Beckfoot

Subject: Chemistry	Topic: Condensation Polymers 3.3.12	Year Group: 13

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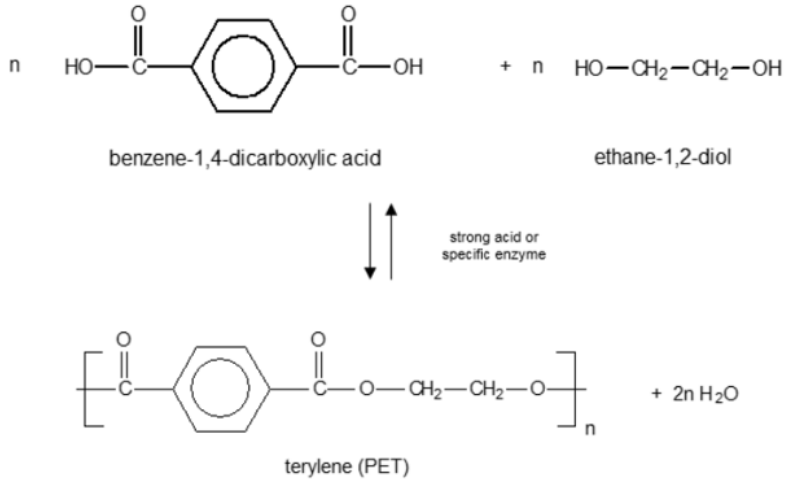
Condensation Polymerisation

1	Condensation polymerisation involves monomers joining together with the loss of a small molecule such as water or HCl.
2	Molecules that contain COOH groups and OH groups or COOH and NH_2 groups can form condensation polymers.
3	There are two common cases where this happens. One involves the formation of ester linkages to give polyesters such as Terylene; the other involves the formation of amide linkages to give polyamides such as nylon. Proteins and other polypeptides are also formed by condensation polymerisation of amino acids

Polyesters

1	A polyester is a condensation polymer formed between a diol and a dicarboxylic acid where water is eliminated.
2	

Key Vocabulary

1	Polymer	Long chain molecule made from lots of small molecules joined together.
2	Monomer	Small molecules that join together in polymerisation.
3	Repeating unit	Part of a polymer whose repetition would produce the complete polymer chain
4	Hydrolysis	Addition of water to break down a molecule

Biodegradable Polymers

1	Condensation polymers can be hydrolysed and are therefore biodegradable. The methods of disposal are landfill and incineration but they can also be recycled to reduce waste. You need to identify advantages and disadvantages of each.

Uses of polymers

1	There are hydrogen bonds between the chains of polymers in polyamides due to the presence of C=O bonds and N-H bonds. Polyesters have permanent dipole-dipole attractions between the polymer chains due to the presence of the polar C=O bonds.
2	The stronger forces of attraction between these chains compared to addition polymers formed from alkenes mean that fibres can be woven together to be used in clothing.

Polyamides

1	Polyamides are formed when dicarboxylic acids react with diamines.