

HEAT TRANSFER FORMULAE

Heat absorbed by mass m with specific heat C to raise its temp from T_1 to T_2

$$Q = m * C * (T_1 - T_2)$$

$$\text{Watt} = \text{kg} * \text{kJ/kg}^\circ\text{C} * (^\circ\text{C} - ^\circ\text{C})$$

Conductive Heat transfer through a wall of thickness b, conductivity k and c.s. area A

$$Q = k * A * (T_1 - T_2)$$

$$\text{Watt} = \text{W/mK} * \text{m}^2 * (^\circ\text{C} - ^\circ\text{C})$$

Radiation Heat Transfer from a surface (Area A) of emissivity ϵ at temp T_1 inside an enclosure at temp T

$$Q = \sigma * \epsilon * A * (T_1^4 - T_2^4)$$

$$\text{Watt} = \sigma * \epsilon * \text{m}^2 * (\text{K}^4 - \text{K}^4)$$

Stefan - Boltzmann constant.

$$\sigma = 5.670 \times 10^{-8} \text{ W/m}^2 - \text{K}^4$$

$$\text{K} = ^\circ\text{C} + 273.16$$