

1.7 Heat Transfer

Video: Three Methods of Heat Transfer

Video: Heat Transfer

Heat is transferred in three ways: conduction, convection and radiation.

1.7.1 Conduction

Demo: Conduction in a coin. Using a coin or key hold it in one hand and put a lit match under the opposite side. What happens?

Demo: Fast and slow conductors.

Heat can be transferred across a coin, glass or can to the other side of the object. This process is called **conduction**. Heat was transferred through a solid (without movement of material) from the hot parts to the cold parts.

Conduction can happen in two ways:

- Energy transfer through molecular or atomic **collisions**. In this method the neighbouring particles interact with each other passing on the thermal energy. This process is slow. Materials such as wood and glass conduct heat in this way.
- Energy transfer by **free** electrons. Metals have electrons which are free to move. These electrons can carry thermal energy more quickly.

The rate at which heat will be transferred through a substance depends on:

- The **material**.
- The temperature **difference** between the two objects.
- The **thickness** of the material
- The **surface** area.

Problem Set #4: Text Page 21 All Questions