Conversion Factors

VOLUME EQUIVALENTS

	$in.^3$	ft^3	U.S. gal	liters	m^3
$in.^3$	1	5.787×10^{-4}	4.329×10^{-3}	1.639×10^{-2}	1.639×10^{-5}
ft^3	1.728×10^{3}	1	7.481	28.32	2.832×10^{-2}
U.S. gal	2.31×10^{2}	0.1337	1	3.785	3.785×10^{-3}
liters	61.03	3.531×10^{-2}	0.2642	1	1.000×10^{-3}
m^3	6.102×10^{4}	35.31	264.2	1000	1

MASS EQUIVALENTS

	avoir oz	pounds	grains	grams
avoir oz	1	6.25×10^{-2}	4.375×10^{2}	28.35
pounds	16	1	7×10^{3}	4.536×10^{2}
grains	2.286×10^{-3}	1.429×10^{-4}	1	6.48×10^{-2}
grams	3.527×10^{-2}	2.20×10^{-3}	15.432	1

LINEAR MEASURE EQUIVALENTS

	meter	inch	foot	mile
meter	1	39.37	3.2808	6.214×10^{-4}
inch	2.54×10^{-2}	1	8.333×10^{-2}	1.58×10^{-5}
foot	0.3048	12	1	1.8939×10^{-4}
mile	1.61×10^{3}	6.336×10^{4}	5280	1

POWER EQUIVALENTS

	hp	kW	$(ft)(lb_f)/s$	.Btu/s	J/s
hp	1	0.7457	550	0.7068	7.457×10^{2}
kW	1.341	1	737.56	0.9478	1.000×10^{3}
$(ft)(lb_f)/s$	1.818×10^{-3}	1.356×10^{-3}	1	1.285×10^{-3}	1.356
Btu/s	1.415	1.055	778.16	1	1.055×10^{3}
J/s	1.341×10^{-3}	1.000×10^{-3}	0.7376	9.478×10^{-4}	1

Conversion Factors

Heat, Energy, or Work Equivalents

	(ft)(lb_f)	kWh	(hp)(hr)	Btu	calorie*	joule
(ft)(lb_f)	1	3.766×10^{-7}	5.0505×10^{-7}	1.285×10^{-3}	0.3241	1.356
kWh	2.655×10^{6}	1	1.341	3.4128×10^{3}	8.6057×10^{5}	3.6×10^{6}
(hp)(hr)	1.98×10^{6}	0.7455	1	2.545×10^{3}	6.4162×10^{5}	2.6845×10^{6}
Btu	7.7816×10^{2}	2.930×10^{-4}	3.930×10^{-4}	1	2.52×10^{2}	1.055×10^{3}
calorie*	3.086	1.162×10^{-6}	1.558×10^{-6}	3.97×10^{-3}	1	4.184
joule	0.7376	2.773×10^{-7}	3.725×10^{-7}	9.484×10^{-4}	0.2390	1

*The thermochemical calorie = 4.184 J.

Pressure Equivalents

	mm Hg	in. Hg	bar	atm	kPa	psia
mm Hg	1	3.937×10^{-2}	1.333×10^{-3}	1.316×10^{-3}	0.1333	1.934×10^{-2}
in. Hg	25.40	1	3.386×10^{1}	3.342×10^{-2}	3.386	0.4912
bar	750.06	29.53	1	0.9869	100.0	14.51
atm	760.0	29.92	1.013	1	101.3	14.696
kPa	7.502	0.2954	1.000×10^{-2}	9.872×10^{-3}	1	0.1451
psia	51.71	2.036	6.893×10^{-2}	6.805×10^{-2}	6.893	1

Ideal Gas Constant R

1.987 cal/(g mol)(K)
1.987 Btu/(lb mol)(°R)
10.73 (psia)(ft^3)/(lb mol)(°R)
8.314 (kPa)(m^3)/(kg mol)(K) = 8.314 J/(g mol)(K)
82.06 (cm^3)(atm)/(g mol)(K)
0.08206 (L)(atm)/(g mol)(K)
21.9 (in Hg)(ft^3)/(lb mol)(°R)
0.7302 (ft^3)(atm)/(lb mol)(°R)

Miscellaneous Conversion Factors

To convert from	To	Multiply by
angstrom	meter	1.000×10^{-10}
barrel (petroleum)	gal	42
centipoise	(newton)(s)/m^2	1.000×10^{-3}
torr (mm Hg, 0°C)	newton/$meter^2$	1.333×10^{2}
fluid oz	cm^3	29.57