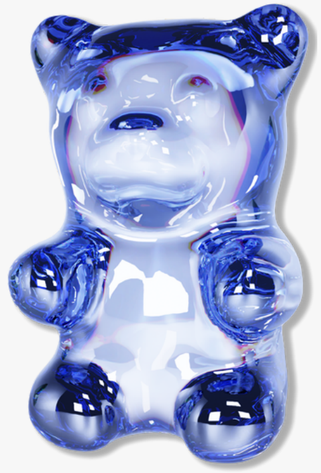
Matter & Atom

Physics x TIK

Made By: **Aurelia Nathania, Cathleen Purnomo, and L. Chloe B. Gunawan/9C/5, 7, and 19**

Solid, Liquid & Gas

Solid, liquid, and gas are the three main states of matter.



- Solid: A solid is a state of matter where particles are tightly packed together, giving it a fixed shape and volume. Unlike liquids or gases, solids are rigid and do not flow or change shape easily.
- Liquid: A liquid is a state of matter where particles are close together but can move freely, allowing it to flow and take the shape of its container. Unlike solids, liquids have a fixed volume but no fixed shape.
- Gas: A gas is a state of matter where particles are widely spaced and move freely, allowing it to expand to fill any container. Gases have neither a fixed shape nor a fixed volume.

Solid, Liquid & Gas

Solid, liquid, and gas are the three main states of matter.

1. Solid -> Liquid:
Melting

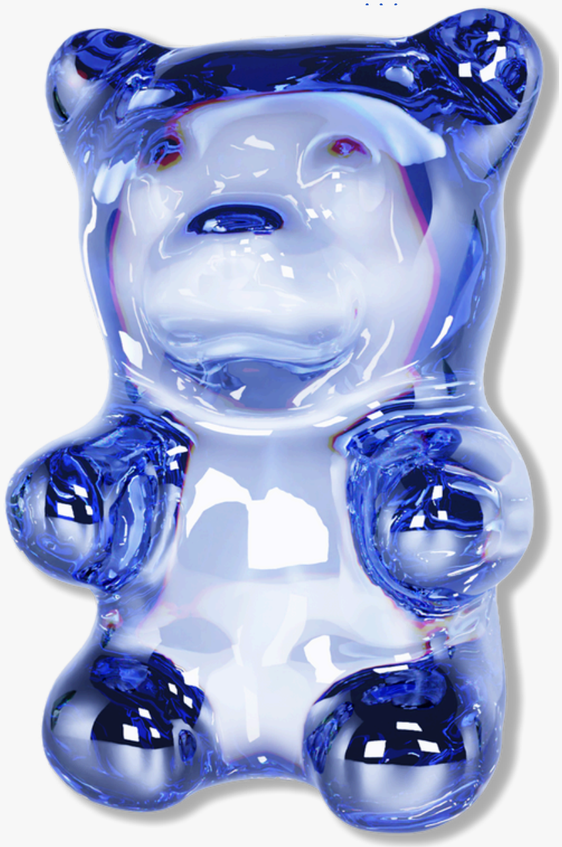
2. Liquid -> Solid:
Freezing

3. Liquid -> Gas:
Evaporation

4. Solid -> Gas:
Sublimation

5. Gas -> Solid:
Deposition

6. Gas -> Liquid:
Condensation



Atoms

A. Structure of An Atom:

- Proton (found in the nucleus): Positive Charge and cannot move
- Neutron (found in the nucleus): Neutral Charges and cannot move
- Electrons (found in the orbits): Negative Charge and can move
- Orbits: Orbits in an atom are the paths that electrons follow around the nucleus. These orbits, also called energy levels or shells. The electrons are found in the orbits

Atoms

2. Isotopes

Isotopes are atoms of the same element that have the same number of protons but different numbers of neutrons. This means they have the same atomic number but different mass numbers. For example, carbon has isotopes like carbon-12 and carbon-14.

ELEMENTS, COMPOUNDS, & MIXTURES

- **Elements** are simple substances made of one type of atom, each has different numbers of protons. They can combine with other elements to form new substances.
- **Compounds** are substances made when two or more different elements chemically combine in fixed proportions. They have different properties from the elements that make them up.
- **Mixtures** are combinations of two or more substances that are not chemically bonded. Each substance in a mixture retains its properties and can usually be separated easily.

SEPERATION MIXTURES

Solution

A solution is a type of mixture where one substance (called the solute) dissolves completely in another substance (called the solvent). The result is a uniform mixture, like salt dissolved in water.

Colloid

A colloid is a mixture where tiny particles of one substance are spread evenly throughout another, but the particles do not settle out. Examples include milk, fog, and jelly. The particles are small enough to stay suspended, making the mixture appear uniform.

Suspension

A suspension is a type of mixture where larger particles are spread throughout a liquid or gas but are not dissolved. Over time, the particles will settle to the bottom if left undisturbed. An example is sand in water.

Changing Matter

Physical Reaction

A physical reaction is a change in a substance that does not alter its chemical composition. It only affects the physical properties, like shape, size, or state (solid, liquid, or gas). Examples include melting ice or tearing paper.

Chemical Reaction

A chemical reaction is a process in which substances change into new substances with different properties. During a chemical reaction, the bonds between atoms are broken and new bonds are formed. Examples include burning wood or rusting iron.

Thank You So Much

For Listening!!