

Addition Condensation Polymers

GCSE Chemistry · Written to the shared content for AQA, Edexcel and OCR

Name _____ Class _____ Date _____

1. Worked example

Describe how ethene molecules form poly(ethene). (2 marks)

Step 1 · Bond

The C=C double bond in each ethene molecule opens up.

Step 2 · Join

Many ethene molecules (monomers) join together in long chains: addition polymerisation.

Answer: Double bonds open; many monomers join

Check: No other product forms.

2. Now try one with the steps

Draw the repeating unit of poly(propene) from propene, CH₂=CH(CH₃). (2 marks)

Step 1 · Open the double bond

Step 2 · Repeating unit

Answer:

3. Practice

Show your working. The marks tell you how much is expected.

1. Define the term polymer. [1]

2. Name the monomer used to make poly(ethene). [1]

3. Explain why ethene can form an addition polymer but ethane cannot. [1]

4. Describe addition polymerisation. [2]

5. Name the polymer made from propene. [1]

6. Name the monomer used to make PVC, poly(chloroethene). [1]

7. A poly(ethene) chain is made from 1000 ethene molecules (M_r 28). Calculate the M_r of the chain. [1]

8. Calculate the M_r of the repeating unit of poly(propene). ($C = 12$, $H = 1$) [1]

9. 2.8 tonnes of ethene are completely polymerised. State the mass of poly(ethene), in tonnes, formed. [1]

10. Explain why polymers are solids at room temperature. [1]

11. Explain how condensation polymerisation differs from addition polymerisation. [2]

12. Name the small molecule usually released when a polyester forms. [1]

13. Name the two types of monomer used to make a polyester. [2]

14. Name the type of link that joins the monomers in a polyester. [1]

4. Before you hand it in

Keeping the double bond in the repeating unit

The repeating unit has single C–C bonds and bonds extending through the brackets.

Leaving out the 'n'

Write n in front of the monomer and after the bracket of the repeating unit.

"Condensation polymers form from alkenes."

Alkenes → addition polymers; diols + dicarboxylic acids → polyesters (condensation).