

Change of State

* $Q = ms \Delta \theta = c \Delta \theta$. (Temp. change without change of state).

* $Q = mL$. (State change).

* $s \rightarrow$ specific heat, heat required to increase temp. of unit mass by 1°C or 1K .

$c \rightarrow$ heat capacity, $= ms$, heat required to increase temp by 1°C or 1K .

* s for water = $1 \text{ cal/g}^\circ\text{C}$.

* $L \rightarrow$ latent heat, heat required to convert unit mass from one state to another.

* Water equivalent: Mass of equivalent water that takes same amount of heat as taken by the vessel for same rise of temp.

* $\frac{d\theta}{dt} = \frac{\Delta\theta}{R_h} = \frac{\Delta\theta}{\frac{1}{KA}}$ [conduction process]

$\frac{d\theta}{dt} = mc \frac{\Delta\theta}{\Delta t} = L \frac{dm}{dt} = \frac{\Delta\theta}{R_h}$ | $R_h \rightarrow$ thermal resistance.

\downarrow While temp. rising
 \downarrow While change of state