Head ..... H or h

Heat content, Total heat, Enthalpy. (The capital should be used for any weight and the small letter for unit weight.) ..... H or h

Heat content of saturated liquid, Total heat of saturated liquid, Enthalpy of saturated liquid, sometimes called heat of the liquid ..... h_f

Heat content of dry saturated vapor, Total heat of dry saturated vapor, Enthalpy of dry saturated vapor ..... h_g

Heat of vaporization at constant pressure ..... L or h_{fg}

Horsepower ..... hp

Horsepower-hour ..... hp-hr

Inch ..... in.

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 ..... sq in.

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

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

[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.

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

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

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.

Power, Heat, and Work

1 ton refrigeration = 12,000 Btu per hour = 200 Btu per minute

Latent heat of ice = 143.33 Btu per pound