

Selected Conversion Factors

Dimension	SI	=	multiplier	×	Other Unit
Density	kg/m ³	=	16.018	×	lbm/ft ³
	kg/m ³	=	10 ³	×	g/cm ³
Diffusivity (α , ν , D)	m ^{2/s}	=	0.092903	×	ft ² /s
	m ² /s	=	10 ⁻⁶	×	centistokes
Energy	J	=	1055.04	×	Btu ^a
	J	=	4.1868	×	cal ^b
Flow rate	m ³ /s	=	6.3090×10 ⁻⁵	×	gal/min (gpm)
	m ³ /s	=	4.7195×10 ⁻⁴	×	ft ³ /min (cfm)
Heat Flux	W/m ²	=	3.154	×	Btu/hr·ft ²
Heat transfer coefficient	W/m ² K	=	5.6786	×	Btu/hr·ft ² °F
Length	m	=	0.0254	×	inches
	m	=	0.3048	×	feet
Power	W	=	0.022597	×	ft·lbf/min
	W	=	0.29307	×	Btu/hr
	W	=	745.700	×	hp
Pressure	Pa	=	248.8	×	inH ₂ O (@60°F)
	Pa	=	6894.8	×	psi
	Pa	=	101325	×	atm
Specific heat capacity	J/kg·K	=	4186.9	×	Btu/lbm·°F
	J/kg·K	=	4186.8	×	cal/g·°C
Temperature	K	=	5/9	×	°R
	K	=	°C + 273.15		
	K	=	(°F + 459.67)/1.8		
Thermal conductivity	W/m·K	=	1.7307	×	Btu/hr·ft·F
	W/m·K	=	418.68	×	cal/s·cm·C

Viscosity (dynamic)	Pa·s	=	10 ⁻³	×	centipoise
	Pa·s	=	1.4881	×	lbm/ft·s
	Pa·s		47.8803	×	lbf·s/ft ²

Dimension **SI** **≡** **multiplier** **×** **Other Unit**

^aThe British thermal unit, originally defined as the heat that raises 1 lbm of water 1°F, has several values that depend mainly on the initial temperature of the water warmed. The above is the International Table (i.e., steam table) Btu. A "mean" Btu of 1055.87 J is also common. Related quantities are: 1 therm = 10⁵ Btu; 1 quad = 10¹⁵ Btu ~ 1 EJ; 1 ton of refrigeration = 12,000 Btu/hr absorbed.

^bThe calorie represents the heat that raises 1 g of water 1°C. The above is the International Table calorie, or IT calorie. A "thermochemical" calorie of 4.184 J has also been common. The dietitian's "Calorie" is actually 1 kilocalorie.

[More on conversion factors](#)