

USING MATERIALS

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WHAT ARE MATERIALS?

Materials are substances we use to make objects used in daily life.

Examples of **objects** used in daily life and the **materials** used to make them.

Activity 1.

What you need; smart phone/laptop with internet access, all materials in your environment.

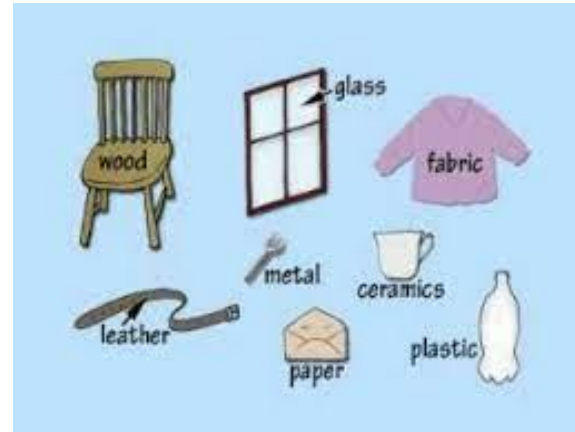
What to do;

1. Identify all the objects used in your home environment and identify the materials used for making them. The objects may be part of those;

- ▶ Used in constructing buildings,
- ▶ Used for cooking,
- ▶ Used for dining,
- ▶ Toys, etc.

2. Using the smart phone/ laptop with internet, search the internet and note down more objects and materials used in daily life that may not be in your environment.

Support Materials



PROPERTIES OF MATERIALS IN RELATION TO THEIR USES

Each material is selected for making a particular object used in daily life because of its properties.

Some materials are transparent, some are flexible, some are hard, some are good conductors of electricity while some are good conductors of heat. Some materials burn easily when heated, while some do not burn easily when heated.

Some materials do not shatter easily while some shatter easily.

A material is selected for use in making an object for use in daily life depending on its properties.

Activity 2.

What you need; objects used in daily life, found in your environment.

What to do;

For each of the materials mentioned in **Activity 1**; state the properties of the material that make it suitable for use in making the object it is used to make. Use the internet to help you exhaust the properties of all the materials in relation to their uses.

CLASSIFICATION OF MATERIALS

Materials used in daily life can be classified according to the following categories;

- ▶ Natural and artificial materials
- ▶ Metallic and non metallic (Plastic, Fiber, Ceramics)
- ▶ Solids, liquids or gases

Activity 3

What you need; smart phone/laptop with internet access, all materials in your environment.

What to do;

Classify the materials stated in **Activity 1** as; Natural or artificial, Metallic or non metallic (Plastic, Fiber, Ceramics) and as solids, liquids or gases.

Question: Why do you think it is important to classify materials into different categories?

POLYMERS

The word polymer comes from two Greek words `poly` meaning many and `mer` meaning molecules. Thus polymers are; ***larger molecules formed by combining many small molecules.***

Polymers form non metallic materials like **plastics** and **fibers**. Therefore; they are important as materials in making many objects used in daily life.

POLYMERS CONT'D

Examples of polymers used as materials and the objects in daily life they form.

Activity 4

What you need; smart phone/laptop with internet access, all **non metallic materials** in your environment.

What to do;

1. Identify all the **non metallic** objects in your environment. State the polymers used for making each of these materials. (Use the internet to surf the polymers used for making each of the object)
2. Use the internet to surf all the non metallic objects that may not be in your environment and the polymers used for making them.

SUPPORT MATERIALS

Examples of Natural and Synthetic Polymers

Natural polymers are made by living organisms.



DNA



Rubber

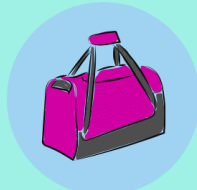


Cellulose



Wool

Synthetic polymers are made by chemical reactions in a lab.



Nylon



Polyester



Teflon



Epoxy

sciencenotes.org



CLASSIFICATION OF POLYMERS

Polymers can be classified according to;

- ▶ Plastics and Fibers
- ▶ Natural and artificial

Plastics are polymers which when heated easily melt, and can be molded into a desired shape.

Activity 5.

What to do; surf the internet and state at least ten examples of plastics and the objects in daily life they make.

Fibers are polymers that can be made into threads.

Activity 6

What to do; surf the internet and state at least ten examples of fibers and the objects in daily life they make.

Activity 7

Classify the non metallic materials stated in **Activity 4** as **plastics** or **fibers**.

CLASSIFICATION OF POLYMERS cont`d

Plastics and fibers can each be classified into **natural** and **artificial**.

Activity 8

Classify the plastics stated in **Activity 5** as natural or artificial plastics.

Activity 9

Classify the fibers stated in **Activity 6** as natural or artificial fibers.

Plastics can further be classified into;

Thermosetting plastics and **thermo-softening plastics (thermoplastics)**

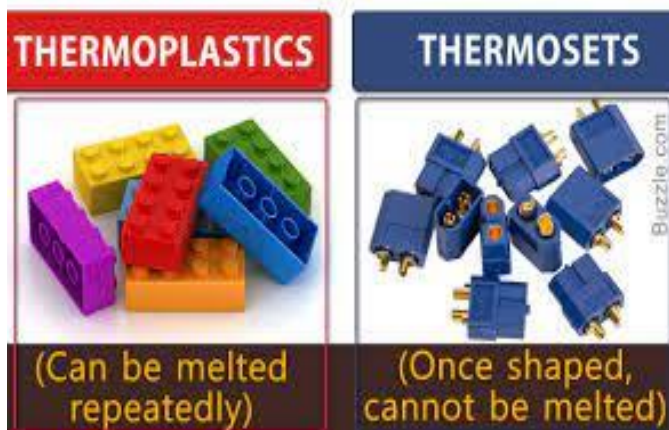
Thermosetting plastics harden on heating and when they are over heated, they burn or decompose.

Thermo-softening plastics soften on heating and can be molded and remolded into new shapes.

CLASSIFICATION OF POLYMERS cont'd

Activity 10

1. Classify the plastics stated in **Activity 5** as **thermosetting** or **thermo-softening**.
2. Surf the internet for more examples of thermosetting plastics not included in the ones stated in 1.



Exercise

Exercise:

Write an essay titled `**Man Can not Do without Polymers**`. In your essay make clear what polymers are, types of polymers and the materials in daily life they re used to make.

MATERIALS USED FOR CONSTRUCTING HOUSES

Activity 11

Look around your environment and see the different houses including your family house, and those in your neighborhood.

1. State the different materials used to make the houses.
2. Surf the internet and find out more materials used for constructing houses
3. State at least three properties of each of the materials that make it suitable for use in construction of houses or buildings.

Making Bricks

Activity 12

Surf the internet or consult a local construction engineer on how to make **bricks**.

Use the procedure to make at least ten bricks.

Present send short videos and pictures of yourself while doing the activity; to your chemistry teacher for evaluation.

Question:

What makes bricks a suitable and common material for constructing houses?
Give at least five reasons.

Making Concrete

Activity 13

Surf the internet or consult a local construction engineer on how to make **concrete**.

Use the procedure to make concrete.

Present send short videos and pictures of yourself while doing the activity; to your chemistry teacher for evaluation.

Question: What makes concrete a suitable material in construction? Give at least six reasons.

WASTE MATERIAL DISPOSAL

Some materials cause environmental pollution or inconveniences in the environment if left to accumulate in the environment. Therefore it is appropriate to dispose them of, from the environment.

The method of disposing the materials depends on whether the material can be **recycled (recyclable materials)** or whether it **cannot be recycled (non recyclable materials)**

Recyclable materials are materials which can be collected, processed and then made into new other useful materials.

Non recyclable materials are those that can not be easily processed into new useful materials.

WASTE MATERIAL DISPOSAL

Activity 14

1. Identify the recyclable and non recyclable materials I your environment.
2. Surf the internet and identify at least 10 recyclable and non recyclable materials that are not in your environment.
3. For each of the recyclable materials, describe briefly how it can be recycled into a new useful product/material. (You may use the internet to help you)
4. For each of the non recyclable material, describe how it can be disposed of from the environment.

Question:

Why is it important to dispose of some materials like polyethene and other plastics from the environment?

Next: Activity Of Integration

After doing the work, we shall communicate as a chemistry department, when to do the activity of integration for this chapter and how we shall go about the evaluation.

Students are encouraged to discuss with their friends in the Whatsapp groups and other platforms.

THANKS

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For More Resources (Notes etc)

Please visit the link below

www.triconas.sc.ug/e-library

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