

Acceleration

foot/second², meter/second², gal, galileo, inch/second²

- 1 m/s² = 3.28084 ft/s² = 100 cm/s² = 39.37 inch per second squared (inch/s²)
- 1 ft/s² = 0.3048 m/s² = 30.48 cm/s²
- 1 g = 9.80665 m/s² = 32.17405 ft/s²

Area

acre, are, barn, sq.ft., sq.in., foot², hectare, inch², mile², section, meter², township, yard², hectares

- 1 m² = 1550 in² = 10.764 ft² = 1.1968 yd² = 3.861x10⁻⁷ mile²
- 1 ft² = 0.0929 m² = 144 in² = 0.1111 yd² = 3.587x10⁻⁸ mile²
- 1 in² = 6.452 cm² = 6.452x10⁻⁴ m² = 6.944x10⁻³ ft² = 7.716x10⁻⁴ yd² = 2.491x10⁻¹⁰ mile²
- 1 yd² = 0.8361 m² = 1,296 in² = 9 ft² = 0.3228x10⁻⁶ mile²
- 1 mile² = 2.590x10⁶ m² = 0.4015x10¹⁰ in² = 2.788x10⁷ ft² = 3.098x10⁶ yd² = 640 Acres
- 1 acre = 1/640 mile² = 0.404686 ha (Hectares) = 4,046.86 m² = 43,560 Sq.Ft. = 4840 Sq.Yds.
- 1 km² = 10² ha² = 10⁶ m² = 10¹⁰ cm² = 10¹² mm²
- 1 ha (Hectare) = 10⁴ m² = 10⁸ cm² = 10¹⁰ mm² = 2.471 Acres
- 1 cm² = 10⁻⁴ m² = 0.155 in²
- 1 mm² = 1.55x10⁻³ in²
- 1 township = 9.323957 10⁷ m²
- 1 section = 2.589 10⁶ m²

Density

kg/cubic meter, gram/centimeter³, lb_m/cubic inch, lb_m/cubic foot, slug/cubic foot, kilogram/cubic meter, lbm/gallon (US liq)

- [Density Water](#) 1,000 kg/m³ = 62.43 Lbs./Cu.Ft = 8.33 Lbs./Gal. = 0.1337 Cu.Ft./Gal.
- 1 lb/ft³ = 16.018 kg/m³ = 0.016 g/cm³ = 0.00926 oz/in³ = 2.57 oz/gal (Imperial) = 2.139 oz/gal (U.S.) = 0.0005787 lb/in³ = 27 lb/yd³ = 0.161 lb/gal (Imperial) = 0.134 lb/gal (U.S.) = 0.0121 ton/yd³
- 1 slug/ft³ = 515.379 kg/m³
- 1 kg/l = 62.43 lb/ft³
- 1 kg/m³ = 0.001 g/cm³ = 0.0005780 oz/in³ = 0.16036 oz/gal (Imperial) = 0.1335 oz/gal (U.S.) = 0.0624 lb/ft³ = 0.000036127 lb/in³ = 1.6856 lb/yd³ = 0.010022 lb/gal (Imperial) = 0.008345 lb/gal (U.S.) = 0.0007525 ton/yd³

Energy

British Thermal Unit (Btu), calorie, joule, kilojoule, electron volt, erg, foot lb_f, foot poundal, kilocalorie, kilowatt hour, watt hour,

- 1 J (Joule) = 0.1020 kpm = 2.778x10⁻⁷ kWh = 2.389x10⁻⁴ kcal = 0.7376 ft lb_f = 1 (kg m²)/s² = 1 watt second = 1 Nm = 1 ft lb = 9.478x10⁻⁴ Btu
- 1 kpm = 9.80665 J = 2.724x10⁻⁶ kWh = 2.342x10⁻³ kcal = 7.233 ft lb_f = 9.295x10⁻³ Btu
- 1 kWh = 3.6x10⁶ J = 3.671x10⁵ kpm = 859.9 kcal = 2.656x10⁶ ft lb_f = 3.412x10³ Btu
- 1 kJ = 1 kNm = 1kWs = 10³ J = 0.947813 Btu = 737.6 ft lb_f = 0.23884 kcal

- 1 Btu (British thermal unit) = 1,055.06 J = 107.6 kpm = 2.931×10^{-4} kWh = 0.252 kcal = 778.16 ft lb_f = 1.055×10^{10} ergs = 252 cal = 0.293 watt hour
- 1 cal = 4.186 J
- 1 kcal = 4186.8 J = 426.9 kp m = 1.163×10^{-3} kWh = 3.088 ft lb_f = 3.9683 Btu = 1,000 cal
- 1 ft lb_f (foot pound force) = 1.3558 J = 0.1383 kp m = 3.766×10^{-7} kWh = 3.238×10^{-4} kcal = 1.285×10^{-3} Btu
- 1 hp h (horse power hour) = 2.6846×10^6 J = 0.7457 kWh
- 1 erg = 1 (g cm²)/s² = 10^{-7} J
- 1 eV = 1.602×10^{-19} J
- 1 Q = 10^{18} Btu = 1.055×10^{21} J
- 1 Quad = 10^{15} Btu
- 1 kg m = 7.233 ft lb = 0.00929 Btu = 9.806 Joule

Energy per unit mass

- 1 kJ/kg = 1 J/g = 0.4299 Btu/lb_m = 0.23884 kcal/kg

Flow - see [Volume flow](#)

Force

dyne, kilogram force (kgf), kilopound force, kip, lbf (pound force), ounce force (avoirdupois), poundal, newton

- 1 N (Newton) = 0.1020 kp = 7.233 pdl = 7.233/32.174 lb_f = 0.2248 lb_f = 1 (kg m)/s² = 10^5 dyn = 1/9.80665 kg_f
- 1 lb_f (Pound force) = 4.44822 N = 0.4536 kp = 32.17 pdl = 4.448×10^5 dyn
- 1 dyn = 1 (g cm)/s²
- 1 kg has a weight of 1 kp
- 1 kp (Kilopond) = 9.80665 N = 2.205 lb_f = 70.93 pdl
- 1 pdl (Poundal) = 0.13826 N = 0.01409 kp = 0.03108 lb_f

Heat flow rate

- 1 Btu/sec = 1,055.1 W
- 1 kW (kJ/s) = 102.0 kpm/s = 859.9 kcal/h = 3,413 Btu/h = 1.360 hk = 1.341 hp = 738 ft lb/s = 1,000 J/s = 3.6×10^6 J/h
- 1 kpm/s = 9.8067×10^{-3} kW = 8.432 kcal/h = 32.47 Btu/h = 0.01333 hk = 0.01316 hp = 7.237 ft lb/s
- 1 kcal/h = 1.163×10^{-3} kW = 0.1186 kpm/s = 3.969 Btu/h = 1.582×10^{-3} hk = 1.560×10^{-3} hp = 0.8583 ft lb/s
- 1 Btu/h = 2.931×10^{-4} kW = 0.0299 kpm/s = 0.252 kcal/h = 3.986×10^{-4} hk = 3.939×10^{-4} hp = 0.2163 ft lb/s
- 1 kcal/h = 1.16×10^{-3} kW
- 1 hk (metric horse power) = 0.735499 kW = 75.00 kpm/s = 632.5 kcal/h = 2,510 Btu/h = 0.9863 hp = 542.8 ft lb/s
- 1 hp = 0.74570 kW = 76.04 kpm/s = 641.2 kcal/h = 2,545 Btu/h = 1.014 hk = 550.3 ft lb/s
- 1 ft lb/s = 1.35501 kW = 0.1382 kpm/s = 1.165 kcal/h = 4.625 Btu/h = 1.843×10^{-3} hk = 1.817×10^{-3} hp

Heat flux

- $1 \text{ Btu/ft}^2 = 2.713 \text{ kcal/m}^2 = 2.043 \times 10^4 \text{ J/m}^2\text{K}$
- $1 \text{ Btu/ft}^2 \text{ h} = 3.1525 \text{ W/m}^2$
- $1 \text{ Btu/ft}^2 \text{ }^\circ\text{F} = 4.88 \text{ kcal/m}^2\text{K} = 2.043 \times 10^4 \text{ J/m}^2\text{K}$
- $1 \text{ kcal/m}^2 = 0.369 \text{ Btu/ft}^2$
- $1 \text{ kcal/m}^2\text{K} = 0.205 \text{ Btu/ft}^2\text{ }^\circ\text{F}$

Heat generation per unit volume

- $1 \text{ Btu/ft}^3 = 8.9 \text{ kcal/m}^3 = 3.73 \times 10^4 \text{ J/m}^3$
- $1 \text{ Btu/ft}^3 \text{ h} = 10.343 \text{ W/m}^3$
- $1 \text{ kcal/m}^3 = 0.112 \text{ Btu/ft}^3$

Heat generation per unit mass

- $1 \text{ Btu/lb} = 0.556 \text{ kcal/kg} = 2,326 \text{ J/kg}$
- $1 \text{ kcal/kg} = 1.800 \text{ Btu/lb}$

Heat transfer coefficient

- $1 \text{ Btu/ft}^2 \text{ h } ^\circ\text{F} = 5.678 \text{ W/m}^2 \text{ K} = 4.882 \text{ kcal/h m}^2 \text{ }^\circ\text{C}$
- $1 \text{ W/m}^2\text{K} = 0.85984 \text{ kcal/h m}^2 \text{ }^\circ\text{C} = 0.1761 \text{ Btu/ft}^2 \text{ h } ^\circ\text{F}$
- $1 \text{ kcal/h m}^2 \text{ }^\circ\text{C} = 1.163 \text{ W/m}^2\text{K} = 0.205 \text{ Btu/ft}^2 \text{ h } ^\circ\text{F}$

Hydraulic Gradients

- $1 \text{ ftH}_2\text{O}/100 \text{ ft} = 0.44 \text{ psi}/100 \text{ ft} = 9.8 \text{ kPa}/100 \text{ m} = 1000 \text{ mmH}_2\text{O}/100 \text{ m}$
- $1 \text{ psi}/100 \text{ ft} = 2.3 \text{ ftH}_2\text{O}/100 \text{ ft} = 2288 \text{ mmH}_2\text{O}/100 \text{ ft} = 22.46 \text{ kPa}/100 \text{ m}$

Length

feet, meters, centimeters, kilometers, miles, furlongs, yards, micrometers, inches, angstrom, cubit, fathom, foot, hand, league, light year, micron, mil, nautical mile, rod,

- $1 \text{ m (meter)} = 3.2808 \text{ ft} = 39.37 \text{ in} = 1.0936 \text{ yd} = 6.214 \times 10^{-4} \text{ mile}$
- $1 \text{ km} = 0.6214 \text{ mile} = 3281 \text{ ft} = 1094 \text{ yds}$
- $1 \text{ in (inch)} = 25.4 \text{ mm} = 2.54 \text{ cm} = 0.0254 \text{ m} = 0.08333 \text{ ft} = 0.02778 \text{ yd} = 1.578 \times 10^{-5} \text{ mile}$
- $1 \text{ ft (foot)} = 0.3048 \text{ m} = 12 \text{ in} = 0.3333 \text{ yd} = 1.894 \times 10^{-4} \text{ mile} = 30.48 \text{ cm} = 304.8 \text{ mm}$
- $1 \text{ mm} = 10^{-3} \text{ m}$
- $1 \text{ cm} = 10^{-2} \text{ m} = 0.3937 \text{ in} = 0.0328 \text{ ft}$
- $1 \text{ mm} = 0.03937 \text{ in}$
- $1 \text{ Å... (Å...ngstrÅm)} = 10^{-10} \text{ m}$
- $1 \text{ mile} = 1.6093 \text{ km} = 1,609.3 \text{ m} = 63,346 \text{ in} = 5,280 \text{ ft} = 1,760 \text{ yd}$
- $1 \text{ mil (Norway and Sweden)} = 10 \text{ kilometres}$
- $1 \text{ nm (nautical mile)} = 1,852 \text{ metres} = 1.151 \text{ mile} = 6076.1 \text{ feet}$
- $1 \text{ yd (yard)} = 0.9144 \text{ m} = 36 \text{ in} = 3 \text{ ft} = 5.682 \times 10^{-4} \text{ mile}$
- $1 \text{ Furlong} = 660 \text{ feet} = 40 \text{ rods} = 1/8 \text{ mile}$
- $1 \text{ rod} = 5.5 \text{ yards}$
- $1 \text{ land league} = 3 \text{ miles}$
- $1 \text{ Fathom} = 6 \text{ feet} = 1.828804 \text{ meters}$

Mass, weight

pounds, kilograms, grams, ounces, grains, tons (long), tons (short), tons (metric), carat, grain, ounce mass, pound mass (lb_m), slug, tonne

- 1 kg = 1,000 g = 2.2046 lb = 6.8521x10⁻² slug
- 1 lb = 16 oz = 0.4536 kg = 453.6 g = 7000 grains = 0.03108 slug
- 1 slug = 14.594 kg = 32.174 lb_m
- 1 grain = 0.000143 lb = 0.0648 g
- 1 g = 15.43 grains = 0.0353 oz = 0.002205 lb
- 1 tonne = 10³ kg = 10⁶ g = 10⁹ mg = 0.984 tons
- 1 qt = 0.9464 liters
- 1 Ton = 2000 Lbs. = 907 kg
- 1 long ton = 2240 pounds
- 1 oz (ounce) = 28.35 g = 437.5 grains
- 1 troy pound = 12 troy ounces
- 1 scruple = 20 grains
- 1 dram = 3 scruples
- 1 apothecary ounce = 8 drams
- 1 apothecary pound = 12 apothecary ounces
- 1 pennyweight = 24 grains
- 1 Gal. H₂O = 8.33 Lbs. H₂O
- [Density, Specific Weight and Specific Gravity](#) - An introduction and definition of density, specific weight and specific gravity. Formulas with examples.

Mass flow rate

- 1 lb/h = 1.26x10⁻⁴ kg/s
- 1 lb/s = 0.4536 kg/s
- 1 lb/min = 7.56x10⁻³ kg/s = 27.216 kg/s
- 1 kg/s = 3,600 kg/h = 132.28 lb/min
- 1 kg/h = 2.778x10⁻⁴ kg/s = 3.67x10⁻² lb/min

Moment of Inertia

- 1 kg m² = 10000 kg cm² = 54675 ounce in² = 3417.2 lb in² = 23.73 lb ft²

Power

horsepower, kilowatt, watt, btu/second, calorie/second, foot lbf/second, kilocalorie/second

- 1 W = 1 kg m²/s³ = 1 Nm/s = 1 J/s
- 1 kW = 1,000 Watts = 3,412 Btu/h = 737.6/550 British hp = 1.341 British hp = 10³/9.80665 kg_f m/s = 737.6 ft lb_f/s = 10³/(9.80665 75) metric hp
- 1 hp (English horse power) = 745.7 W = 0.746 kW = 550 ft lb/s = 2,545 Btu/h = 33.000 ft lb/m = 1.0139 metric horse power ≈ 1.0 KVA
- 1 metric horse power = 736 W = 75 kg m/s = 0.986 English horse power
- 1 refrigeration Ton = 12,000 Btu/h cooling = 3.516 kW = 3,025.9 k [Calories](#)/h
- 1 cooling tower Ton = 15,000 [Btu](#)/h = 3,782 k [Calories](#)/h
- 1 Therm = 100,000 Btu/h
- 1 ft lb/s = 1.3558 W
- 1 Btu/s = 1055.1 W
- 1 Btu/h = 1 Btuh = 0.293 W = 0.001 MBH

Power per unit area

- $1 \text{ W/m}^2 = 0.3170 \text{ Btu/(h ft}^2) = 0.85984 \text{ kcal/(h m}^2)$

Pressure

atmosphere, centimeters of mercury, foot of water, bar, barye, centimeter of water, dyne/centimeter², inch of mercury, inch of water, kgf/centimeter², kgf/meter², lbf/foot², lbf/inch² (psi), millibar, millimeter of mercury, pascal, torr, newton/meter²

- [Standard Atmospheric Pressure](#) $1 \text{ atm} = 101.325 \text{ kN/m}^2 = 101.325 \text{ kPa} = 14.7 \text{ psia} = 0 \text{ psig} = 29.92 \text{ in Hg} = 760 \text{ torr} = 33.95 \text{ Ft.H}_2\text{O} = 407.2 \text{ In.W.G (Water Gauge)} = 2116.8 \text{ Lbs./Sq.Ft.}$
- $1 \text{ N/m}^2 = 1 \text{ Pa} = 1.4504 \times 10^{-4} \text{ lb/in}^2 = 1 \times 10^{-5} \text{ bar} = 4.03 \times 10^{-3} \text{ in water} = 0.336 \times 10^{-3} \text{ ft water} = 0.1024 \text{ mm water} = 0.295 \times 10^{-3} \text{ in mercury} = 7.55 \times 10^{-3} \text{ mm mercury} = 0.1024 \text{ kg/m}^2 = 0.993 \times 10^{-5} \text{ atm}$
- $1 \text{ Pa} = 10^{-6} \text{ N/mm}^2 = 10^{-5} \text{ bar} = 0.1020 \text{ kp/m}^2 = 1.02 \times 10^{-4} \text{ m H}_2\text{O} = 9.869 \times 10^{-6} \text{ atm} = 1.45 \times 10^{-4} \text{ psi (lb}_f\text{/in}^2)$
- $1 \text{ N/mm}^2 = 10^6 \text{ Pa} = 10 \text{ bar} = 1.020 \times 10^5 \text{ kp/m}^2 = 102.0 \text{ m H}_2\text{O} = 9.869 \text{ atm} = 145.0 \text{ psi (lb}_f\text{/in}^2)$
- $1 \text{ mmHg} = 1 \text{ torr} = 0.01934 \text{ lb/in}^2$
- $1 \text{ atm} = 101,325 \text{ Pa (N/m}^2) = 1.013 \times 10^2 \text{ kN/m}^2 = 1.033 \times 10^4 \text{ kp/m}^2 = 1.033 \text{ kp/cm}^2 = 1.013 \text{ bar} = 14.696 \text{ psi (lb}_f\text{/in}^2) = 407.1 \text{ in H}_2\text{O at } 62^\circ\text{F (16.7}^\circ\text{C)} = 33.9 \text{ ft H}_2\text{O at } 62^\circ\text{F (16.7}^\circ\text{C)} = 10.33 \text{ m H}_2\text{O at } 62^\circ\text{F (16.7}^\circ\text{C)} = 29.92 \text{ in mercury at } 62^\circ\text{F (16.7}^\circ\text{C)} = 760 \text{ mm mercury at } 62^\circ\text{F (16.7}^\circ\text{C)} = 760 \text{ torr}$
- $1 \text{ bar} = 10^5 \text{ Pa (N/m}^2) = 0.1 \text{ N/mm}^2 = 10,197 \text{ kp/m}^2 = 10.20 \text{ m H}_2\text{O} = 0.9869 \text{ atm} = 14.50 \text{ psi (lb}_f\text{/in}^2) = 10^6 \text{ dyn/cm}^2 = 750 \text{ mmHg}$
- $1 \text{ kp/m}^2 = 9.81 \text{ Pa (N/m}^2) = 9.807 \times 10^{-6} \text{ N/mm}^2 = 10^{-3} \text{ m H}_2\text{O} = 1 \text{ mm H}_2\text{O} = 0.9681 \times 10^{-4} \text{ atm} = 1.422 \times 10^{-3} \text{ psi (lb}_f\text{/in}^2) = 0.0394 \text{ in H}_2\text{O} = 0.0736 \text{ mm mercury}$
- $1 \text{ psi (lb}_f\text{/in}^2) = 144 \text{ psf (lb}_f\text{/ft}^2) = 6,894.8 \text{ Pa (N/m}^2) = 6.895 \times 10^{-3} \text{ N/mm}^2 = 6.895 \times 10^{-2} \text{ bar} = 27.71 \text{ in H}_2\text{O at } 62^\circ\text{F (16.7}^\circ\text{C)} = 703.1 \text{ mm H}_2\text{O at } 62^\circ\text{F (16.7}^\circ\text{C)} = 2.0416 \text{ in mercury at } 62^\circ\text{F (16.7}^\circ\text{C)} = 51.8 \text{ mm mercury at } 62^\circ\text{F (16.7}^\circ\text{C)} = 703.6 \text{ kg/m}^2 = 0.06895 \text{ atm} = 2.307 \text{ Ft. H}_2\text{O} = 16 \text{ ounces}$
- $1 \text{ psf (lb}_f\text{/ft}^2) = 47.88 \text{ N/m}^2 \text{ (Pa)} = 0.006944 \text{ lb}_f\text{/in}^2 \text{ (psi)}$
- $1 \text{ dyn/cm}^2 = 145.04 \times 10^{-7} \text{ lb}_f\text{/in}^2$
- $1 \text{ in mercury (Hg)} = 3,376.8 \text{ N/m}^2 = 0.49 \text{ lb/in}^2 = 12.8 \text{ in water}$
- $1 \text{ Ounce} = 1.73 \text{ In.W.C.}$
- $1 \text{ Ft.H}_2\text{O} = 0.4335 \text{ psi} = 62.43 \text{ Lbs./Sq.Ft.}$
- $1 \text{ in water} = 248.8 \text{ N/m}^2 = 0.0361 \text{ lb/in}^2 = 25.4 \text{ kg/m}^2 = 0.0739 \text{ in mercury}$
- $1 \text{ m H}_2\text{O} = 9806.7 \text{ Pa} = 9.807 \times 10^{-3} \text{ N/mm}^2 = 0.0987 \text{ bar} = 1,000 \text{ kp/m}^2 = 0.09678 \text{ atm} = 1.422 \text{ psi (lb}_f\text{/in}^2)$
- $1 \text{ mm water} = 9.81 \text{ Pa (N/m}^2) = 1 \text{ kg/m}^2 = 0.0736 \text{ mm mercury} = 0.9677 \times 10^{-4} \text{ atm}$
- $1 \text{ mm mercury} = 0.0193 \text{ lb/in}^2 = 133 \text{ N/m}^2 = 12.8 \text{ mm water}$

Rotation

revolutions,

- $1 \text{ r/min (rpm)} = 0.01667 \text{ r/s} = 0.105 \text{ rad/s}$
- $1 \text{ r/s} = 60 \text{ r/min} = 6.28 \text{ rad/s}$
- $1 \text{ rad/s} = 9.55 \text{ r/min (rpm)} = 0.159 \text{ r/s (rps)}$

Specific energy, enthalpy, entropy

- $1 \text{ Btu/lb}_m = 2,326.1 \text{ J/kg} = 0.55556 \text{ kcal/kg} = 778.2 \text{ ft lb}_f / \text{lb}_m = 3.9 \cdot 10^{-4} \text{ hp hr} / \text{lb}_m = 5.4 \text{ lb}_f / \text{in}^2 / \text{lb}_m / \text{ft}^3 = 0.237 \text{ kp m} / \text{g} = 5.56 \cdot 10^{-4} \text{ kcal/g} = 2.326 \text{ kJ/kg}$
- $1 \text{ J/kg} = 4.299 \cdot 10^{-4} \text{ Btu/lb}_m = 2.388 \cdot 10^{-4} \text{ kcal/kg}$
- $1 \text{ kcal/kg} = 1.80 \text{ Btu/lb}_m = 4,187 \text{ J/kg}$

Specific heat capacity

- $1 \text{ J/(kg K)} = 2.389 \cdot 10^{-4} \text{ kcal/(kg } ^\circ\text{C)} = 2.389 \cdot 10^{-4} \text{ Btu/(lb}_m \text{ } ^\circ\text{F)}$
- $1 \text{ kJ/(kg K)} = 0.2389 \text{ kcal/(kg } ^\circ\text{C)} = 0.2389 \text{ Btu/(lb}_m \text{ } ^\circ\text{F)}$
- $1 \text{ Btu/(lb}_m \text{ } ^\circ\text{F)} = 4,186.8 \text{ J/(kg K)} = 1 \text{ kcal/(kg } ^\circ\text{C)}$
- $1 \text{ kcal/(kg } ^\circ\text{C)} = 4,186.8 \text{ J/(kg K)} = 1 \text{ Btu/(lb}_m \text{ } ^\circ\text{F)}$

Specific Volume

- $1 \text{ m}^3/\text{kg} = 16.02 \text{ ft}^3/\text{lb}_m = 27680 \text{ in}^3/\text{lb}_m = 119.8 \text{ US gal/lb}_m = 1000 \text{ liter/kg}$
- $1 \text{ liter/kg} = 0.016 \text{ ft}^3/\text{lb}_m = 27.7 \text{ in}^3/\text{lb}_m = 0.12 \text{ US gal/lb}_m = 0.001 \text{ m}^3/\text{kg}$
- $1 \text{ ft}^3/\text{lb}_m = 1728 \text{ in}^3/\text{lb}_m = 7.48 \text{ US gal/lb}_m = 62.43 \text{ liter/kg} = 0.062 \text{ m}^3/\text{kg}$
- $1 \text{ in}^3/\text{lb}_m = 0.00058 \text{ ft}^3/\text{lb}_m = 0.0043 \text{ US gal/lb}_m = 0.036 \text{ liter/kg} = 0.000036 \text{ m}^3/\text{kg}$
- $1 \text{ US gal/lb}_m = 0.134 \text{ ft}^3/\text{lb}_m = 231 \text{ in}^3/\text{lb}_m = 8.35 \text{ liter/kg} = 0.0083 \text{ m}^3/\text{kg}$

Temperature

celsius, rankine, kelvin, centigrade, fahrenheit,

- $1 ^\circ\text{C} = 1.8 ^\circ\text{F}$
- $1 ^\circ\text{F} = 0.555 ^\circ\text{C}$
- $0 ^\circ\text{C}$ corresponds to $32 ^\circ\text{F}$, 273.16 K and 491.69 R
- $T(^{\circ}\text{R}) = (9/5)T(\text{K})$
- $T(^{\circ}\text{F}) = [T(^{\circ}\text{C})](9/5) + 32$
- $T(^{\circ}\text{F}) = [T(\text{K}) - 273.15](9/5) + 32$
- $T(^{\circ}\text{C}) = 5/9[T(^{\circ}\text{F}) - 32]$

Thermal conductivity

- $1 \text{ W/(m K)} = 0.85984 \text{ kcal/(h m } ^\circ\text{C)} = 0.5779 \text{ Btu/(ft h } ^\circ\text{F)}$
- $1 \text{ Btu/(ft h } ^\circ\text{F)} = 1.731 \text{ W/(m K)} = 1.488 \text{ kcal/(h m } ^\circ\text{C)}$
- $1 \text{ kcal/(h m } ^\circ\text{C)} = 1.163 \text{ W/(m K)} = 0.6720 \text{ Btu/(ft h } ^\circ\text{F)}$

Thermal diffusivity

- $1 \text{ ft}^2/\text{s} = 0.0929 \text{ m}^2/\text{s}$
- $1 \text{ ft}^2/\text{h} = 2.581 \cdot 10^{-5} \text{ m}^2/\text{s}$

Thermal resistance

- $1 \text{ (h } ^\circ\text{F)/Btu} = 1.8958 \text{ K/W}$

Time

year, month, day, hour, minute, second, millisecond

- 1 h = 3,600 s = 60 min
- 1 ms (millisecond) = 10^{-3} s
- 1 μ s (microsecond) = 10^{-6} s
- 1 ns (nanosecond) = 10^{-9} s

Torque, Moment

foot-pound torque, newton-meter

- 1 ft lb = 1.356 Nm

Velocity, speed

foot/second, inch/second, meter/second, kilometer/hour, knot, mile/hour, nautical mile per hour

- 1 ft/s = 0.3048 m/s
- 1 ft/min = 5.08×10^{-3} m/s = 0.0183 km/h = 0.0114 mph
- 1 mph = 0.44703 m/s = 1.609 km/h = 88 ft/min = 5280 ft/hr = 1.467 Ft./sec. = 0.8684 knots
- 1 m/s = 3.6 km/h = 196.85 ft/min = 2.237 mph
- 1 km/h = 0.2778 m/s = 54.68 ft/min = 0.6214 mph = 0.5396 knot
- 1 knot (nautical mile per hour) = 0.514444444 m/s = 1.852 kilometers per hour = 1.1515 miles per hour = 1 nautical miles per hour
- 1 League = 3.0 Miles

Viscosity dynamic

- 1 lb/(ft s) = 1.4879 Pa s = 14.88 P = 1,488 cP = 0.1517 kp s/m²
- 1 cP (Centipoise) = 10^{-3} Pa s = 0.01 P = 1.020×10^{-4} kp s/m² = 6.721×10^{-4} lb/(ft s) = 0.00100 (N s)/m²
- 1 kg/(m s) = 1 (N s)/m² = 0.6720 lb_m/(ft s) = 10 Poise
- 1 P (Poise) = 0.1 Pa s = 100 cP = 1.020×10^{-2} kp s/m² = 6.721×10^{-2} lb/(ft s) = 0.1 kg/ms
- 1 Pa s (N s/m²) = 10 P (Poise) = 10^3 cP = 0.1020 kp s/m² = 0.6721 lb/(ft s)
- 1 kp s/m² = 9.80665 Pa s = 98.07 P = 9,807 cP = 6.591 lb/(ft s)
- 1 reyns = 1 lb_f s/in² = 6894.76 Pa s
- [Dynamic, Absolute and Kinematic Viscosity](#) - An introduction to dynamic, absolute and kinematic viscosity and how to convert between CentiStokes (cSt), CentiPoises (cP), Saybolt Universal Seconds (SSU) and degree Engler.

Viscosity kinematic

- 1 ft²/s = 0.0929 m²/s
- 1 ft²/h = 2.581×10^{-5} m²/s
- 1 St (Stokes) = 1×10^{-4} m²/s = 100 cSt = 1.076×10^{-3} ft²/s
- 1 m²/s = 10^4 St = 10^6 cSt = 10.764 ft²/s = 38750 ft²/h
- 1 cSt (Centistokes) = 10^{-6} m²/s = 0.01 St = 1.076×10^{-5} ft²/s

Volume

barrel, gallon, cubic centimeter (cm³), cubic feet (foot³), cubic inch (inch³), cubic meter (meter³), cubic yard (yard³), quarts, liters, acre foot, board foot, bushel, cord, cup, dram, fluid ounce, peck, pint, quart, tablespoon, teaspoon,

- $1 \text{ ft}^3 = 0.02832 \text{ m}^3 = 28.32 \text{ dm}^3 = 0.03704 \text{ yd}^3 = 6.229 \text{ Imp. gal (UK)} = 7.481 \text{ gal (US)} = 1,728 \text{ Cu.In.}$
- $1 \text{ in}^3 = 1.6387 \times 10^{-5} \text{ m}^3 = 1.639 \times 10^{-2} \text{ dm}^3 \text{ (liter)} = 16.39 \text{ cm}^3 = 16390 \text{ mm}^3 = 0.000579 \text{ ft}^3$
- $1 \text{ Gallon (U.S.)} = 3.785 \times 10^{-3} \text{ m}^3 = 3.785 \text{ dm}^3 \text{ (liter)} = 0.13368 \text{ ft}^3 = 4.951 \times 10^{-3} \text{ yd}^3 = 0.8327 \text{ Imp. gal (UK)} = 4 \text{ Quarts} = 8 \text{ Pints}$
- $1 \text{ Imp. gal (UK)} = 4.546 \times 10^{-3} \text{ m}^3 = 4.546 \text{ dm}^3 = 0.1605 \text{ ft}^3 = 5.946 \times 10^{-3} \text{ yd}^3 = 1.201 \text{ gal (US)}$
- $1 \text{ dm}^3 \text{ (Liter)} = 10^{-3} \text{ m}^3 = 0.03532 \text{ ft}^3 = 1.308 \times 10^{-3} \text{ yd}^3 = 0.220 \text{ Imp gal (UK)} = 0.2642 \text{ Gallons (US)} = 1.057 \text{ Quarts} = 2.113 \text{ Pints}$
- $1 \text{ yd}^3 = 0.7646 \text{ m}^3 = 764.6 \text{ dm}^3 = 27 \text{ ft}^3 = 168.2 \text{ Imp. gal (UK)} = 202.0 \text{ gal (US)} = 46,656 \text{ Cu.In.} = 1616 \text{ Pints} = 807.9 \text{ Quarts} = 764.6 \text{ Liters}$
- $1 \text{ pint (pt)} = 0.568 \text{ dm}^3 \text{ (liter)} = 16 \text{ fl. oz. (fluid ounce)} = 28.88 \text{ in}^3$
- $1 \text{ km}^3 = 10^9 \text{ m}^3 = 10^{12} \text{ dm}^3 \text{ (liter)} = 10^{15} \text{ cm}^3 = 10^{18} \text{ mm}^3$
- $1 \text{ cm}^3 = 0.061 \text{ in}^3$
- $1 \text{ m}^3 = 10^3 \text{ dm}^3 \text{ (liter)} = 35.31 \text{ ft}^3 = 1.3093 \text{ yd}^3 = 220.0 \text{ Imp. gal (UK)} = 264.2 \text{ gal (US)} = 61,023 \text{ Cu.In.} = 0.02832 \text{ Cu.Ft}$
- $1 \text{ Hogshead} = 63 \text{ Gallon} = 8.42184 \text{ Cu.Ft}$
- $1 \text{ Barrel liquid} = 31.0 \text{ Gallons liquid}$
- $1 \text{ Barrel beer} = 31.5 \text{ Gallons beer}$
- $1 \text{ Barrel oil (petroleum)} = 42 \text{ Gallons oil}$
- $1 \text{ Bushel} = 1.2445 \text{ Cu.Ft.} = 32 \text{ Quarts (Dry)} = 64 \text{ Pints (dry)} = 4 \text{ Pecks}$
- $1 \text{ quart (qt)} = 2 \text{ pints} = 57.75 \text{ in}^3 = 1/8 \text{ dry quarts}$
- $1 \text{ fluid ounce (fl. oz.)} = 2 \text{ tablespoons} = 1.805 \text{ in}^3 = 29.574 \text{ milliliters}$
- $1 \text{ cord} = 128 \text{ ft}^3$
- $1 \text{ peck} = 8 \text{ dry quarts}$
- $1 \text{ cup} = 8 \text{ fl.oz. (fluid ounce)}$
- one board foot = piece of lumber 1 foot wide x 1 foot long x 1 inch thick

Volume flow

- $1 \text{ dm}^3/\text{s (kg/s water)} = 13.20 \text{ Imp. gal (UK)}/\text{min}$
- $1 \text{ m}^3/\text{s} = 3,600 \text{ m}^3/\text{h} = 1,000 \text{ dm}^3(\text{liter})/\text{s} = 35.32 \text{ ft}^3/\text{s} = 2,118.9 \text{ ft}^3/\text{min} = 13,200 \text{ Imp.gal (UK)}/\text{min} = 15,852 \text{ gal (US)}/\text{min}$
- $1 \text{ m}^3/\text{h} = 2.7778 \times 10^{-4} \text{ m}^3/\text{s} = 0.2778 \text{ dm}^3(\text{litre})/\text{s} = 9.810 \times 10^{-3} \text{ ft}^3/\text{s} = 0.5886 \text{ ft}^3/\text{min (cfm)} = 3.667 \text{ Imp.gal (UK)}/\text{min} = 4.403 \text{ gal (US)}/\text{min}$
- $1 \text{ m}^3/\text{h} = 10^3 \text{ dm}^3(\text{litre})/\text{h} = 16.67 \text{ dm}^3(\text{litre})/\text{min} = 0.27878 \text{ dm}^3(\text{litre})/\text{s}$
- $1 \text{ ft}^3/\text{min} = 1.7 \text{ m}^3/\text{h} = 0.47 \text{ l/s} = 62.43 \text{ Lbs.H}_2\text{O}/\text{Min.}$
- $1 \text{ dm}^3(\text{litre})/\text{s} = 10^{-3} \text{ m}^3/\text{s} = 3.6 \text{ m}^3/\text{h} = 0.03532 \text{ ft}^3/\text{s} = 2.1189 \text{ ft}^3/\text{min (cfm)} = 13.200 \text{ Imp.gal (UK)}/\text{min} = 15.852 \text{ gal (US)}/\text{min} = 792 \text{ Imp. gal (UK)}/\text{h}$
- $1 \text{ dm}^3(\text{litre})/\text{s} = 60 \text{ litre}/\text{min} = 3,600 \text{ litre}/\text{h}$
- $1 \text{ ft}^3/\text{s} = 0.0283168 \text{ m}^3/\text{s} = 101.9 \text{ m}^3/\text{h} = 28.32 \text{ dm}^3(\text{litre})/\text{s} = 60 \text{ ft}^3/\text{min} = 373.7 \text{ Imp.gal (UK)}/\text{min} = 448.9 \text{ gal (US)}/\text{min}$
- $1 \text{ Imp.gal (UK)}/\text{min} = 7.57682 \times 10^{-5} \text{ m}^3/\text{s} = 0.0273 \text{ m}^3/\text{h} = 0.0758 \text{ dm}^3(\text{litre})/\text{s} = 2.675 \times 10^{-3} \text{ ft}^3/\text{s} = 0.1605 \text{ ft}^3/\text{min} = 1,201 \text{ gal (US)}/\text{min}$
- $1 \text{ gal (US)}/\text{min} = 6.30888 \times 10^{-5} \text{ m}^3/\text{s} = 0.227 \text{ m}^3/\text{h} = 0.06309 \text{ dm}^3(\text{litre})/\text{s} = 2.228 \times 10^{-3} \text{ ft}^3/\text{s} = 0.1337 \text{ ft}^3/\text{min} = 0.8327 \text{ Imperial gal (UK)}/\text{min}$

Weight see [Mass](#)

- See [Density, Specific Weight and Specific Gravity](#) - An introduction and definition of density, specific weight and specific gravity. Formulas with examples.