Inch-pound ..... in-lb
Indicated horsepower ..... ihp
Indicated horsepower-hour ..... ihp-hr
Internal energy, Intrinsic energy. (The capital should be used for any weight and the small letter for unit weight) ..... U or u
Kilogram ..... kg
Kilowatt ..... kw
Kilowatthour ..... kwhr
Length of path of heat flow, thickness L
Load, total ..... W
Mass ..... m
Mechanical efficiency ..... e_m
Mechanical equivalent of heat ..... J
Melting point ..... mp
Meter ..... m
Micron ..... μ (mu)
Miles per hour ..... mph
Minute ..... min
Molecular weight ..... mol. wt
Mol ..... mol
Ounce ..... oz
Power, Horsepower, Work per unit time ..... P
Pressure, Absolute pressure, Gage pressure, Force per unit area ..... p
Quantity (total) of fluid, water, gas, heat; Quantity by volume; Total quantity of heat transferred ..... Q
Quality of steam, Pounds of dry steam per pound of mixture x
Revolutions per minute ..... rpm
Saturated liquid at saturation pressure and temperature, Liquid in contact with vapor ..... *Subscript* f
Specific gravity ..... sp gr
Specific heat ..... sp ht or c
Specific heat at constant pressure ..... c_p
Specific heat at constant volume ..... c_v
Specific volume, Volume per unit weight, Volume per unit mass v
Square foot ..... sq ft
Square inch ..... in. sq
Temperature (ordinary) F or C. (*Theta* is used preferably only when t is used for Time in the same discussion) ..... t or θ (*theta*)
Temperature (absolute) F abs or K. (Capital *theta* is used preferably only when small *theta* is used for ordinary temperature) ..... T or Θ (*capital theta*)
Thermal conductance[4] (heat transferred per unit time, per degree) C

$$C = \frac{1}{R} = \frac{kA}{L} = \frac{q}{t_1 - t_2}$$

Thermal conductance per unit area, unit conductance (heat transferred per unit time per unit area, per 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 per unit area, and per degree per unit length) ..... k

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

[4]Terms ending *ivity* designate properties independent of size or shape, sometimes called *specific properties*. Examples are—conductivity and resistivity. Terms ending *ance* designate quantities depending not only on the material, but also upon size and shape, sometimes called *total quantities*. Examples are—conductance and transmittance. Terms ending *ion* designate rate of heat transfer. Examples are—conduction and transmission.

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

Over-all coefficient of heat transfer, Thermal transmittance per unit area (heat transferred per unit time per unit area, per degree over-all) ..... U

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

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

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

Thermal resistance (degrees, 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
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
Watt ..... w
Watthour ..... whr
Weight of a major item, Total weight ..... W
Weight rate, Weight per unit of power, Weight per unit of time ..... w
Work (total) ..... W

CONVERSION EQUATIONS

Fahrenheit degrees = 9/5 centigrade degrees + 32.

Centigrade degrees = 5/9 (Fahrenheit degrees − 32).

Absolute temperature, expressed in Fahrenheit degrees = Fahrenheit degrees + 459.6. In heating and ventilating work, 460 is usually used.

Absolute temperature, expressed in centigrade degrees = centigrade degrees + 273.1.

Powers and Work

1 ton refrigeration = 200 Btu per minute

Latent heat of ice = 143.33 Btu per pound

1 Btu =
- 777.5 ft-lb
- 0.293 watthours
- 252.02 mean calories

1 watthour =
- 2,655.2 ft-lb
- 3.415 Btu
- 3600 joules
- 860.648 mean calories

1 mean calorie =
- 0.003968 Btu
- 3.085 ft-lb
- 0.0011619 watthours