## Appendix D Conversion Factors: Units

TABLE 1 Metric Conversions	
1 cc (10 <sup>3</sup> mm <sup>3</sup> )	$1\times10^{-6}\text{m}^3$
1 kg wt	9.80665 N
1 kg wt	$9807\times10^5dyn$
1 kg wt	980.665 dyn
1 kg m	9.80665 J
1 kg m	8.6001 g cal
1 g	0.001 kg
1 J	1 W s
1 J	$10^7  \mathrm{erg}$
1 J	$2.778 \times 10^{-7} \text{ kw h}$
1 Pa	1 dyn/cm <sup>2</sup>
1 rad	56.296 degrees
1 rad/s	57.296 degrees/s
1 N	10 <sup>5</sup> dyn
1 dyn	0.0010197 g wt
1 erg (1 dyn cm)	$1 \times 10^{-7} \mathrm{J}$
1 km	$10^5  \mathrm{cm}$
1 m	$10^{-10}  \text{Å}$
1 m	$10^{-12}$ microns
1 L	1,000,027 (0.10) cm <sup>3</sup> (cc)
1 W	1 J/s

(Continued)

1 W	10' erg/s
1 W	$10^7 \mathrm{dyn}\mathrm{cm/s}$
1 amp	1 C/s
1 C (amp/s)	$6.281\times10^{18}~electronic~charges$
1 C	$3 \times 10^9$ electrostatic units
1 Ω	1 V/amp
1 V	1 J/C
1 H	1 V s/amp
1 F	1 C/V

 TABLE 2
 English-to-Metric Conversions

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1 in. (U.S.)	2.540 cm
1 ft	0.3048 m
1 yd	0.9144 m
1 fathom (6 ft)	1.829 m
1 mi	1.609 km
1 in. <sup>3</sup>	$16.387 \text{ cm}^3$
1 in. <sup>2</sup>	$6.4516 \text{ cm}^2$
1 pint (0.5 qt)	0.473 L
1 gal (0.013368 ft <sup>3</sup> )	3.7854 L
1 gal	$3785.4 \text{ cm}^3$
1 gal wt (8.337 lb)	3.785 kg
1 ct	6.2 g
1 oz (troy)	31.134 g
1 oz (avdps)	28.35 g
1 lb (troy)	373.24 g
1 lb (troy)	0.3782 kg
1 lb (avdps)	453.59 g
1 lb (avdps)	0.45359 kg

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1 rpm	0.10472 rad/s
1 rpm	6 degrees/s
1 hp	0.7457 kw
1 BTU	1054.8 J
1 lb wt	4.448 N
1 lb wt	$4.448\times 10^5\mathrm{dyn}$

PRESSURE CONVERSIONS	
1 cm Hg (0°C)	$1.333\times10^4\mathrm{dyn/cm^2}$
1 cm Hg (0°C)	$135.95\mathrm{kg/m^2}$
1 cm Hg (4°C)	980.368 dyn/cm <sup>2</sup>
1 Pa	1 dyn/cm <sup>2</sup>

 TABLE 3
 Metric-to-English Conversions

1 cm	0.3937 in.
1 m	3.281 ft
1 km	0.6214 mi
1 km	3280.8 ft
1 km	$1.0567 \times 10^{-13}$ light year
1 g	0.0322 oz (troy)
1 kg	2.2046 lb (avdps)
1 degrees/s	0.1667 rpm
1 cm/s	0.02237 mi/h
1 cm/s	$3.728\times10^{-4}\mathrm{mi/min}$

TABLE 4 Constants

Gravitational constant: g	$32.174 \text{ ft/s}^2$
Gravitational constant: g	$980.665 \text{ cm/s}^2$
Speed of light: vc	$2.9986 \times 10^{10}  \text{cm/s}$
Dielectric constant (vacuum): $\varepsilon_0$	$8.85 \times 10^{-12}  \text{col}^2/\text{mm}^2$

TABLE 5 American Standard Wire Gage or Brown and Sharpe Gage

No.	Diameter (in.)
1	0.2893
2	0.2576
3	0.2294
4	0.2043
5	0.1819
6	0.1620
7	0.1443
8	0.1285
9	0.1144
10	0.1019
11	0.0907
12	0.0808
13	0.0720
14	0.0641
15	0.0571
16	0.0508
17	0.0453
18	0.0403
19	0.0359
20	0.0320
21	0.0285
22	0.0253
23	0.0226
24	0.0201
25	0.0179
26	0.0159
27	0.0142
28	0.0126
29	0.0113
30	0.100
31	0.00893
32	0.00795

 TABLE 6
 Scaling Prefixes

Scale	Prefix	Examples
$10^{-15}$	femto	femtoseconds
$10^{-12}$	pico	picoseconds, picoamps
$10^{-9}$	nano	nanoseconds, nanoamps, nanotechnology
$10^{-6}$	micro	microsecond, microvolts, microfarads
$10^{-3}$	milli	milliseconds, millivolts, milliamps, millimeters
$10^{3}$	kilo	kilohertz, kilohms, kilometers
$10^{6}$	mega	megahertz, megaohms, megabucks
109	giga	gigahertz, gigawatt
10 <sup>12</sup>	tera	terahertz