

$$\text{or } E_b = \sigma T^4 \quad \text{--- (5)}$$

σ = stefan's constant ; $\sigma = 5.67 \times 10^8 \text{ W-m}^{-2}\text{K}^{-4}$.

$$\text{SI unit of } \left(\sigma = \frac{E}{T^4} \right) \sigma = \frac{\text{W/m}^2}{\text{K}^4} = \text{W-m}^{-2}\text{K}^{-4}$$

For any body in general

$$E = \epsilon E_b$$

$$E = \epsilon \sigma T^4 \quad \text{--- (6)}$$

Note: Let a black body of Temp. T is kept in a region with surrounding temp T_0 .

$$(E_b)_{\text{net}} = (E_b)_{\text{radiated}} - (E_b)_{\text{absorbed}}$$

$$(E_b)_{\text{net}} = \sigma T^4 - \sigma T_0^4$$