🧱 Topic: Properties of Materials – Ceramics and Glasses

Subtopics:

- Identification of Ceramics and Glasses
- Types
- Properties
- Uses

🎯 Lesson Objectives:

By the end of the lesson, students should be able to:

1. Identify ceramic and glass materials.
2. Mention different types of ceramics and glass.
3. Describe the properties of ceramics and glasses.
4. State common uses of ceramics and glasses in daily life.

🔎 1. Identification of Ceramics and Glass

🔸 Ceramics

Ceramics are **non-metallic**, **inorganic materials** made by heating natural substances like clay at high temperatures.

Examples:

- Clay pots
- Floor tiles
- Porcelain plates
- Bricks

🔸 Glass

Glass is a **transparent or translucent** material made mainly from **sand (silica)** and other ingredients, melted at very high temperatures and cooled to form solid glass.

Examples:

- Window panes
- Drinking glasses
- Mirrors
- Glass bottles

🧩 2. Types of Ceramics and Glass

🔹 Types of Ceramics

1. **Earthenware** – made from clay, porous (e.g., flower pots, water pots).
2. **Stoneware** – harder than earthenware, less porous (e.g., mugs).
3. **Porcelain/China** – fine, white, delicate ceramics (e.g., teacups, tiles).
4. **Bricks** – used in building construction.
5. **Tiles** – used for flooring and walls.

🔹 Types of Glass

1. **Soda-lime glass** – common type (e.g., windows, bottles).
2. **Tempered glass** – strong and heat-resistant (e.g., car windows).
3. **Fiberglass** – fine fibers of glass used in insulation.
4. **Laminated glass** – made by joining layers, used for safety glass.
5. **Colored glass** – tinted for decoration or reducing sunlight.

⚙️ 3. Properties of Ceramics and Glass

Property	Ceramics	Glass
Hardness	Very hard	Hard but can break easily
Heat Resistance	Can withstand high heat	Can resist heat, but may crack
Electrical Property	Poor conductor (insulator)	Also an insulator

Property	Ceramics	Glass
Durability	Very durable, brittle	Durable, brittle
Water Absorption	Low to none (depending on type)	Does not absorb water
Transparency	Opaque (most types)	Transparent or translucent

🧠 4. Uses of Ceramics and Glass

🧱 Ceramics

- Cooking pots and dishes
- Tiles for walls and floors
- Bricks for building
- Electrical insulators
- Sanitary ware (toilets, sinks)

🪟 Glass

- Windows and doors
- Mirrors
- Lenses (e.g., glasses, microscopes)
- Light bulbs
- Containers (e.g., bottles, jars)
- Decoration (e.g., stained glass)