

Applications:

- ✓ Roofs of factory are coated with aluminum(poor conductor of heat) to prevent conduction of heat into the factory
- ✓ Thermo flask
- ✓ White cloth is preferred to dark cloth in winter and summer respectively.

Expansion

- ✓ Expansion is defined as increase in the size of body or object. It occurs due to the addition of heat to a substance

Linear-expansivity

- ✓ Linear expansion is **increase in length per degree rise in temperature**
- ✓ Linear expansion is denoted by " α "
- ✓ It occurs in solids due to the **rigidity** and **intermolecular force** of the solid.
- ✓ Its unit is K^{-1} Or $^{\circ}C^{-1}$
- ✓ Formula for Linear expansivity $\alpha = \frac{L_2 - L_1}{L_1(\theta_2 - \theta_1)} = \frac{L_2 - L_1}{L_1(\Delta\theta)}$
- ✓ Where L = Length and $(\Delta\theta)$ = change in temperature

Superficial or Area Expansion

- ✓ Superficial or area expansion is increase in area per unit area per degree rise in temperature
- ✓ Formula for superficial expansion $\beta = \frac{A_2 - A_1}{A_1(\theta_2 - \theta_1)} = \beta = \frac{A_2 - A_1}{A_1(\Delta\theta)}$

Where A = Area= Length \times breadth=Length \times Length and $(\Delta\theta)$ = change in temperature

Cubic/volume expansivity

- ✓ It's the increase in volume per unit volume per degree rise in temperature
- ✓ Formula for cubic expansivity $\gamma = \frac{V_2 - V_1}{V_1(\theta_2 - \theta_1)} = \frac{V_2 - V_1}{V_1(\Delta\theta)}$
- ✓ Where V = volume= length \times breadth \times height= Length \times length \times length = L^3

Expansion in liquids

- ✓ Expansion in liquid can be real or apparent
- ✓ Real cubic expansivity is the increase in volume per unit volume per degree rise in temperature
- ✓ Apparent cubic expansivity is the increase in volume per unit volume per degree rise in temperature when the liquid is heated in an expansible vessel.
- ✓ Formula: Real cubic expansivity (γ_r) = apparent cubic expansivity (γ_a) + cubic expansivity of the container
- ✓ Apparent cubic expansivity = $\frac{\text{mass of liquid expelled}}{\text{mass of liquid remaining} \times \text{temperature rise}}$