

Polymers Unit 1 VCE

1. Consider the small section of a polymer shown in fig. 1.

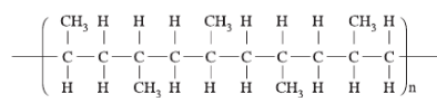


Figure 1 – small section of a polymer chain

- a. Give the IUPAC name of the monomer that produced the polymer.
- b. What general class of chemical reaction produced the polymer.

2. Consider the small section of a polymer shown in fig. 2.

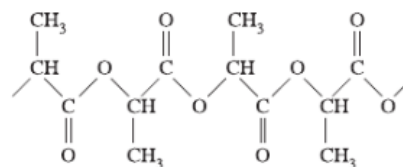
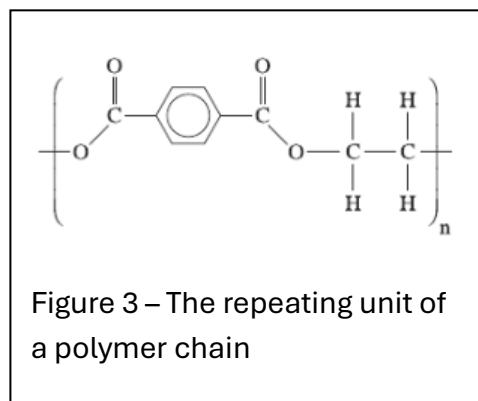


Figure 2 – a small section of a polymer chain

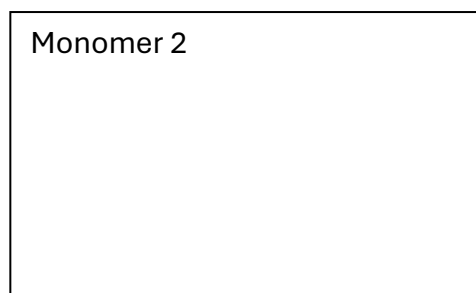
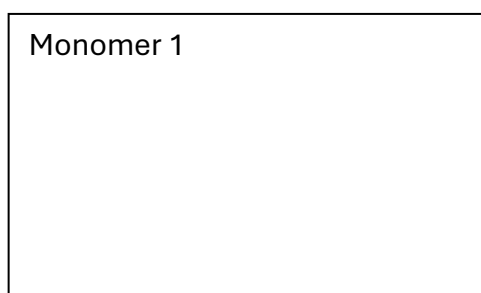
- a. Give the IUPAC name of the monomer that formed this polymer.
- b. What general class of chemical reaction produced the polymer?
- c. How does this reaction differ from the one given as the answer to question 1 b. above?

3. Consider the small section of a polymer shown in fig. 3.



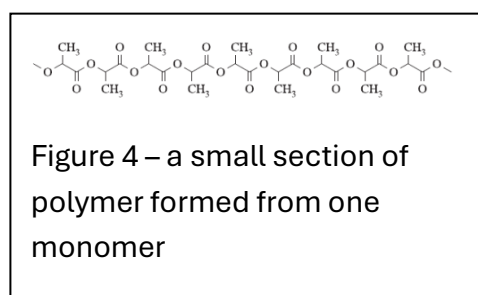
- a. This polymer starts to soften at temperatures around 260 °C , whilst the polymer shown in fig. 1 above softens at much lower temperatures.
Give an explanation as to why?

- b. This polymer is known as a copolymer as it is made of two monomers. Draw the structural formulas of each monomer in the space provided below.



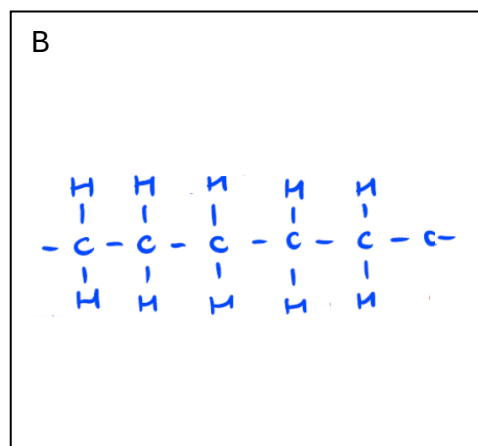
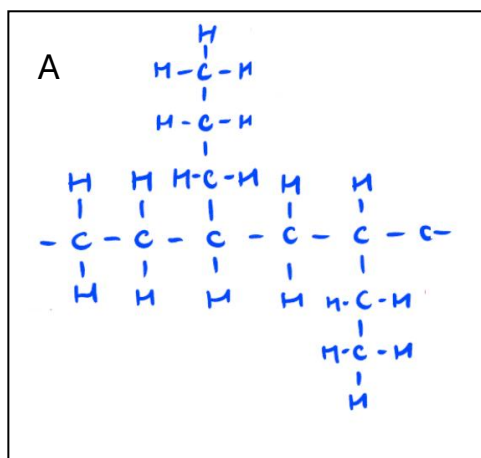
4. Consider the small section of a polymer identical to the one shown in fig. 2 above.

- a. Circle and give the name of the functional group that exists in the polymer.



- b. What functional groups reacted to form the link between each monomer?

5. Consider the two polymer structures of polyethene drawn by a student, shown below.



- a. Which structure represents a thermoplastic that softens at a very low temperatures? Justify your answer.
- b. Which structure represents a plastic that is most likely used in buoyancy vests? Justify your answer.
- c. Under what conditions was polymer A formed?
- d. Under what conditions was polymer B formed?

6. Consider the impact of mixing a high concentration of radical activator in with the ethene monomers in the preparation of polyethene. Discuss the impact on:
- i. Chain length
 - ii. Mechanical strength
 - iii. Melting point