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Chemistry

For the IB Diploma

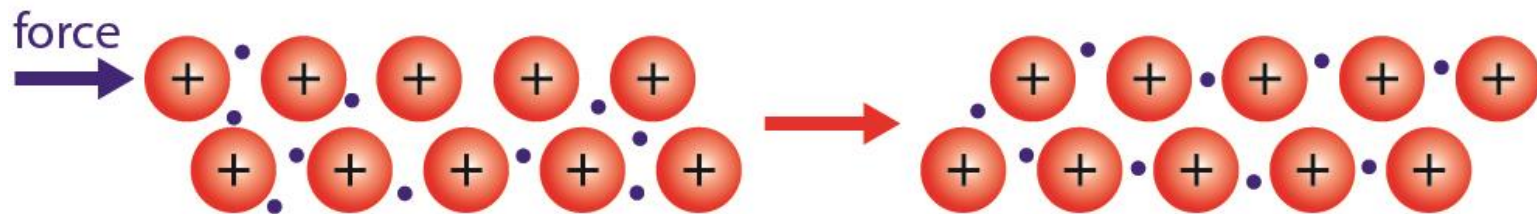
> Chapter 9

From models to materials

> Alloys

Alloys tend to be stronger and stiffer than pure metals and often combine the desirable properties of the different metals involved.

a



b

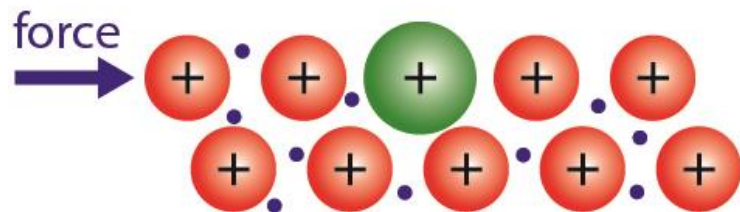


Figure 9.1: **a** Metals are malleable and ductile because the planes of atoms/ions can slide over each other without disrupting bonding. **b** The introduction of a different-sized atom makes it more difficult for the planes of atom/ions to slide over each other, and so, alloys tend to be stronger and stiffer than pure metals.

> Intermolecular forces in thermoplastics

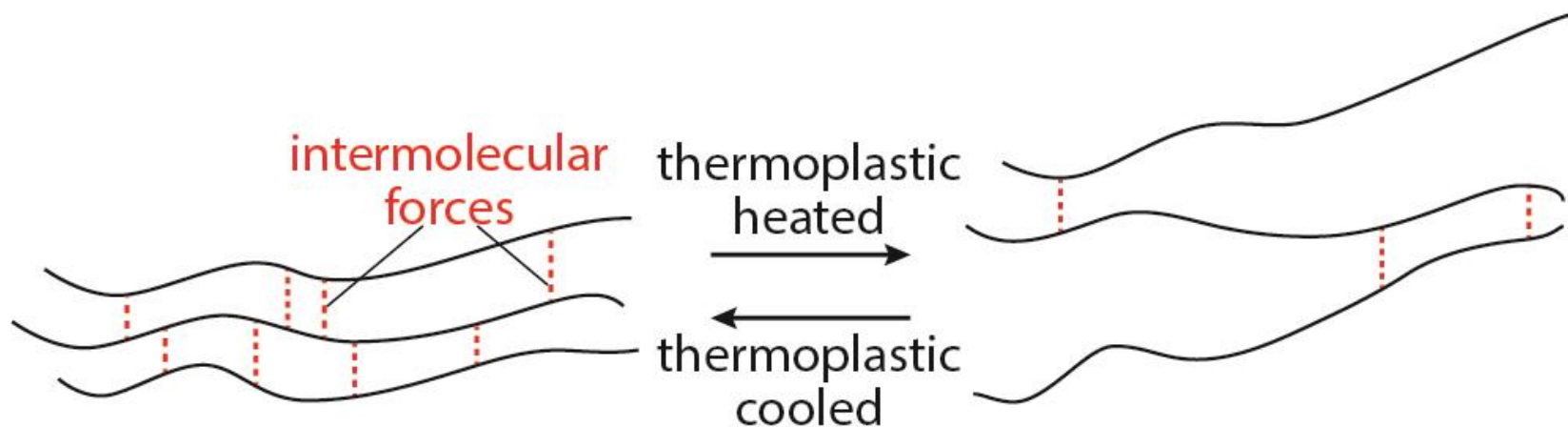


Figure 9.2: Intermolecular forces are broken when a thermoplastic is heated and form again when it is cooled.

> The different regions in the structure of plastics

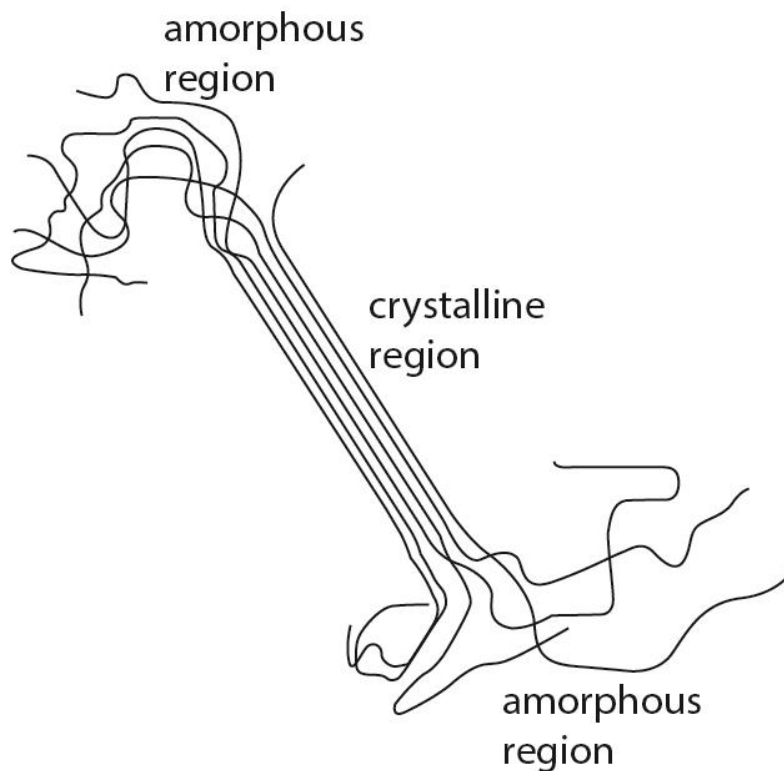


Figure 9.3: Amorphous and crystalline regions in the structure of a plastic.

> How polymer chains are formed

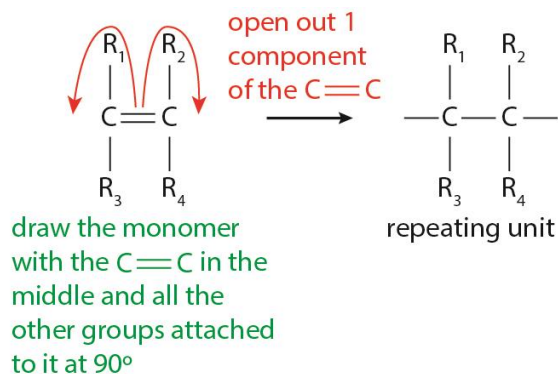


Figure 9.4: How to work out the repeating unit from the monomer.

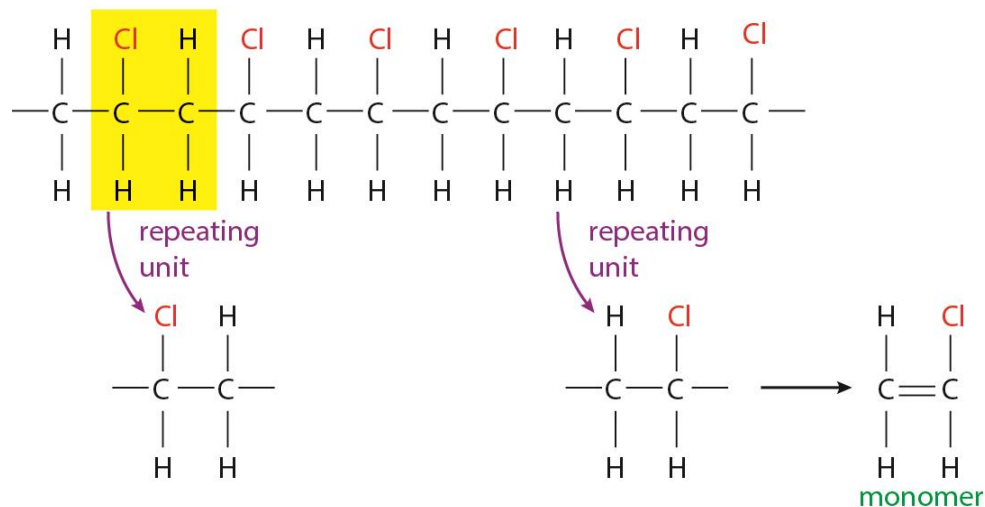


Figure 9.5: Working out the repeating unit and monomer from the polymer chain.

➤ Condensation polymer formation

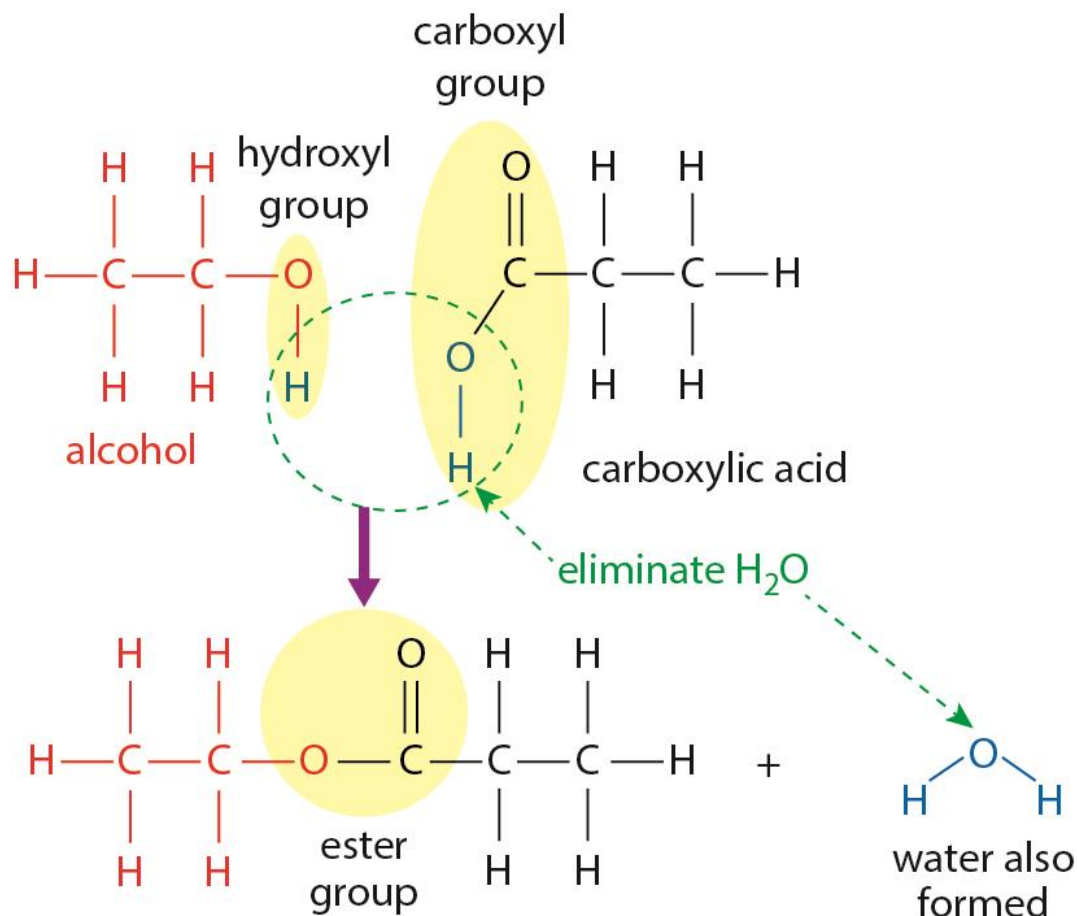


Figure 9.6: Formation of an ester. The reaction usually requires heating in the presence of a catalyst, such as concentrated sulfuric acid.