8.1 Thermal Energy

Thermal energy is the internal energy arising from the motion of particles and is associated with temperature and is a form of kinetic energy.

The higher the temperature, the greater the average kinetic energy of the particle.

Temperature is the measure of the average kinetic energy of particles in a substance.

Thermal Expansion

The particles in solids and liquids are in constant vibration. When they are heated, they vibrate faster leading to an increase in kinetic energy. They force each other a little further apart resulting in the thermal expansion where the substance expands.

Bimetallic Strips

Bimetallic strips consist of two different metals bonded together. Since different metals have different coefficients of thermal expansion, the strip bends when exposed to temperature changes.

For example:

- Fire alarms: Heat from the fire makes the bimetallic strips bend and complete the electrical circuit, so ringing the alarm bell.

Note: Thermal energy is transferred from a body with a high temperature to the one at a lower temperature.