

GCSE Chemistry

Worksheet: Carbonates

TIME 25 min	TOTAL 22 marks	CALCULATOR Allowed	DIFFICULTY Easy, Medium
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Topics: Carbonates

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
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0	1	.	1
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 Describe the test for carbonate ions.
Give the result of a positive test.

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.....

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.....

.....

[3 marks]

0	1	.	2
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 Name the gas produced when a carbonate reacts with an acid.

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.....

.....

[1 mark]

0 2

0 2 . 1

Which gas is produced when a carbonate reacts with a dilute acid?

Tick (✓) **one** box.

Chlorine

☐

Carbon dioxide

☐

Hydrogen

☐

Oxygen

☐

[1 mark]

0 3

Calcium carbonate reacts with dilute hydrochloric acid.

0 3 . 1

Name the salt formed in this reaction.

.....

.....

.....

[1 mark]

0 3 . 2

Name the **other two** products of this reaction.

.....

.....

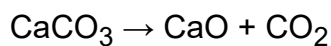
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[2 marks]

0 4

A technician heats calcium carbonate strongly. It decomposes.



0 4 . 1

Describe a test to confirm the gas produced is carbon dioxide, and state the result.

.....

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.....

.....

[2 marks]

0 4 . 2

The white solid remaining after heating is calcium oxide.

Describe a chemical test the technician could use to show that this solid is **no longer** a carbonate.

.....

.....

.....

.....

[2 marks]

0 5

Indigestion tablets often contain a carbonate to neutralise excess stomach acid.
A student tests three white powders, P, Q and R, used in different tablets, by adding dilute hydrochloric acid.

Table 1 shows the results.

Table 1

Powder	Observation
P	vigorous fizzing
Q	gentle fizzing
R	no fizzing

0 5 . 1

Which powder could **not** be a carbonate?
Give a reason for your answer.

.....

.....

.....

.....

[2 marks]

0 5 . 2

Suggest **one** reason, other than a difference in temperature, why P fizzes more vigorously than Q.

.....

.....

[1 mark]

0 6

0 6 . 1

Describe, step by step, how a student could test whether a white powder contains carbonate ions, including the apparatus needed.

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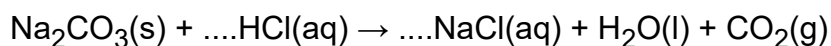
[3 marks]

0 7

A student added dilute hydrochloric acid to a white solid, sodium carbonate.

0 7 . 1

Balance the equation for the reaction.



.....

.....

[1 mark]

0 7 . 2

Describe how the student could show that the gas produced is carbon dioxide.
Give the result.

.....

.....

.....

.....

[2 marks]

0 7 . 3

The student added dilute hydrochloric acid to a different white solid. There was no fizzing.

What does this show about the solid?

[1 mark]

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: Carbonates · 22 marks

Question 1 (4 marks)

01.1 [3 marks]

- add dilute acid (e.g. dilute hydrochloric acid) (1)
 - bubbles / fizzing (1)
 - the gas turns limewater milky / cloudy (1)
-

01.2 [1 mark]

Answer: carbon dioxide

- carbon dioxide / CO₂ (1)
-

Question 2 (1 mark)

02.1 [1 mark]

Correct: Carbon dioxide

Question 3 (3 marks)

03.1 [1 mark]

Answer: calcium chloride

- calcium chloride (1)
-

03.2 [2 marks]

- water (1)
 - carbon dioxide (1)
-

Question 4 (4 marks)

04.1 [2 marks]

- bubble the gas through limewater (1)
 - the limewater turns milky / cloudy (1)
-

04.2 [2 marks]

- add dilute acid to a sample of the remaining solid (1)
 - no bubbles / fizzing is produced, showing that carbonate ions are no longer present (1)
-

Question 5 (3 marks)

05.1 [2 marks]

Answer: R

- R (1)
- R produces no gas / does not fizz with acid, so it does not contain carbonate ions (1)

05.2 [1 mark]

- P contains a greater mass / higher concentration of carbonate than Q, or P's carbonate is in smaller pieces (a larger surface area) than Q's (1)

Notes: Allow: P contains a different carbonate that reacts faster.

Question 6 (3 marks)

06.1 [3 marks]

- add a spatula of the powder to a test tube and add dilute (hydrochloric) acid (1)
- connect, using a bung and delivery tube, to a second test tube containing limewater (1)
- if the powder is a carbonate, bubbles of gas form and the limewater turns milky / cloudy (1)

Question 7 (4 marks)

07.1 [1 mark]

Answer: $\text{Na}_2\text{CO}_3 + 2\text{HCl} \rightarrow 2\text{NaCl} + \text{H}_2\text{O} + \text{CO}_2$

- 2HCl and 2NaCl (1)

07.2 [2 marks]

- bubble the gas through limewater (1)
- limewater turns milky / cloudy (1)

07.3 [1 mark]

- the solid is not a carbonate / does not contain carbonate ions (1)
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