



Delhi Public School Guwahati

"Under the aegis of the Delhi Public School Society, Delhi"

CYCLE 5

Class VIII

Date: 3rd August to 23rd August'21

No. of Working Days: 15

Subject: Chemistry

Name of the Chapter: SYNTHETIC FIBRES AND PLASTICS

1st and 2nd period: Pg.:32-33

Step – I	Study the following topic from textbook: <ul style="list-style-type: none">• Introduction• 3.1: What are synthetic fibres?• Types of synthetic fibres- Rayon Nylon
Step – II	Study the same topics in the following part of Extra mark app and the given YouTube links. Chapter: Synthetic fibres and plastics → Detailed learning → Understanding concepts (video, polymerisation, rayon, nylon) https://youtu.be/kiCu4SjrpY0 https://youtu.be/Ew22Lc3I9K8
Step – III	Clear your doubts (if any) from the subject teacher
Step – IV	Revise using following Bullet points: <ul style="list-style-type: none">• Fabrics are made by weaving fibres (or threads) obtained from natural or artificial sources. They can be of two types: Natural fibre and Synthetic fibre.• A synthetic fibre is made up of a chain of small units (called Monomers) which combine to form polymers.• Monomers: A monomer is a single molecule that can bond with other identical molecules to form polymers through a process called Polymerization.• Polymers: Polymer is a Greek word in which 'poly' means 'many' and 'mer' means units. Hence, polymers are large molecule made up of several molecules (or monomers) linked together. Example of Polymers: <ul style="list-style-type: none">• All synthetic fibres, such as Rayon and Nylon, are polymers.

	<ul style="list-style-type: none"> • Polymers are also found in Nature. ‘Cotton’ is a polymer called ‘Cellulose’. ‘Cellulose’ is made up of a number of single units (or monomers) called ‘Glucose’. • The process of linking small monomers together to form polymers is called Polymerization. <p>Types of Synthetic Fibres</p> <ul style="list-style-type: none"> • Rayon is a versatile fibre and can imitate the feel and texture of silk, wool, cotton and linen with drape and slipperiness akin to nylon. • Rayon resembles silk in appearance, texture and shine. Hence, it is also known as Artificial Silk. <p>Uses of Rayon</p> <p>This man-made fibre uses natural material (wood pulp) and can be woven like silk fibre. It is cheaper than silk and can be dyed in a variety of colours. It can be:</p> <ul style="list-style-type: none"> • Make apparels like suits, slacks, jackets etc. • Make automobile tyre cords (because of its strength) • Mixed with cotton to make bedsheets and bedspreads • Mixed with wool to make carpets and blankets • Used to make other home furnishings, such as curtains and tablecloths <ul style="list-style-type: none"> • Nylon is the first synthetic fibre to be prepared without using any natural raw materials (materials produced by plants and animals). <p>Uses of Nylon</p> <p>A nylon thread is, in fact, stronger than a steel wire. Hence, it is used to:</p> <ul style="list-style-type: none"> • Make clothes (including socks) • Make parachutes as well as ropes for rock climbing • Make ropes, toothbrushes, and car seat belts etc. • Make tents, curtains, and sleeping bags
Step V	<p><u>Solve the following questions given in the text book</u></p> <p>Question 1. Explain why some fibres are called synthetic. Answer: Some fibres are called synthetic fibres because they are made by man using chemicals.</p>

	<p>Question 4. Give examples which indicate that nylon fibres are very strong. Answer: The following examples indicate that nylon fibres are very strong. (i) They are used for making parachutes and ropes for rock climbing. (ii) They are used in making seat-belts, fishing nets, tyre cord, a string for sports rackets and musical instruments.</p> <p>Question 3. Fill in the blanks with appropriate words. (a) Synthetic fibres are also called ____ or ____ fibres. (b) Synthetic fibres are synthesised from a raw material called ____ (c) Like synthetic fibres, plastic is also a ____</p> <p>Answer: (a) man-made, artificial fibres (b) petrochemicals (c) polymer</p>
<u>End of 2nd period</u>	

<u>3rd and 4th period: Pg.:34-37</u>	
Step – I	<p>Study the following topic from textbook:</p> <ul style="list-style-type: none"> • Types of synthetic fibres- Polyester Acrylic • Characteristics of synthetic fibres • 3.4 Plastics • 3.5 Plastics as a material of choice
Step – II	<p>Study the same topics in the following part of Extra mark app and the given YouTube links. Chapter: Synthetic fibres and plastics → Detailed learning → Understanding concepts (video, polymerisation, polyester, acrylic)</p> <p>https://youtu.be/2PAIQPLZgoI https://youtu.be/VjcH2nHxff8</p>
Step – III	Clear your doubts (if any) from the subject teacher
Step – IV	Revise using following Bullet points:

- **Polyester** fibre does not get wrinkled easily. Hence, a fabric made from this fibre is easy to wash and does not need to be ironed - which makes it suitable for dress material. Polyester is made up of two words - 'poly' which means many, and 'ester' which is a chemical. **Esters** are chemicals which give fruits their smell.

Some popular polyester fibres are:

- Terylene (often known by brand name Dacron) which can be drawn into a very fine fibre and can be woven like any other yarn.
- Polyethylene terephthalate (P.E.T.) is used for making wires, films, bottles, utensils and other products.
- Blended fibres are formed by mixing natural and synthetic fibres. Polyester is often used in blended fibres. **For Example,**
 Polywool is made by mixing polyester and wool.
 Polycot is made by mixing polyester and cotton.
 Terrycot is made by mixing Terylene and cotton.

Uses of Polyester

Since polyester is strong, wrinkle-resistant and water-resistant, it has several uses. It can be used to:

- Make a variety of textiles (including sarees, curtains, dress materials etc.) and can be blended with natural fibres (like cotton and wool)
- Make films, magnetic recording tapes, etc (as Mylar)
- Make sails of sailboats
- Make water hoses for firefighting purposes
- **Acrylic** is a strong, lightweight and warm synthetic fibre that resembles wool. It is available in a number of colours and is more durable and affordable than natural wool.

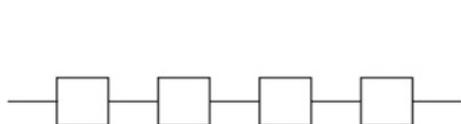
Uses of Acrylic Fibre

It can be used to:

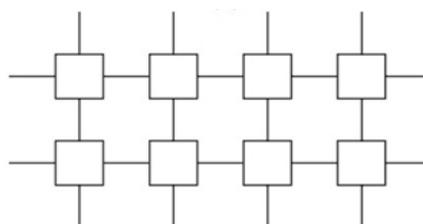
- Make woollen clothes like hats, scarves, gloves, sweaters, blankets, and other home-furnishing fabrics.
- Make fake fur used for making toys and fur accessories.
- Make garments for babies (as the fabric is machine-washable).

Characteristics of Synthetic Fibres

- All the synthetic fibres are manufactured by processing raw materials of petroleum origin in a number of ways. **The raw materials of petroleum origin are called Petrochemicals.**
- Synthetic fibres melt on heating. If the clothes catch fire, the fabric made up of synthetic fibres will melt and stick to one's body. Hence, it is recommended that one should not wear synthetic clothes while working in the kitchen or laboratory.
- **Plastic** is a polymer (like the synthetic fibre) which can be moulded into different shapes. The word '**plastic**' originates from the Greek word '**plastikos**' which means 'that can be moulded or **shaped**'.
- All plastics do not have the same arrangement of units. In some it is formed in linear, whereas in others it is formed cross-linked.



(a) Linear arrangements



(b) Cross-linked arrangements

- **Types of Plastic:**
Plastic can be divided into two main types – Thermoplastics and Thermosetting.
- **Thermoplastic:**
 - (i) Such plastics which get easily bent or deform on heating are known as thermoplastic. Examples of thermoplastics are **PVC and Polythene.**
 - (ii) It is used in making toys, bottles, combs, containers, etc.
- **Thermosetting plastic:**
 - (i) Such plastics which when mould once, cannot be softened or deformed by heating. These are called thermosetting plastics. Examples of thermosetting plastics are **Bakelite and melamine.**
 - (ii) These plastics are used in making hard board, electric switch, handles of electrical appliances, handles of kitchen utensils, floor tiles, etc.
 - (iii) Melamine is versatile material and poor conductor of heat. It resists fire, thus it is used in making floor tiles, kitchen materials, fabrics which resist fire.
 - (iv) Bakelite is poor conductor of electricity and heat, thus it is used for making electrical switches, handles of various utensils and other electrical appliances.

Step V

Solve the following questions given in the text book

Question 2.

Mark (✓) the correct answer.

Rayon is different from synthetic fibres because
 (a) it has a silk-like appearance.
 (b) it is obtained from wood pulp.
 (c) its fibres can also be woven like those of natural fibres.

Answer:

(b) it is obtained from wood pulp.

Question 11.

Should the handle and bristles of a toothbrush be made of the same material? Explain your answer.

Answer:

No, the handle and bristles of a toothbrush should not be made of the same material. This is because our gums are soft and the bristles should be made of soft material so that it does not harm the gums. On the other hand, the handles should be made up of hard material so that it can give a firm grip.

Question 9.

Rana wants to buy shirts for summer. Should he buy cotton shirts or shirts made from synthetic material? Advise Rana, giving your reason.

Answer:

He should buy cotton shirts. This is because cotton has more capacity to hold moisture than synthetic clothes. In summers we have extensive sweating which is easily soaked by cotton shirts and hence, cotton clothes are much better than the clothes made from synthetic material.

Question 6.

Explain the difference between thermoplastic and thermosetting plastics.

Answer:

Thermoplastic	Thermosetting plastics
(i) These are the plastics which get deformed easily on heating and can be easily bent. ii) Linear arrangements can be seen in polymer chains (iii) These are used for making toys, combs and various types of containers. (iv) Ex- polythene, PVC.	(i) These are the plastics which when moulded or cannot be softened by heating. (ii) Crossed linked arrangement can be seen in polymer chains. (iii) Used for making electrical switches and handles of various utensils. (iv) Ex- Bakelite, melamine etc.

End of 4th period