
What Is Thermal Energy?

Energy that moves from one substance to another because of a temperature difference is called heat. Heat can also move from one part of an object to another if the two parts are at different temperatures.

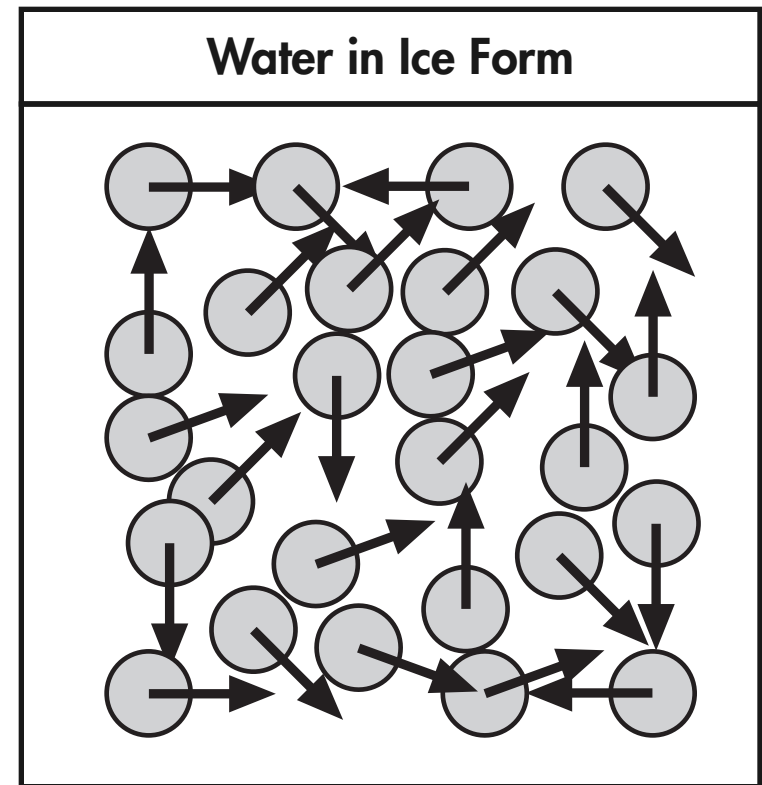
For example, if you heat a pan on a stove, the temperature of the bottom of the pan will increase. Because the handle of the pan is still at a low temperature, heat will travel from the warmer bottom of the pan to the cooler handle.

Here are three important facts to remember.

1. The direction in which heat flows is always from a warmer substance to a cooler substance.
2. Thermal energy is called heat only when it is moving from one place to another.
3. A substance can give off heat or take in heat. The heat energy that is inside a substance is called thermal energy.

Thermal energy is caused by the movement of tiny particles in matter. For example, think about water in its three forms—solid, liquid, and gas. Ice, liquid water, and steam are all made of the same thing—water particles.

Water in a solid form is ice. The particles in ice are close together and move relatively slowly. This motion does not generate much heat, therefore, ice feels cold to our warm hands.



In ice, the particles are arranged in a pattern in which they don't move much, so they don't generate much thermal energy.