

Class XI, Thermal Expansion

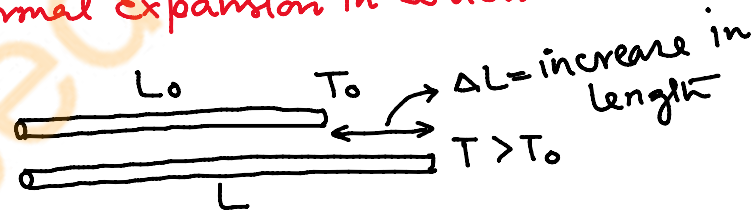
Cause of Thermal Expansion:

According to atomic theory of matter, asymmetry in potential energy curve is responsible for thermal expansion. With rise in temperature, as the energy of atoms increases, the average distance between them increases. Due to this increase in average distance between atoms, the matter as a whole expands.



There are 3 types of Thermal Expansion in solids:

1. Linear Expansion:



$$\Delta L \propto L_0 \quad \text{and} \quad \Delta L \propto \Delta T \quad \Rightarrow \quad \Delta L \propto L_0 \cdot \Delta T$$

$$\Delta L = \alpha L_0 \Delta T \quad \text{--- (1)}$$

↳ Coefficient of Linear expansion

by (1)

$$\alpha = \frac{\Delta L}{L_0 \cdot \Delta T} \quad \text{--- (2)}$$