



Stefan's Law

Stefan's law: When a body is at a temperature higher than that of surrounding radiation loss take place. The amount of energy lost due to radiation per second per unit surface of a given body is proportional to the difference of fourth power of temperature in absolute scale of the body and the surrounding.

$$U \propto [T^4 - T_0^4]$$
$$U = \sigma [T^4 - T_0^4]$$

Where T_0 and T are the temperature of the surrounding and the body.

U = Amount of energy lost due to radiation per unit surface area per second.

σ = constant of proportionality known as Stefan's constant

$$\sigma = \frac{U}{[T^4 - T_0^4]} \text{ Joule m}^{-2} \text{ S}^{-1} \text{ K}^{-4}$$
$$\sigma = 1.455 \times 10^3$$