

**CONVERSION FACTORS**  
(Read across)

VOLUME EQUIVALENTS

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

MASS EQUIVALENTS

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

LINEAR MEASURE EQUIVALENTS

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

POWER EQUIVALENTS

hp	kW	(ft)(lb <sub>f</sub> )/sec	Btu/sec	J/sec
1	0.7457	550	0.7068	$7.457 \times 10^2$
1.341	1	737.56	0.9478	$1.000 \times 10^3$
$1.818 \times 10^{-3}$	$1.356 \times 10^{-3}$	1	$1.285 \times 10^{-3}$	1.356
1.415	1.055	778.16	1	$1.055 \times 10^3$
$1.341 \times 10^{-3}$	$1.000 \times 10^{-3}$	0.7376	$9.478 \times 10^{-4}$	1

### HEAT, ENERGY, OR WORK EQUIVALENTS

(ft)(lb <sub>f</sub> )	kWh	hp-hr		calorie*	
0.7376	$2.773 \times 10^{-7}$	$3.725 \times 10^{-7}$	9.48	0.2390	1
7.233	$2.724 \times 10^{-6}$	$3.653 \times 10^{-6}$	9.29	2.3438	9.80665
1	$3.766 \times 10^{-7}$	$5.0505 \times 10^{-7}$	1.28	0.3241	1.356
$2.655 \times 10^6$	1	1.341	3.4128	$8.6057 \times 10^6$	$3.6 \times 10^6$
$1.98 \times 10^6$	0.7455	1	$2.545 \times 10^6$	$6.4162 \times 10^6$	$2.6845 \times 10^6$
74.73	$2.815 \times 10^{-5}$	$3.774 \times 10^{-5}$	$9.604 \times 10^{-3}$	24.218	$1.0133 \times 10^3$
$3.086 \times 10^3$	$1.162 \times 10^{-3}$	$1.558 \times 10^{-3}$	3.9657	$1 \times 10^3$	$4.184 \times 10^3$
$7.7816 \times 10^2$	$2.930 \times 10^{-4}$	$3.930 \times 10^{-4}$	1	$2.52 \times 10^2$	$1.055 \times 10^3$
3.086	$1.162 \times 10^{-6}$	$1.558 \times 10^{-6}$	$3.97 \times 10^{-3}$	1	4.184

\*The thermochemical calorie = 4.184 J; the IT calorie = 4.1867 J (see Sec. 4.1).

### PRESSURE EQUIVALENTS

mm Hg	in. Hg	bar	atm	kPa
1	$3.937 \times 10^{-2}$	$1.333 \times 10^{-3}$	$1.316 \times 10^{-3}$	0.1333
25.40	1	$3.387 \times 10^1$	$3.342 \times 10^{-2}$	3.387
750.06	29.53	1	0.9869	100.0
760.0	29.92	1.013	1	101.3
7.502	0.2954	$1.000 \times 10^{-2}$	$9.872 \times 10^{-3}$	1

### IDEAL GAS CONSTANT R

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