

**USEFUL ENGINEERING FORMULAS:**

BTU = Material weight in lbs. x specific heat of material x temperature difference

1 BTU = .293 Watts

1 WATT = 3.42 BTU

1 KW = 1000 Watts = 3,412 BTU

BTU/Hr = GPM x 500 x)T = (cfm x 1.08 x)T (air))

1 Kilogram Calorie = BTU/Hr x .252

Tons = $\frac{(\text{Water}) \text{ GPM} \times 8.34 \times 60 \times \text{temp. diff.} \times \text{sp. ht.}}{12,000}$ = $\frac{(\text{Water}) \text{ GPM} \times)T}{24}$

1 Ton = 12,000 BTU/Hr

1 Gal. Water = 8.34 lbs. = 231 cu. in. = .1337 cu. ft. = 3.785 liters = 4 quarts

1 Lb. Water = .1198 gallons

1 Gallon = 3.79 liters

1 Cu. Ft. Water = 7.481 gallons = 62.37 lbs.

1 Kilogram = lbs. x .454

1 Liter = .2642 gallons

454 Gram = .0353 oz.

1 oz. = 28.35 grams

PSI = $\frac{\text{Ft. Hd.} \times \text{Sp. gravity}}{2.3}$

(Sp gravity of water = 1)

Feet of head = $\frac{\text{PSI} \times 2.3}{\text{SP gravity}}$

°F = (9/5 x °C) + 32

°C = 5/9 (°F – 32)

Volume of Cube = L x W x H

Volume of Cylinder = B x r² x L

Volume of Cylinder Material = $\frac{B \times (D^2 - d^2) \times L}{4}$

Circumference of Circle = B x Diameter

Area of Circle = B x r² = D² x .7854

1 Millimeter = inches x 25.4

1 Foot = 30.48 cm.

1 Sq. Cm. = .155 sq. in.

1 Cu. Ft. = 1728 cu. in.

B = 3.1416

Watts = Amps x Volts (1 Phase)

Watts = Amps x Volts x 1.73 (3 Phase)

Cfm = $\frac{\text{kw} \times 3000}{\text{temp. diff.}}$

Volts = $\frac{\text{Watts}}{\text{Amps}}$ = OHM x Amps = $\sqrt{\text{Watts} \times \text{OHM}}$

KVA = $\frac{\text{cfm} \times \text{temp. diff.}}{3000}$