

|                                       |            |
|---------------------------------------|------------|
| Direct-current (as adjective).....    | d-c        |
| Electromotive Force.....              | emf        |
| Feet per minute.....                  | fpm        |
| Feet per second.....                  | fps        |
| Foot.....                             | ft         |
| Foot-pound.....                       | ft-lb      |
| Foot-pound-second (system).....       | fps        |
| Freezing point.....                   | fp         |
| Gallon.....                           | gal        |
| Gallons per minute.....               | gpm        |
| Gallons per second.....               | gps        |
| Gram.....                             | g          |
| Gram-calorie.....                     | g-cal      |
| Horsepower.....                       | hp         |
| Horsepower-hour.....                  | hp-hr      |
| Hour.....                             | hr         |
| Inch.....                             | in.        |
| Inch-pound.....                       | in.-lb     |
| Indicated horsepower.....             | ihp        |
| Indicated horsepower-hour.....        | ihp-hr     |
| Kilogram.....                         | kg         |
| Kilowatt.....                         | kw         |
| Kilowatthour.....                     | kwhr       |
| Mass.....                             | mass       |
| Melting point.....                    | mp         |
| Meter.....                            | m          |
| Micron.....                           | $\mu$ (mu) |
| Miles per hour.....                   | mph        |
| Millimeter.....                       | mm         |
| Minute.....                           | min        |
| Molecular weight.....                 | mol. wt    |
| Mol.....                              | mol        |
| Ounce.....                            | oz         |
| Pound.....                            | lb         |
| Pounds per square inch.....           | psi        |
| Pounds per square inch, gage.....     | psig       |
| Pounds per square inch, absolute..... | psia       |
| Revolutions per minute.....           | rpm        |
| Revolutions per second.....           | rps        |
| Second.....                           | sec        |
| Specific gravity.....                 | sp gr      |
| Specific heat.....                    | sp ht      |
| Square foot.....                      | sq ft      |
| Square inch.....                      | sq in.     |
| Watt.....                             | w          |
| Watthour.....                         | whr        |

## SYMBOLS

A letter symbol is a single character, with subscript or superscript if required, used to designate a physical magnitude in mathematical equations and expressions. Two or more symbols together always represent a product. The following have been compiled from a selected list of approved standards<sup>1</sup>. Additional symbols and variations in the standard

<sup>1</sup>Letter Symbols for Mechanics of Solid Bodies, Z10.3-1942, and Letter Symbols for Heat and Thermodynamics, Z10.4-1943 (American Standards Association).

## Abbreviations and Symbols

symbols found necessary in the individual chapters will be found in a list at the end of Chapters 3, 4, 5, 7, 39, 41, and 43.

|                                                       |                     |
|-------------------------------------------------------|---------------------|
| Acceleration, due to gravity.....                     | g                   |
| Acceleration, linear.....                             | a                   |
| Area.....                                             | A                   |
| Change in specific volume during vaporization.....    | $v_g$               |
| Density, Weight per unit volume, Specific weight..... | $d$ or $\rho$ (rho) |

$$d = \frac{1}{v}$$

|                                                                                                                  |             |
|------------------------------------------------------------------------------------------------------------------|-------------|
| Distance, linear.....                                                                                            | s           |
| Dry saturated vapor, Dry saturated gas at saturation pressure and temperature, vapor in contact with liquid..... | Subscript g |

|                                                                                                 |            |
|-------------------------------------------------------------------------------------------------|------------|
| Efficiency.....                                                                                 | $\eta$     |
| Elevation above some datum.....                                                                 | z, Z       |
| Emissivity.....                                                                                 | $\epsilon$ |
| Energy in general; work, total; work, molal.....                                                | E          |
| Entropy. (The capital should be used for any weight, and the small letter for unit weight)..... | S or s     |

|                                                                                                                                          |                |
|------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| Force, total load.....                                                                                                                   | F              |
| Gas Constant, in equation $pV = nRT$ .....                                                                                               | R              |
| 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 <sub>f</sub> |

|                                                                                                                          |                      |
|--------------------------------------------------------------------------------------------------------------------------|----------------------|
| Heat content of dry saturated vapor, Total heat of dry saturated vapor, Enthalpy of dry saturated vapor.....             | h <sub>g</sub>       |
| Heat of vaporization at constant pressure.....                                                                           | L or h <sub>fg</sub> |
| Hydraulic radius.....                                                                                                    | R <sub>H</sub>       |
| Internal energy, Intrinsic energy. (The capital should be used for any weight and the small letter for unit weight)..... | U or u               |
| Length of path of heat flow, thickness.....                                                                              | L                    |

|                                                                      |              |
|----------------------------------------------------------------------|--------------|
| Load, total.....                                                     | W            |
| Mechanical efficiency.....                                           | $\epsilon_m$ |
| Mechanical equivalent of heat.....                                   | J            |
| 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               |
| Reynolds Number.....                                                                                     | N <sub>Re</sub> |
| Saturated liquid at saturation pressure and temperature, Liquid in contact with vapor.....               | Subscript f     |
| Specific heat.....                                                                                       | c               |

|                                                                                                                                   |                               |
|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| Specific heat at constant pressure.....                                                                                           | c <sub>p</sub>                |
| Specific heat at constant volume.....                                                                                             | c <sub>v</sub>                |
| Specific volume, Volume per unit weight, Volume per unit mass.....                                                                | v                             |
| Temperature (ordinary) F or C. (Theta is used preferably only when t is used for time in the same discussion).....                | t or $\theta$ (theta)         |
| Temperature (absolute) F abs or K. (Capital theta is used preferably only when small theta is used for ordinary temperature)..... | T or $\Theta$ (capital theta) |