



CHEM 1300/1310

SI Units and Conversion Factors

Length

SI unit: meter (m)

1 meter	= 1.0936 yards
1 centimeter	= 0.39370 inch
1 inch	= 2.54 centimeters (exactly)
1 kilometer	= 0.62137 mile
1 mile	= 5280 feet = 1.6093 kilometers
1 angstrom	= 10^{-10} meter = 100 picometers

Mass

SI unit: kilogram (kg)

1 kilogram	= 1000 grams = 2.2046 pounds
1 pound	= 453.59 grams = 0.45359 kilogram = 16 ounces
1 ton	= 2000 pounds = 907.185 kilograms
1 metric ton	= 1000 kilograms = 2204.6 pounds
1 atomic mass unit	= 1.66054×10^{-27} kilograms

Volume

SI unit: cubic meter (m³)

1 liter	= 10^{-3} m ³ = 1 dm ³ = 1.0567 quarts
1 gallon	= 4 quarts = 8 pints = 3.7854 liters
1 quart	= 32 fluid ounces = 0.94633 liter

Temperature

SI unit: kelvin (K)

0 K	= -273.15°C = -459.67°F
K	= °C + 273.15
°C	= $\frac{5}{9}(\text{°F} - 32)$
°F	= $\frac{9}{5}(\text{°C}) + 32$

Energy

SI unit: joule (J)

1 joule	= 1 kg m ² s ⁻² = 0.23901 calorie = 9.4781×10^{-4} btu (British thermal unit)
1 calorie	= 4.184 joules = 3.965×10^{-3} btu
1 btu	= 1055.06 joules = 252.2 calories

Pressure

SI unit: pascal (Pa)

1 pascal	= 1 N m ⁻² = 1 kg m ⁻¹ s ⁻²
1 atmosphere	= 101.325 kilopascals = 760 torr (mm Hg) = 14.70 pounds per square inch
1 bar	= 10^5 pascals

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