

17. Man Made Materials

1. Plastics are polymers made by hydrocarbons. They play a very important role in our lives.
2. Their overuse and non biodegradable nature possess a serious threat to our environment as they take millions of years to get decomposed. They also produce harmful gases on burning.
3. In market, different kinds of plastics are available. These are PVC (used in making pipes, electric cables), polythene (used for making carry bags, toys, buckets), Bakelite (used for making switches, telephone bodies, musical instruments) and polystyrene (used for making toys, radio bodies, foam cups etc.)
4. **Thermoplastics:** They can easily change their shapes on heating.
5. **Thermosetting plastics:** They do not get soften and can be moulded into different shapes on heating.
6. Plastic has many advantages. It is strong, cheap, durable, light in weight, unbreakable, corrosion resistant and has low production cost. Its use also discourages the cutting of trees.
7. Though plastics have several advantages, there are several disadvantages associated with them as well.
 - (i) They are non-biodegradable in nature and do not get decomposed easily.
 - (ii) They emit harmful gases on burning.
 - (iii) Their careless disposal creates a serious threat for animals as they mistaken plastic bags for food.
 - (iv) The raw material used in the manufacturing of plastics comes from petrochemicals, a non-renewable resource.
8. Plastic creates pollution as its particles often get mixed with air and cause diseases.
9. Certain steps can be taken to minimize the hazards imposed by plastics. These are:
 - (i) Avoiding the usage of plastic as far as possible
 - (ii) Throwing the plastic into bins meant for non-biodegradable wastes
 - (iii) Reusing plastic materials

Manufacture of glass

1. Chemically, glass is a homogeneous mixture of sodium and calcium silicate (Na_2SiO_3 , Ca SiO_3 , 4SiO_2)
2. Sand, limestone and sodium carbonate are the raw materials used in the manufacture of glass.
3. Scrap glass is also used in the manufacture of glass, which accounts for its recycling.
4. Glass is manufactured in a furnace at higher temperature, which gives molten glass.
 - (i) The molten glass is then slowly cooled and moulded into different shapes.
5. The process of slow cooling of glass is known as annealing.

Properties of glass

1. It is a transparent, strong and corrosion free material.
2. It softens on heating and begins to flow easily; therefore glass is sometimes also known as super cooled liquid.
3. Soda glass is used in window panels.
4. Lead glass is highly transparent and used in making lenses, prisms, etc.
5. Borosilicate glass is used in making laboratory equipment, due to its resistance towards heat shock.
6. Safety glass and fibre glass are used for safety purposes.
7. Coloured glass is prepared by adding desired metal oxide in glass.