

Lesson Outline for Teaching

Lesson 2: Physical Properties

Physical Properties

1. A(n) **physical** property is a characteristic of matter that you can observe or measure without changing the identity of the matter.
2. **State** of matter is a physical property.
 - a. The common states of matter on Earth are solid, liquid, and **gas**.
 - b. The state of matter depends on how **close** the particles are and how **quickly** they move.
3. Some physical properties are **size-dependent**, which means the measurement of the property depends on how much matter is present.
4. **Mass** is a size-dependent property because it is a measure of the amount of matter in a sample.
 - a. Mass is sometimes confused with **weight**, which is the pull of **gravity** on matter.
 - b. Weight changes with **location**, but mass does not.
5. **Volume** is the amount of space something takes up.
6. Other physical properties are **size-independent** because they do not depend on how much matter is present.
7. **Melting point** and **boiling point** are size-independent properties.
 - a. Melting point is the temperature at which a(n) **solid** changes to a(n) **liquid**.
 - b. The temperature at which a liquid changes to a gas is the **boiling point**.
8. **Density** is the amount of mass per unit volume.
9. **Electrical conductivity** is the ability of matter to carry an electric current; **thermal conductivity** is the ability of matter to carry thermal energy.
10. **Solubility** is the ability of one substance to dissolve in another.
11. The parts of a mixture can be **separated** using the physical properties of the components.
 - a. Salt and water can be separated because the **boiling point** of water is much lower than that of salt.
 - b. A solid can be separated from a liquid by **filtering** if the solid does not dissolve in the liquid.
 - c. Oil and water can be separated because they have different **densities**.
 - d. A(n) **magnet** can be used to separate materials that contain **iron** from other materials.

Lesson Outline continued

Discussion Question

Give an example of two substances you could separate using the boiling-point method and two substances you could separate using the filtering method.

Sample answers: boiling point—sugar and water; filtering—sand and water