

UNIT 5: MATTER AND ENERGY

Anything we can , touch, or smell is .

Matter exists in states:

- Have a **definite shape** and **volume**.
- It always occupies the same amount of space.



- Have a **definite volume**.
- Do **NOT** have a **definite shape**.
- Its shape depends on the container



- Do **NOT** have a definite **shape** and **volume**.
- They **fill** the container they are put in.



PHYSICAL AND CHEMICAL CHANGES.

PHYSICAL CHANGE

- It changes the shape or the state
- It does not change the matter into a different matter.

Change of state:

Liquid → Solid 



Liquid → Gas 



Change of shape:

When you apply a force the matter changes its shape but then it returns to the original shape.

EXAMPLE: When you stretch a rubber band.

CHEMICAL CHANGE

When matter **changes** into a

When you burn wood it changes into another different matter called ash.

The metal reacts with water and air and changes into a different matter.



MIXTURES

A mixture is something that contains two or more different components.

1° type of mixture

You can distinguish the components



2° type of mixture

You can distinguish the components



You can use three methods to separate materials:

EVAPORATION: Separates a solid dissolved in a liquid

SIEVING: separates a solid from a solid

FILTRATION: separates a solid from a liquid



TYPES OF ENERGY

Energy is important for everything you do.

THERMAL ENERGY

The temperature of a material depends on the amount of thermal energy it has.

Material changes states when thermal energy increase or decrease.

Liquid \longrightarrow thermal energy increases \uparrow \longrightarrow gas

Solid \longrightarrow thermal energy increases \uparrow \longrightarrow liquid

Liquid \longrightarrow thermal energy decreases \downarrow \longrightarrow solid



ELECTRICAL ENERGY

Electrical conductors:

- Materials that allow electricity to pass through them.
- Example: metal and

Electrical insulators:

- Materials that do not allow electricity to pass through them.
- Example: rubber and plastic.

Other types of energy:

Light energy: Allows you to see objects.

Mechanical energy: Everything that move produce this type of energy.

Sound energy: Things that make noise produce this type of energy.

SOURCES OF ENERGY

Renewable energy sources:

Non-renewable sources:

NON-RENEWABLE ENERGY: Come from the ground or the seabed.

- It processed into petrol.
- We use it to produce electricity and energy



- People burn it to produce electricity and energy.



- People burn it to produce electricity.



RENEWABLE ENERGY: Comes from sun, wind and water.

SOLAR ENERGY

Solar panels turn the **Sun's** light into electrical or thermal energy.



WIND FARMS

Change the **kinetic** energy of wind into electrical energy.



HYDROELECTRIC POWER STATION

Change the **kinetic** energy of water into electrical energy.

