

GCSE Chemistry

Worksheet: Alcohols

TIME 30 min	TOTAL 27 marks	CALCULATOR Allowed	DIFFICULTY Easy, Medium
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Topics: Alcohols

NAME _____	CLASS _____	DATE _____
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- Use black ink or black ball-point pen. Pencil should only be used for drawing.
- Answer all questions in the spaces provided.
- In all calculations, show clearly how you work out your answer.
- The marks for questions are shown in brackets.

0 1

A student added a small piece of sodium to ethanol in a test tube.

0 1 . 1

Describe **one** observation the student would make.

.....

.....

[1 mark]

0 1 . 2

Complete the word equation for this reaction.

sodium + ethanol → sodium ethoxide + _____

.....

.....

.....

.....

[1 mark]

0 2

0 2 . 1

What is the functional group of the alcohols?

.....

.....

.....

.....

[1 mark]

0 2 . 2

Name the alcohol with the formula CH_3OH .

.....

.....

.....

.....

[1 mark]

0 2 . 3

Which **two** of these are main uses of alcohols?

Tick (✓) **two** boxes.

Fuels

☐

Solvents

☐

Fertilisers

☐

Food colourings

☐

Extracting metals

☐

[2 marks]

0 2 . 4

Ethanol is produced when sugar solutions are fermented.

What is added to the sugar solution to ferment it?

.....

.....

.....

.....

[1 mark]

0 3

0 3 . 1

Give the molecular formula of ethanol.

.....

.....

.....

.....

[1 mark]

0 3 . 2

Name the gas produced when sodium reacts with ethanol.

.....

.....

.....

.....

[1 mark]

0 3 . 3

Which of these is a use of alcohols such as ethanol?

Tick (✓) **one** box.

As a fuel

☐

As a fertiliser

☐

As a metal ore

☐

As a food preservative acid

☐

[1 mark]

0 4

If a bottle of wine (which contains ethanol) is left open to the air for several days, it can start to taste sour and vinegary.

0 4 . 1

Explain, in terms of oxidation, what has happened to the ethanol in the wine.

.....

.....

.....

.....

[2 marks]

0 4 . 2

Suggest why sealing the bottle tightly after opening it slows down this change.

.....

.....

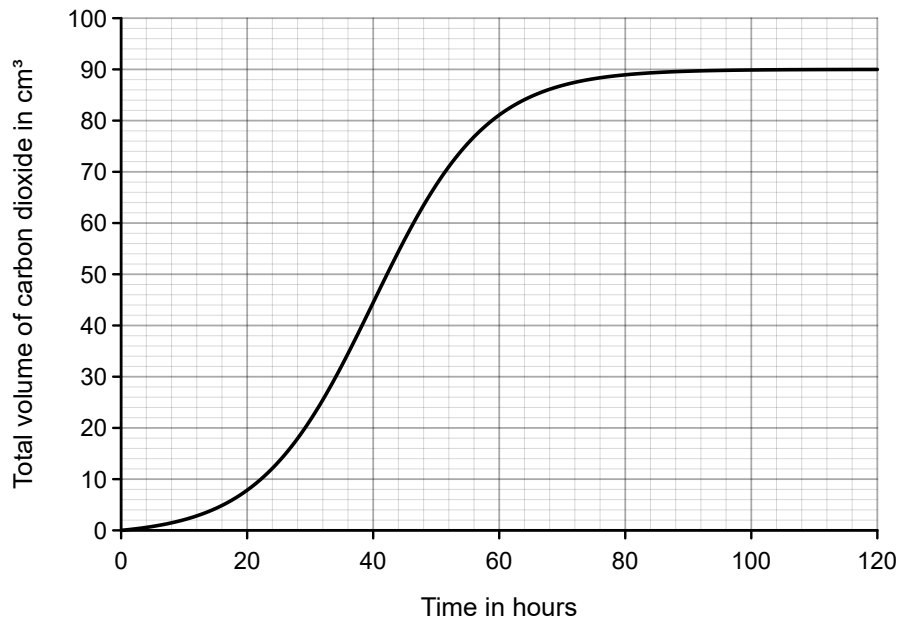
[1 mark]

0 5

A student added yeast to a glucose solution in a conical flask connected to a gas syringe, and recorded the total volume of carbon dioxide produced over five days.

Figure 1 shows the results.

Figure 1



0 5 . 1

Describe how the rate of production of carbon dioxide changes during the experiment.

.....

.....

.....

.....

.....

.....

[3 marks]

0 5 . 2

Suggest **one** reason why the rate of fermentation decreases after about 60 hours.

.....

.....

[1 mark]

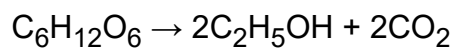
0 5 . 3

Give **two** conditions needed for fermentation, apart from yeast and a sugar solution.

[2 marks]

0 6

Ethanol for drinks is made by fermentation.



0 6 . 1

Give **three** conditions needed for fermentation.

[3 marks]

0 6 . 2

Explain why the temperature must not be too high.

[2 marks]

0 6 . 3

The fermentation vessel is fitted with an airlock, which lets gas out but stops air getting in.

Suggest why air must be kept out.

[1 mark]

0 7

Ethanol is used both as a solvent (e.g. in perfumes and hand sanitiser) and as a fuel.

0 7 . 1

Suggest why ethanol, rather than a hydrocarbon such as octane, is often used as the solvent in products such as perfume that are applied to skin.

[2 marks]

END OF QUESTIONS

Original practice questions written to match the specification. Not produced by, affiliated with or endorsed by AQA.

Mark scheme

GCSE Chemistry · Worksheet: Alcohols · 27 marks

Question 1 (2 marks)

01.1 [1 mark]

Answer: Bubbles (fizzing) are seen; the sodium may move around and get smaller.

- bubbles / fizzing / effervescence (the sodium gets smaller) (1)
-

01.2 [1 mark]

Answer: hydrogen

- hydrogen (1)
-

Question 2 (5 marks)

02.1 [1 mark]

Answer: -OH

- -OH (1)
-

02.2 [1 mark]

Answer: Methanol

- methanol (1)
-

02.3 [2 marks]

Correct: Fuels; Solvents

02.4 [1 mark]

Answer: Yeast

- yeast (1)
-

Question 3 (3 marks)

03.1 [1 mark]

Answer: C_2H_6O

- C_2H_6O (or C_2H_5OH) (1)
-

03.2 [1 mark]

Answer: Hydrogen

- hydrogen (1)
-

03.3 [1 mark]

Correct: As a fuel

Question 4 (3 marks)

04.1 [2 marks]

Answer: The ethanol has been oxidised by oxygen in the air, forming ethanoic acid, which gives the sour, vinegary taste.

- the ethanol has reacted with oxygen from the air (has been oxidised) (1)
 - forming ethanoic acid, which has a sour / vinegary taste (1)
-

04.2 [1 mark]

Answer: It reduces the amount of oxygen in contact with the wine, so less oxidation can occur.

- it reduces the amount of oxygen able to reach (dissolve into) the wine, slowing the oxidation (1)
-

Question 5 (6 marks)

05.1 [3 marks]

Answer: The rate is slow at first, increases to a maximum at about 40 hours (where the curve is steepest), then decreases until no more carbon dioxide is produced after about 90 hours.

- the rate is slow at the start (1)
- the rate increases to a maximum at about 40 hours (the curve is steepest here) (1)
- the rate then decreases and becomes zero (the curve levels off) after about 80 to 100 hours (1)

05.2 [1 mark]

Answer: The glucose is being used up, so its concentration decreases.

- the glucose (sugar) is being used up / its concentration decreases / the concentration of ethanol becomes high enough to stop the yeast working (1)

05.3 [2 marks]

Answer: A warm temperature (about 30–35 °C) and no air (anaerobic conditions).

- a warm temperature / about 25 to 40 °C (1)
- absence of air / oxygen (anaerobic conditions) (1)

Notes: Do not accept 'hot' or temperatures above 40 °C.

Question 6 (6 marks)

06.1 [3 marks]

Answer: Yeast; a warm temperature of about 30 °C; no air (anaerobic).

- yeast (1)
- a warm temperature (about 30 °C / 25 to 35 °C) (1)
- no air / oxygen (anaerobic) (1)
- sugar dissolved in water (1)

Any 3 of the points above.

06.2 [2 marks]

Answer: The enzymes in the yeast are denatured, so fermentation stops.

- the enzymes in the yeast are denatured / the yeast is killed (1)
 - so fermentation stops (or slows down) (1)
-

06.3 [1 mark]

Answer: Oxygen would oxidise the ethanol to ethanoic acid.

- oxygen would oxidise the ethanol (to ethanoic acid) / the yeast would respire aerobically and make less ethanol (1)
-

Question 7 (2 marks)

07.1 [2 marks]

Answer: Ethanol evaporates readily (leaving little residue), mixes with water-based ingredients, and is less harmful to skin than many hydrocarbon solvents.

- ethanol evaporates quickly, leaving little residue on the skin (1)
- ethanol is less harmful / irritating to skin than hydrocarbon solvents (1)
- ethanol mixes with water (and water-based ingredients), whereas octane does not (1)

Any 2 of the points above.
