CONVERSION OF UNITS — STRESS AND PRESSURE*

	MN/m^2	dyn/cm^2	lb/in^2	kgf/mm^2	bar	long ton/in^2
MN/m^2	1	10^7	1.45×10^2	0.102	10	6.48×10^{-2}
dyn/cm^2	10^{-7}	1	1.45×10^{-5}	1.02×10^{-8}	10^{-6}	6.48×10^{-9}
lb/in^2	6.89×10^{-3}	6.89×10^4	1	703×10^{-4}	6.89×10^{-2}	4.46×10^{-4}
kgf/mm^2	9.81	9.81×10^7	1.42×10^3	1	98.1	63.5×10^{-2}
bar	0.10	10^6	14.48	1.02×10^{-2}	1	6.48×10^{-3}
long ton/in^2	15.44	1.54×10^8	2.24×10^3	1.54	1.54×10^2	1

CONVERSION OF UNITS — ENERGY*

	J	erg	cal	eV	Btu	ft lbf
J	1	10^7	0.239	6.24×10^{18}	9.48×10^{-4}	0.738
erg	10^{-7}	1	2.39×10^{-8}	6.24×10^{11}	9.48×10^{-11}	7.38×10^{-8}
cal	4.19	4.19×10^7	1	2.61×10^{19}	3.97×10^{-3}	3.09
eV	1.60×10^{-19}	1.60×10^{-12}	3.38×10^{-20}	1	1.52×10^{-22}	1.18×10^{-19}
Btu	1.06×10^3	1.06×10^{10}	2.52×10^2	6.59×10^{21}	1	7.78×10^2
ft lbf	1.36	1.36×10^7	0.324	8.46×10^{18}	1.29×10^{-3}	1

CONVERSION OF UNITS — POWER*

	kW(kJ/s)	erg/s	hp	ft lbf/s
kW(kJ/s)	1	10^{-10}	1.34	7.38×10^2
erg/s	10^{-10}	1	1.34×10^{-10}	7.38×10^{-8}
hp	7.46×10^{-1}	7.46×10^9	1	5.50×10^2
ft lbf/s	1.36×10^{-3}	1.36×10^7	1.82×10^{-3}	1

*To convert row unit to column unit, multiply by the number at the column-row intersection, thus 1 MN/m^2 = 10 bar

PHYSICAL CONSTANTS IN SI UNITS

Absolute zero temperature	$-273.2^{\circ}C$
Acceleration due to gravity, g	$9.807\ m/s^2$
Avogadro's number, N_A	6.022×10^{23}
Base of natural logarithms, e	2.718
Boltzmann's constant, k	$1.381 \times 10^{-23}\ J/K$
Faraday's constant k	$9.648 \times 10^{4}\ C/mol$
Gas constant, $\overline{R}$	$8.314\ J/mol/K$
Permeability of vacuum, μ_0	$1.257 \times 10^{-6}\ H/m$
Permittivity of vacuum, ε_0	$8.854 \times 10^{-12}\ F/m$
Planck's constant, h	$6.626 \times 10^{-34}\ J/s$
Velocity of light in vacuum, c	$2.998 \times 10^{8}\ m/s$
Volume of perfect gas at STP	$22.41 \times 10^{-3}\ m^3/mol$

CONVERSION OF UNITS

Angle, θ	1 rad	57.30°
Density, ρ	$1\ lb/ft^3$	$16.03\ kg/m^3$
Diffusion coefficient, D	$1\ cm^3/s$	$1.0 \times 10^{-4}\ m^2/s$
Energy, U	See inside back cover	
Force, F	1 kgf 1 lbf 1 dyne	9.807 N 4.448 N 1.0×10^{-5} N
Length, ℓ	1 ft 1 inch 1 Å	304.8 mm 25.40 mm 0.1 nm
Mass, M	1 tonne 1 short ton 1 long ton 1 lb mass	1000 kg 908 kg 1107 kg 0.454 kg
Power, P	See inside back cover	
Stress, σ	See inside back cover	
Specific heat, Cp	1 cal/g°C Btu/lb°F	4.188 kJ/kg°C 4.187 kJ/kg°C
Stress intensity, K_{1C}	$1\ ksi\sqrt{in}$	$1.10\ MN/m^{3/2}$
Surface energy γ	$1\ erg/cm^2$	$1\ mJ/m^2$
Temperature, T	1°F	0.556°K
Thermal conductivity λ	1 cal/s cm°C 1 Btu/h ft°F	418.8 W/m°C 1.731 W/m°C
Volume, V	1 Imperial gall 1 US gall	$4.546 \times 10^{-3}\ m^3$ $3.785 \times 10^{-3}\ m^3$
Viscosity, η	1 poise 1 lb ft s	$0.1\ N\ s/m^2$ $0.1517\ N\ s/m^2$