AQA GCSE Chemistry | 8462

SPECIFICATION POINT 4.8.2.4

Test for chlorine

Past-paper questions

Tier	**Foundation**
Question groups	**3**
Available paper years	**2008–2021**

Using this booklet

1. Answer the questions in order and show your working.
2. Original question numbers and marks are retained.
3. Print at actual size (100%) for measuring questions.
4. Use the companion answer booklet to check your work.

Name: _____ **Date:** _____

Whole questions are retained for context, so some parts assess other specification points. Current and legacy sources are labelled. Continue on extra paper if needed.

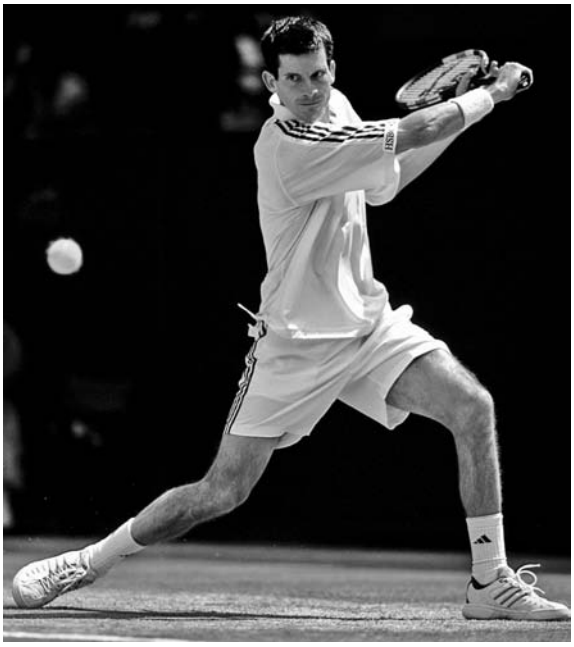
4.8.2.4 Test for chlorine

Question 01

June 2008 | CHY3F | Original Q3 | Legacy

3 The information in the box was on the internet.

Breathtaking Finish



Tim Henman used *smelling salts* to help revive his fortunes at Wimbledon yesterday.

The active chemical in *smelling salts* is ammonium carbonate, $(NH_4)_2CO_3$.

A student tested some *smelling salts* to prove that they contained ammonium ions and carbonate ions.

3 (a) Complete these sentences by choosing the correct substances from the box.

3 (a) (i) Test for carbonate ions.

ammonia	**carbon dioxide**	**hydrochloric acid**
limewater	**water**	

The student added ..... to the smelling salts.

A gas called ..... was given off.

This gas turned ..... milky.

(3 marks)

4.8.2.4 Test for chlorine

Question 01 · continued

for mark

3 (a) (ii) Test for ammonium ions.

ammonia	**carbon dioxide**	**hydrochloric acid**
litmus	**sodium hydroxide**	

The student added ..... to the smelling salts.

A gas called ..... was given off.

This gas turned ..... paper blue.

(3 marks)

3 (b) Suggest why ammonium ions **cannot** be identified using a flame test.

.....

.....

(1 mark)

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4.8.2.4 Test for chlorine

Question 02

November 2020 | 8462/1F | Original Q1

0 1 This question is about the elements in Group 7 of the periodic table.

Table 1 shows the melting points and boiling points of some of the elements.

Table 1

Element	Melting point in °C	Boiling point in °C
Fluorine	–220	–188
Chlorine	–101	–35
Bromine	–7	59

0 1 . 1 What is the state of bromine at 100 °C?

Use **Table 1**.

[1 mark]

Tick (✓) **one** box.

Gas ☐

Liquid ☐

Solid ☐

4.8.2.4 Test for chlorine

Question 02 · continued

0 1 . 2 What temperature does chlorine gas condense at to form a liquid?

Use **Table 1**.

[1 mark]

Temperature = _____ °C

0 1 . 3 Complete the sentences.

[2 marks]

Going down Group 7 the melting points _____.

This is because the size of the molecules increases so the

intermolecular forces _____.

Question 1 continues on the next page

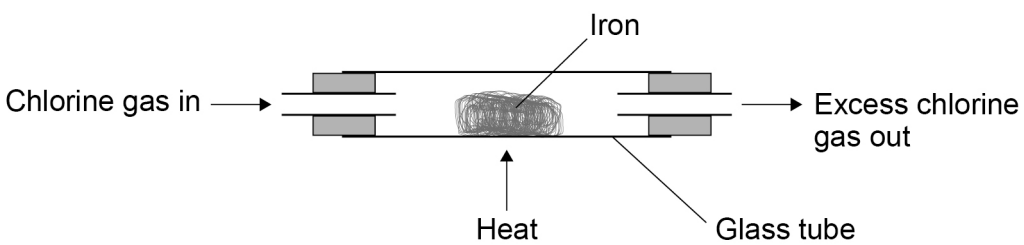
4.8.2.4 Test for chlorine

Question 02 · continued

A teacher investigated the reaction of iron with chlorine.

Figure 1 shows the apparatus used.

Figure 1



0 1 . 4 Why did the teacher do the investigation in a fume cupboard?

[1 mark]

Tick (✓) **one** box.

Chlorine gas is coloured. ☐

Chlorine gas is flammable. ☐

Chlorine gas is toxic. ☐

4.8.2.4 Test for chlorine

Question 02 · continued

0 1 . 5 The word equation for the reaction is:

iron + chlorine → iron chloride

Iron chloride is a solid.

The teacher weighed the glass tube and contents:

- before the reaction
- after the reaction.

What happened to the mass of the glass tube and contents during the reaction?

Give **one** reason for your answer.

[2 marks]

The mass of the glass tube and contents _____.

Reason _____

_____

Question 1 continues on the next page

4.8.2.4 Test for chlorine

Question 02 · continued

The teacher repeated the investigation with bromine gas and with iodine gas.

Table 2 shows the results.

Table 2

Element	Observation
Chlorine	Iron burns vigorously with an orange glow
Bromine	Iron burns with an orange glow
Iodine	Iron slowly turns darker

0 1 . 6 Fluorine is above chlorine in Group 7.

Predict what you would observe when fluorine gas reacts with iron.

Use **Table 2**.

[1 mark]

0 1 . 7 Balance the equation for the reaction between iron and bromine.

[1 mark]

$$2Fe + _____ Br_2 \rightarrow 2FeBr_3$$

0 1 . 8 Calculate the relative formula mass (M_r) of $FeBr_3$

Relative atomic masses (A_r): Fe = 56 Br = 80

[2 marks]

Relative formula mass (M_r) = _____

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4.8.2.4 Test for chlorine

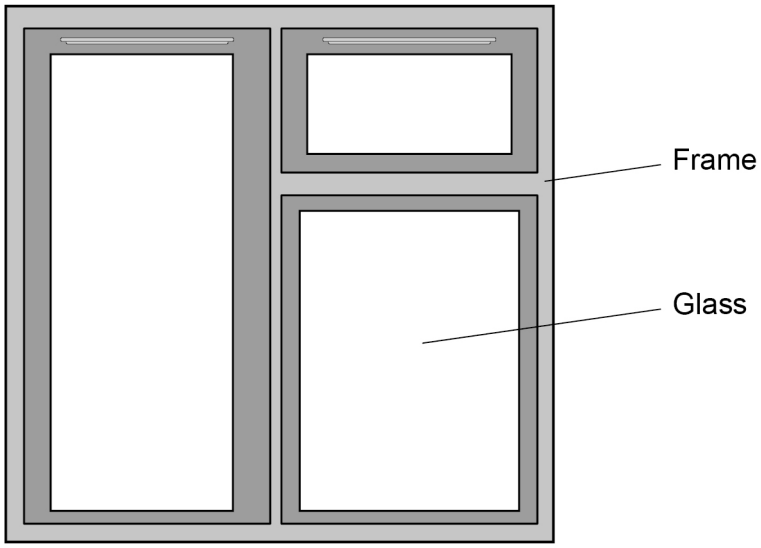
Question 03

November 2021 | 8462/2F | Original Q3

0 3 This question is about substances used to make windows and window frames.

Figure 2 shows a window.

Figure 2



0 3 . 1 Glass is made by heating sand with **two** other materials.

Which **two** other materials are used to make glass?

[2 marks]

Tick (✓) **two** boxes.

- Clay ☐
- Graphite ☐
- Limestone ☐
- Sodium carbonate ☐
- Sodium hydroxide ☐

4.8.2.4 Test for chlorine

Window frames need to be:

- easy to install
- resistant to damage.

The polymers poly(chloroethene) and HDPE are used to make window frames.

Table 3 shows information about poly(chloroethene) and HDPE.

Table 3

Property	Poly(chloroethene)	HDPE
Density in g/cm^3	1.4	0.92
Relative strength	72	25

0 3 . 2 Suggest **one** advantage of using poly(chloroethene) compared with HDPE to make window frames.

Give **one** reason for your answer.

Use **Table 3**.

[2 marks]

Advantage _____

_____

Reason _____

_____

0 3 . 3 Suggest **one** advantage of using HDPE compared with poly(chloroethene) to make window frames.

Give **one** reason for your answer.

Use **Table 3**.

[2 marks]

Advantage _____

_____

Reason _____

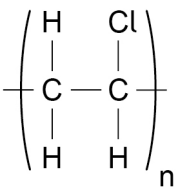
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4.8.2.4 Test for chlorine

Question 03 · continued

0 3 . 4 **Figure 3** shows the displayed structural formula of poly(chloroethene).

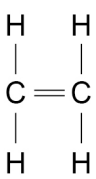
Figure 3

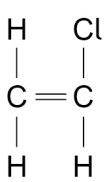


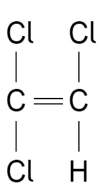
Which monomer is used to make poly(chloroethene)?

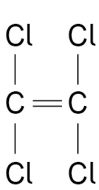
[1 mark]

Tick (✓) **one** box.

 ☐

 ☐

 ☐

 ☐

4.8.2.4 Test for chlorine

0 3 . 5 Chlorine gas is used to produce poly(chloroethene).

Describe a test to identify chlorine gas.

Give the result of the test.

[2 marks]

Test _____

_____

Result _____

_____

0 3 . 6 Wood can be used instead of polymers to make window frames.

- Polymers are unreactive.
- Polymers are produced from crude oil.
- Wood breaks down in wet conditions.
- Wood is produced from trees.

Suggest **one** advantage of using polymers and **one** advantage of using wood to make window frames.

[2 marks]

Advantage of polymers _____

_____

Advantage of wood _____

_____

Question 3 continues on the next page

4.8.2.4 Test for chlorine

Window frames can also be made from an alloy of aluminium.

0 3 . 7 6.00 kg of the alloy is used to make a window frame.

Table 4 shows the mass of each element in 6.00 kg of the alloy.

Table 4

Element	Mass in kg
Aluminium	5.94
Magnesium	0.04
Silicon	0.02

Calculate the percentage of aluminium in 6.00 kg of the alloy.

[2 marks]

Percentage of aluminium = _____ %

0 3 . 8 Why is an alloy used instead of pure aluminium to make window frames?

[1 mark]

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