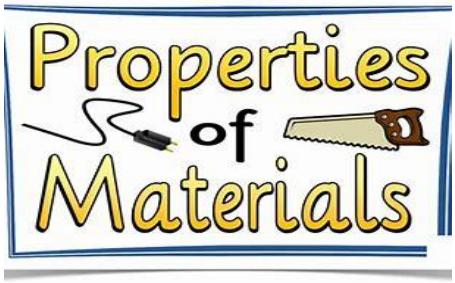
MATERIALS



PROPERTIES AND CHANGE OF MATERIALS

Materials are all around us, and they have special properties that make them useful for different jobs. Some materials are hard, while others are soft. Some can change when we heat them, and others cannot. In this text, we will learn about the properties of materials and how they can change..

WHAT ARE THE PROPERTIES OF MATERIALS?

The properties of a material are the characteristics that describe what it is like. These properties can help us understand how a material will behave in different situations. Some common properties of materials include:

1. **Hardness** – Hard materials are tough and do not break easily. For example, metals like iron are hard.
2. **Softness** – Soft materials can be squashed or shaped. For example, cotton is soft and can be turned into clothes.
3. **Texture** – This describes how a material feels when you touch it. It could be smooth like glass or rough like sandpaper.
4. **Colour** – Different materials come in many colours. For example, bricks are often red, while paper is white.
5. **Density** – This is how heavy or light a material is for its size. Materials like lead are very dense, while materials like wood are less dense.

HOW DO MATERIALS CHANGE?

Materials can change in different ways. Some changes are easy to see, while others are not so obvious. There are two types of changes that happen to materials: **physical changes** and **chemical changes**.

Physical Changes

A physical change happens when a material changes its shape, size, or state, but the material itself does not change. The material will still be the same after the change.

- **Example of a physical change**: If you cut a piece of paper, it is still paper. It just has a different shape now. If you freeze water, it becomes ice, but it is still water, just in a solid state.
- **Example of a physical change**: When you bend a piece of clay, it changes shape, but it is still the same material.

Chemical Changes

A chemical change happens when a material changes into something completely different. After a chemical change, the new material will have different properties.

- **Example of a chemical change**: When you burn wood, it turns into ash and smoke. The wood has changed into a new substance.
- **Example of a chemical change**: When food cooks, it changes in a way that you cannot get it back to its original form. The heat causes the food to change chemically.

Reversible and Irreversible Changes

Some changes are reversible, meaning you can change the material back to its original form. Other changes are irreversible, meaning you cannot return the material to its original state.

- **Reversible changes**: Melting ice is reversible because you can refreeze the water to turn it back into ice.
- **Irreversible changes**: Burning paper is irreversible because you cannot change the ash back into paper.

WHY DO MATERIALS CHANGE?

Materials change for many reasons. Some changes happen when we apply heat or cold. Other changes happen when we mix materials together, like when we make dough from flour and water. Some changes are natural, like when leaves fall off trees and turn brown.

CONCLUSION

The properties of materials help us understand how they work and how we can use them. Some materials change when we heat them or apply force, and some changes are permanent while others are reversible. By learning about the properties and changes of materials, we can make better choices when we design and create things in our world.

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EXAMPLE QUESTIONS:

1. What are some examples of materials that are hard and soft?
2. What is the difference between a physical change and a chemical change in materials?
3. Can you give an example of a reversible change and an irreversible change?
4. How does the density of a material affect how heavy or light it is?
5. Why do materials change when we heat them or cool them down?