Guide to SI Units

The International System of Units (SI) has been adopted in the publications of several scientific and technical societies in the United States and other countries. It is expected that in due course that these units will come into general use. The SI units and conversion factors applicable to this book are given below. For further information, see "The International System of Units (SI)," National Bureau of Standards Special Publication 330, U.S. Government Printing Office, Washington, D.C. 20402.

Base Units

Quanity	SI Unit	Symbol
Length	meter	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Temperature*	kelvin	K

*(Temperatures may also be expressed in °C)

Derived Units

Quantity	Unit	Symbol	Formula
Force	newton	N	$kg \cdot m/s^2$
Pressure	pascal	Pa	N/m^2
Energy, heat, etc.	joule	J	N•m
Power	watt	W	J/s
Frequency	hertz	Hz	1 (cycle)/s
Radioactivity	becquerel	Bq	1 (decay)/s
Absorbed dose	gray	Gy	J/kg

Conversion Factors

To convert from:	to:	multiply by:
Length, Area, Volume		
inch	meter (m)	2.540×10^{-2}
foot	meter (m)	0.3048
yard	meter (m)	0.9144
mile	kilometer (km)	1.609
centimeter	meter (m)	10^{-2}
angstrom	meter (m)	10^{-10}
square inch	$meter^2$ (m^2)	6.452×10^{-4}
square foot	$meter^2$	9.290×10^{-2}
square mile	$kilometer^2$ (km^2)	2.590
cubic foot	$meter^3$ (m^3)	2.832×10^{-2}

Mass

pound	kilogram (kg)	0.4536
ounce	kilogram (kg)	2.835×10^{-2}

Energy

calorie	joule (J)	4.187
erg	joule (J)	1.00×10^{-7}
MeV	joule (J)	1.602×10^{-13}
ton (TNT equivalent)	joule (J)	4.2×10^{9}

Miscellaneous

density (lb/ft^3)	kg/m^3	1.602×10
pressure (psi)	pascal (Pa)	6.895×10^{3}
radiant exposure (cal/cm^2)	J/m^2	4.187×10^{4}
speed (ft/sec)	m/s	0.3048
speed (miles/hour)	m/s	0.4470
dose (rads)	gray (Gy)	1.00×10^{-2}
dose rate (rads/hour)	Gy/s	2.778×10^{-6}
curie	becquerel (Bq)	3.700×10^{10}

The only multiples or submultiples of SI to which appropriate prefixes may be applied are those represented by factors of 10^n or 10^{-n} where n is divisible by 3. Thus, kilometer (10^3m or 1 km), millimeter (10^{-3}m or 1 mm), and micrometer (10^{-6}m or 1 μm). The centimeter and gram are not used in the SI system, but they are included in the metric system proposed for adoption in the United States.