# Appendix D
# Conversion Factors

| Physical Quantity | | |
|---|---|---|
| Length | 1 in. = 25.4 mm<br>1 ft = 0.3048 m<br>1 mile = 1,609.344 m | 39.3701 in.<br>1 m = 3.28084 ft<br>$0.621371 \cdot 10^{-3}$ mile |
| Area | 1 $in.^2$ = 645.16 $mm^2$<br>1 $ft^2$ = 0.092903 $m^2$ | 1,550 $in.^2$<br>1 $m^2$ = 10.7639 $ft^2$ |
| Volume | 1 $ft^3$= 28.3168<br>1 $yd^3$ = 0.764555 $m^3$<br>1 U.S. gal = 3.78541 | $35.3147 \cdot 10^{-3}$ $ft^3$<br>$1 = 1.30795 \cdot 10^{-3}$ $yd^3$<br>0.264172 U.S. gal |
| Mass | 1 lb = 0.453592 kg<br>1 ton U.S. = 907.185 kg | 2.20462 lb<br>$1 \text{ kg} = 1.10231 \cdot 10^{-3}$ ton U.S. |
| Density | 1 $lb/ft^3$ = 16.0185 $kg/m^3$<br>1 $lb/in.^3$ = 27,679.9 $kg/m^3$ | 0.0624278 $lb/ft^3$<br>1 $kg/m^3$ = $36.127 \cdot 10^{-6}$ $lb/in.^3$ |
| Force | 1 kgf = 9.80665 N<br>1 lbf = 4.44822 N | 0.101972 kgf<br>1 N=0.224809 lbf |
| Moment (Energy) | 1 kgf · m = 9.80665 Nm<br>1 lbf · ft = 1.35582 Nm | 0.101972 kgf · m<br>1 Nm=0.737562 lbf · ft |
| Pressure or stress | 1 bar = 100 kPa<br>1 psi = 6.89476 kPa<br>1 psf = 0.04788 kPa | 0.01 bar<br>1 kPa = 0.145038 psi<br>= 20.89 psf |
| Energy | 1 kWh = 3.6 MJ<br>1 hkh = 2.6478 MJ<br>1 hkh = 0.735 kWh | $0.277778 \cdot 10^{-3}$ kWh<br>$1 \text{ kJ} = 0.377673 \cdot 10^{-3}$ hkh<br>1 kWh = 1.356 hkh |
| Flow | 1 gpm = 0.063090 l/sec<br>1 cfm = 0.028317 $m^3$/min | 1 l/sec = 15.8503 gpm<br>1 $m^3$/min = 35.315 cfm |

**SI-unit prefixes**

| Prefix | tera | giga | mega | kilo | milli | micro | nano | pico |
|---|---|---|---|---|---|---|---|---|
| Multiplier | $10^{12}$ | $10^9$ | $10^6$ | $10^3$ | $10^{-3}$ | $10^{-6}$ | $10^{-9}$ | $10^{-12}$ |

Note: N = Newton = kg · m/$sec^2$, J = Joule = Nm, T = Tonne = $10^3$ kg, W = Watt = J/sec, g = gram = $10^{-3}$ kg, Hz = Hertz = cycles/sec