0353 ft ³	1 gal	= 3.7854 x 10 ⁻³ m ³

FORCE

1 N	= 1 kg.m/s ²	1 lbf	= 32.174 lb.ft/s ²
1 N	= 0.22481 lbf	1 lbf	= 4.4482 N

PRESSURE

1 Pa	= 1 N/m ² = 1.4504 x 10 ⁻⁴ lbf/in ²	1 lbf/in ²	= 6894.8 Pa
1 bar	= 10 ⁵ N/m ²	1 lbf/in ²	= 144 lbf/ft ²
1 atm	= 1.01325 bar	1 atm	= 14.696 lbf/in ²

ENERGY AND SPECIFIC ENERGY

1 J	= 1 N.m = 0.73756 ft.lbf	1 ft.lbf	= 1.35582 J
1 kJ	= 737.56 ft.lbf	1 Btu	= 778.17 ft.lbf
1 kJ	= 0.9478 Btu	1 Btu	= 1.0551 kJ
1 kJ/kg	= 0.42992 Btu/lb	1 Btu/lb	= 2.326 kJ/kg
		1 kcal	= 4.1868 kJ

ENERGY TRANSFER RATE

1 W	= 1 J/s = 3.413 Btu/h	1 Btu/h	= 0.293 W
1kW	= 1.341 hp	1 hp	= 2545 Btu/h
		1 hp	= 550 ft.lbf/s
		1 hp	= 0.7457 kW

SPECIFIC HEAT

1 kJ/kg.K	= 0.238846 Btu/lb.°R	1 Btu/lb.°R	= 4.1868 kJ/kg.K
1 kcal/kg.K	= 1 Btu/lb.°R		

TEMPERATURE RELATIONS

T (°R)	= 1.8 T (K)
T (°C)	= T (K) - 273.15
T (°F)	= T (°R) - 459.67

UNIVERSAL GAS CONSTANT

$$\bar{R} = \begin{cases} 8.314 \text{ kJ/kmol} \cdot \text{K} \\ 1545 \text{ ft} \cdot \text{lbf} / \text{lbmol} \cdot ^\circ \text{R} \\ 1.986 \text{ Btu} / \text{lbmol} \cdot ^\circ \text{R} \end{cases}$$

STANDARD ACCELERATION OF GRAVITY

$$g = \begin{cases} 9.80665 \text{ m/s}^2 \\ 32.174 \text{ ft} / \text{s}^2 \end{cases}$$

STANDARD ATMOSPHERIC PRESSURE

$$1 \text{ atm} = \begin{cases} 1.01325 \text{ bar} \\ 14.696 \text{ lbf} / \text{in}^2 \end{cases}$$