

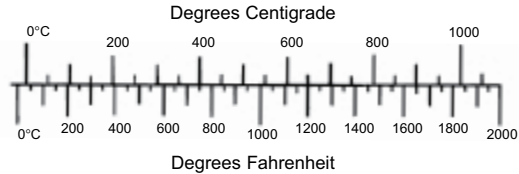
Technical Data - Conversion Data

$$^{\circ}\text{F} = 9/5^{\circ}\text{C} + 32$$

$$^{\circ}\text{C} = 5/9 (^{\circ}\text{F} - 32)$$

$$^{\circ}\text{R} = ^{\circ}\text{F} + 460$$

$$^{\circ}\text{K} = ^{\circ}\text{C} + 273$$



Common Conversion Factors

To Convert From	To	Multiply By
Heat Transfer		
p.c.u./(hr)(ft ²)(°C)	B.t.u./(hr)(ft ²)(°F)	1.
kg-cal./(hr)(m ²)(°C)	B.t.u./(hr)(ft ²)(°F)	0.2048
g-cal./(sec.)(cm ²)(°C)	B.t.u./(hr)(ft ²)(°F)	7,380.
watts/(cm ²)(°C)	B.t.u./(hr)(ft ²)(°F)	1,760.
watts/(in ²)(°F)	B.t.u./(hr)(ft ²)(°F)	490.
B.t.u./(hr)(ft ²)(°F)	p.c.u./(hr)(ft ²)(°C)	1.
B.t.u./(hr)(ft ²)(°F)	kg-cal./(hr)(m ²)(°C)	4.88
B.t.u./(hr)(ft ²)(°F)	g-cal./(sec.)(cm ²)(°C)	0.0001355
B.t.u./(hr)(ft ²)(°F)	watts/(cm ²)(°C)	0.000568
B.t.u./(hr)(ft ²)(°F)	watts/(in ²)(°F)	0.00204
B.t.u./(hr)(ft ²)(°F)	hp/(ft ²)(°F)	0.000394
B.t.u./(hr)(ft ²)(°F)	joules/(sec.)(m ²)(°C)	5.678
kg-cal./(hr)(m ²)(°C)	joules/(sec.)(m ²)(°C)	1.163
watts/(m ²)(°C)	joules/(sec.)(m ²)(°C)	1.0
Viscosity		
centipoises	g/(sec.)(cm) or poise	0.01
centipoises	lb/(sec.)(ft.)	0.000672
centipoises	lb/(hr)(ft.)	2.42
centipoises	kg/(hr)(m)	3.60
centipoises	(newton)(sec.)/m ²	0.001
lb/(sec)(ft)	(newton)(sec.)/m ²	1.488
Thermal Conductivity		
g-cal./(sec.)(cm ²)(°C/cm)	B.t.u./(hr)(ft ²)(°F/in)	2903.0
watts/(cm ²)(°C/cm)	B.t.u./(hr)(ft ²)(°F/in)	694.0
g-cal./(hr)(cm ²)(°C/cm)	B.t.u./(hr)(ft ²)(°F/in)	0.8064
B.t.u./(hr)(ft ²)(°F/ft)	joules/(sec.)(m ²)(°C)	1.731
B.t.u./(hr)(ft ²)(°F/in)	joules/(sec.)(m ²)(°C)	0.1442

Special Conversion Factors

To Convert From	To	Multiply By
Atmospheres	mm Mercury (0°C/32°F)	760.
Atmospheres	Newtons sq. meter	101,325.
Atmospheres	Ft. Water (3.9°C/39.1°F)	33.90
Atmospheres	Ins. Mercury (0°C/32°F)	29.921
Atmospheres	Pounds/sq. in	14.696
Bars	Pounds/sq in	14.504
Boiler H.P.	Kilowatts	9.803
Btu	Calories (gram)	252.
Btu/hr	Watts	0.29307
Btu/sec.	Watts	1,054.4
Btu/sq. ft./min	Kilowatts/sq. ft.	0.1758
Circular Mills	Square Inches	7.854 x 10 ⁻⁷
Cubic Feet Water	Pounds	62.37
Cubic Feet/Minute	cm/sec	472.0
Cubic Feet/Minute	U.S. Gallons/sec.	0.1247
Cubic Feet/Second	U.S. Gallons/min.	448.8
Feet/Min.	Miles/Hour	0.011364
Gallons (U.S.)	Gallons (Imperial)	0.8327
H.P. (British)	Watts	745.7
Pounds	Grains	7,000.

Conversion Data

S.I. Conversions

Basic Conversion Factors

Velocity		Power	
1 fps	= 0.3048 m/s	1 Btu/h(int.)	= 0.29307 W
1 fpm	= 0.00508 m/s	1 Btu/s(int.)	= 1.05506 kW
1 mph	= 0.44704 m/s	1 HP mech. (UK)	= 0.74570 kW
1 mph	= 1.60934 km/h	1 HP boiler	= 9.8095 kW
Length		Density	
1 inch	= 25.4 mm	1 lb/ft ³	= 16.01846 kg/m ³
1 foot	= 0.3048 m	1 lb/gal(int.)	= 99.77633 kg/m ³
1 mile	= 1.60934 km	1 lb/gal(US)	= 119.82640 kg/m ³
Area		Thermal Conductivity	
1 sq. inch	= 6.4516 cm ²	1 Btu.ft/ft ² h.°F	= 1.73073 W/m°C
1 sq. foot	= 0.09290 m ²	1 Btu.in/ft ² h.°F	= 0.14423 W/m°C
Volume		Volumetric Flow	
1 inch ³	= 16.38706 cm ³	1 ft ³ /s	= 0.028317 m ³ /s
1 foot ³	= 0.02832 m ³	1 ft ³ /s	= 101.9406 m ³ /s
Capacity Imp. Measure		Kinematic Viscosity	
1 fluid oz.	= 28.41306 ml	1 ft ² /sq	= 0.092903 m ² /s
1 gallon	= 4.54609 l	1 centistoke (cSt)	= 1.0 x 10 ⁻⁶ m ² /s
Weight or Mass		Dynamic Viscosity	
1 oz.	= 28.34952 g	1 centipoise (cP)	= 0.001 Pa-s
1 lb.	= 0.45359 kg	1 lb./ft.s	= 1.488164 Pa-s
Pressure		Heat Transfer	
1 psi	= 6.89476 kPa	1 Btu/ft ² h.°F	= 5.67826 w/m ² °C
1 bar	= 10 ⁵ Pa	1 kcal/m ² h.°F	= 1.163 W/m ² °C
Energy		Specific Energy	
1 kWh	= 3.6 MJ	1 Btu/lb.	= 2.326 kJ/kg
1 watt-hour	= 3.6 kJ	1 cal/g	= 4.1868 kJ/kg
Frequency		Specific Heat	
1 cps	= 1 Hz	1 btu/lb.°F	= 4.1868 kJ/kg°C

Derived Units with Special Names

Measurement	Unit	Symbol	Derivation
Frequency	hertz	Hz	s ⁻¹
Force	newton	N	kg•m/s ²
Pressure	pascal	Pa	N/m ²
Energy	joule	J	N•m
Power	watt	W	J/s
Electric Potential	volt	V	W/A
Electric Resistance	ohm	Ω	V/A
Electric Conductance	siemens	S	1/Ω
Electric Charge	coulomb	C	A•s
Capacitance	farad	F	C/V
Magnetic Flux	weber	Wb	V•s
Magnetic Flux Density	tesla	T	Wb/m ²
Inductance	henry	H	Wb/A
Luminous Flux	lumen	lm	cd•sr
Illumination	lux	lx	lm/m ²
Temperature	Celsius Degree	°C	K - 273.15
Pressure	bar	bar	10 ⁵ Pa
Volume	liter	l	dm ³

The Preferred Prefixes

Prefix	Symbol	Meaning	Prefix	Symbol	Meaning
tera-	T	10 ¹²	milli-	m	10 ⁻³
giga-	G	10 ⁹	micro-	μ	10 ⁻⁶
mega-	M	10 ⁶	nano-	n	10 ⁻⁹
kilo-	k	10 ³	pico-	p	10 ⁻¹²
deci-	d	10 ⁻¹	femto-	f	10 ⁻¹⁵
centi-	c	10 ⁻²	atto-	a	10 ⁻¹⁸