

THEORY

When a substance is heated, it expands. This is because the particles of the substance gain energy and move faster. As they move faster, they push each other further apart, causing the substance to expand. This is true for all states of matter: solids, liquids, and gases.

In a solid, the particles are packed closely together. When heated, they vibrate more vigorously, pushing their neighbors away. In a liquid, the particles are more disordered and can move past each other. Heating makes them move even more rapidly. In a gas, the particles are far apart and move very quickly. Heating increases their speed and the pressure they exert.

State of Matter	Particle Arrangement	Effect of Heating
Solid	Particles are packed in a regular, repeating pattern.	Particles vibrate more strongly, pushing each other apart.
Liquid	Particles are close together but can move past each other.	Particles move faster and more randomly, increasing the volume.
Gas	Particles are far apart and move rapidly in all directions.	Particles move even faster, exerting more pressure and expanding.

Therefore, the expansion of a substance upon heating is a result of the increased kinetic energy of its particles, which causes them to occupy a larger volume.

DISCUSSION

