

Thermal conductance per unit area, Unit conductance: heat transferred per (unit time) (unit area) (degree)..... C_a

$$C_a = \frac{C}{A} = \frac{1}{RA} = \frac{q}{A(t_1 - t_2)} = \frac{k}{L}$$

Thermal conductivity: heat transferred per (unit time) (unit area) (degree per unit length)..... k

$$k = \frac{\frac{q}{A}}{(t_1 - t_2) / L}$$

Surface coefficient of heat transfer, Film coefficient of heat transfer, Individual coefficient of heat transfer: heat transferred per (unit time) (unit area) (degree)..... f

$$f = \frac{\frac{q}{A}}{t_1 - t_2}$$

(In general f is not equal to k/L , where L is the actual thickness of the fluid film.)

Overall coefficient of heat transfer, Thermal transmittance per unit area: heat transferred per (unit time) (unit area) (degree overall)..... U

$$U = \frac{\frac{q}{A}}{t_1 - t_2}$$

Thermal transmission (heat transferred per unit time)..... q

$$q = \frac{Q}{t}$$

Thermal resistance (degree per unit of heat transferred per unit time)..... R

$$R = \frac{t_1 - t_2}{q} = \frac{L}{kA}$$

Thermal resistivity..... $1/k$

Vaporization values at constant pressure, Differences between values for saturated vapor and saturated liquid at the same pressure..... *Subscript fg*

Velocity..... V

Viscosity, absolute..... μ

Viscosity, kinematic..... μ/ρ

Volume (total)..... V

Volume per unit time, Rate at which quantity of material passes through a machine, Quantity of heat per unit time, Quantity of heat per unit weight..... q

Weight of a major item, Total weight..... W

Weight rate, Weight per unit of power, Weight per unit of time..... w

Work (total)..... W

THE GREEK ALPHABET

α Alpha	ι Iota	ρ Rho
β Beta	κ Kappa	σ Sigma
γ Gamma	λ Lambda	τ Tau
δ Delta	μ Mu	υ Upsilon
ϵ Epsilon	ν Nu	ϕ Phi
ζ Zeta	ξ Xi	χ Chi
η Eta	$\omicron$ Omicron	ψ Psi
θ Theta	π Pi	ω Omega

CONVERSION EQUATIONS¹

Heat, Power and Work

1 ton refrigeration	= { 12,000 Btu per hour 200 Btu per minute
Latent heat of ice	= 143.4 Btu per pound
1 Btu	= { 778.3 ft-lb 0.2930 Int. whr 252.0 I.T. calorie
1 Int. watthour	= { 2656 ft-lb 3.413 Btu 3600 Int. joules 860 I.T. calories
1 Int. kilowatthour	= { 3,413 Btu 3,517 lb water evaporated from and at 212 F
1 Int. kilowatt (1000 watts)	= { 1.341 hp 56.88 Btu per minute 44,267 ft-lb per minute
1000 I.T. calories	= { 3.968 Btu 3088 ft-lb
1 I.T. Kilocalorie	= 1.1628 Int. whr
1 horsepower	= { 0.7455 Int. kw 42.40 Btu per minute 33,000 ft-lb per minute 550 ft-lb per second
1 boiler horsepower	= { 33,475 Btu per hour 9.809 Int. kw

Weight and Volume

1 gal (U. S.)	= { 231 cu in. 0.1337 cu ft
1 British or Imperial gallon	= 277.42 cu in.
1 cu ft	= { 7.481 gal 1728 cu in.
1 cu ft water at 60 F. (in vacuo)	= 62.37 lb
1 cu ft water at 212 F. (" ")	= 59.83 lb
1 gal water at 60 F. (" ")	= 8.338 lb
1 gal water at 212 F. (" ")	= 7.998 lb
1 lb (avdp)	= { 16 oz 7000 grains
1 bushel	= 1.244 cu ft
1 short ton	= 2000 lb

Pressure

1 lb per square inch	= { 144 lb per square foot 2.0360 in. mercury at 32 F 2.0422 in. mercury at 62 F 2.309 ft water at 62 F 2.771 in. water at 62 F
1 oz per square inch	= { 0.1276 in. mercury at 62 F 1.732 in. water at 62 F

¹ Checked in 1944 by National Bureau of Standards. Abbreviations Int. and I.T. refer to International and International (Steam) Table, respectively.