**28 Addition and condensation polymers**

**Topic summary**

**•**  Many different **addition polymers** can be made by polymerising ethene molecules in which one or more hydrogen atoms have been replaced by other atoms or groups.

**•**  **Co-polymers** are polymers made from more than one type of monomer.

**•**  **Condensation polymers** are usually either polyesters or polyamides.

**•**  Condensation polymers can be divided into two categories – **type I** and **type II** – depending on the relative orientation of adjacent functional groups within the chain.

**•**  The properties and uses of various polymers depend on their chemical structures, and the bonding between the chains.

**•**  Proteins and nucleic acids are two important natural examples of condensation polymers.

**•**  Addition and condensation polymers can be distinguished, and the structures of their monomers determined, by studying the make-up of the backbone chain.

**Key reactions you should know**

**•**  Addition polymerisation

*n*CH2=CH–R + *n*CH2=CH–R’ → [–CH2–CHR–CH2–CHR’–]*n*

    (The proportions of CH2=CHR and CH2=CHR’ can be varied)

**•**  Condensation polymerisation to give polyesters:

http://reader.dynamic-learning.co.uk/epub_content/9781471840494/OEBPS/images/ts_28-1.jpg

**•**  Condensation polymerisation to give polyamides:

http://reader.dynamic-learning.co.uk/epub_content/9781471840494/OEBPS/images/ts_28-2.jpg