

Alcohols, acids, esters and polymers explained

Chemistry grades 9-10 (GCSE · IGCSE · O Level · Class 9-10) · Test

Name: _____ Date: _____ Class: _____ Mark: ____ / 20

This test covers alcohols, carboxylic acids, esters, fermentation and the two types of polymerisation. Answer every question and show your working in the calculation. Write chemical formulae and equations carefully, and use the figure for the question about condensation polymerisation.

Level: Chemistry grades 9-10 (GCSE · IGCSE · O Level · Class 9-10) · **Curriculum:** GCSE C7

Time: 40 minutes · 8 questions · Total: 20 marks · Calculator allowed

Question 1 Functional groups (2 marks)

- Name the functional group in ethanol. (1 mark)
- Write the formula of the group in ethanoic acid. (1 mark)

Question 2 Fermentation conditions (3 marks)

Yeast ferments glucose to make ethanol.

- Write the balanced equation. (2 marks)
- Explain why the mixture should not be heated above 60 °C. (1 mark)

Question 3 Making an ester (3 marks)

Propanol reacts with ethanoic acid.

- Name the ester formed. (1 mark)
- Name the other product. (1 mark)
- Name the catalyst commonly used. (1 mark)

Question 4 Glucose calculation (3 marks)

A sample of 18 g of glucose is fermented completely. (A_r : C = 12, H = 1, O = 16.)

- Calculate the moles of glucose. (1 mark)
- Calculate the mass of ethanol formed. (1 mark)
- Calculate the mass of carbon dioxide formed. (1 mark)

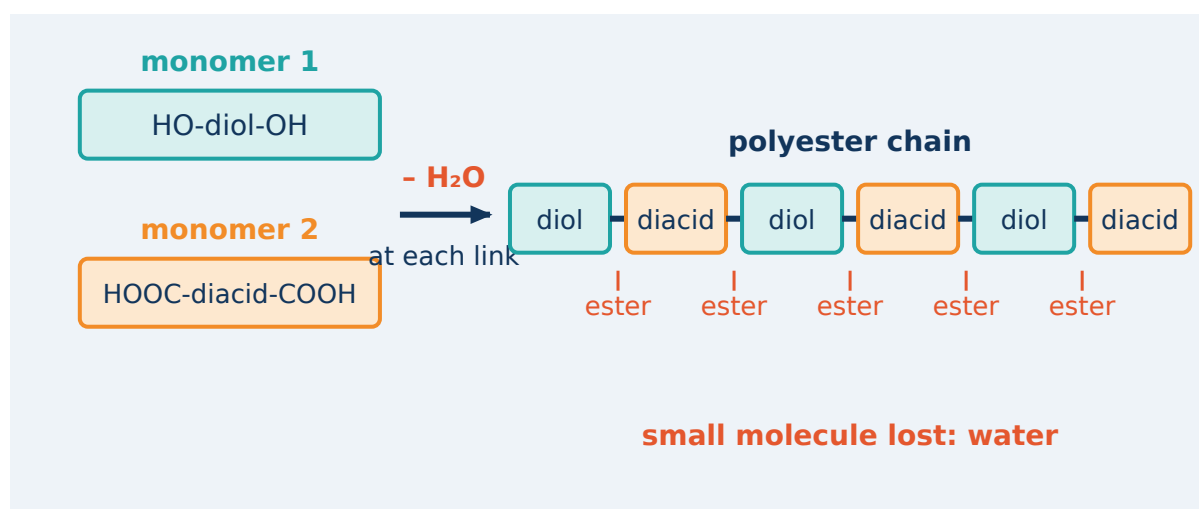
Question 5 Addition polymer (3 marks)

Propene, $\text{CH}_3\text{CH}=\text{CH}_2$, forms poly(propene).

- Name the type of polymerisation. (1 mark)
- Write the repeat unit. (1 mark)
- State whether poly(propene) decolourises bromine water and give a reason. (1 mark)

Question 6 Condensation polymer (3 marks)

The figure shows the formation of a polyester.



Formation of a polyester from two monomers.

- Name the link formed between the monomers. (1 mark)
- Name the small molecule lost. (1 mark)
- State one difference from addition polymerisation. (1 mark)

Question 7 Weak acid (2 marks)

Ethanoic acid is a weak acid. Explain what this means and describe what you would see when it is added to sodium carbonate.

Question 8 Plastic waste (1 mark)

Explain in one sentence why addition polymers cause waste problems.