

GCSE Chemistry

Worksheet: Halides

TIME 35 min	TOTAL 31 marks	CALCULATOR Allowed	DIFFICULTY Easy, Medium
-----------------------	--------------------------	------------------------------	-----------------------------------

Topics: Halides

NAME	CLASS	DATE
-------------	--------------	-------------

- 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
---	---

0	1	.	1
---	---	---	---

 Give the formula of the precipitate formed when silver nitrate solution reacts with potassium chloride solution.

.....

.....

.....

.....

[1 mark]

0	1	.	2
---	---	---	---

 Give the formula of the precipitate formed when silver nitrate solution reacts with potassium iodide solution.

.....

.....

.....

.....

[1 mark]

0 2

A student has a sample of calcium chloride.

0 2 . 1

Predict the flame colour of calcium chloride in a flame test.

.....

.....

.....

.....

[1 mark]

0 2 . 2

The student dissolves some calcium chloride in water, then adds dilute nitric acid followed by silver nitrate solution.
Give the colour of the precipitate that forms.

.....

.....

.....

.....

[1 mark]

0 3

Silver nitrate solution can stain skin and clothing.

0 3 . 1

Give **one** precaution, apart from wearing eye protection, that a student should take when using silver nitrate solution.

.....

.....

[1 mark]

0 3 . 2

Name the acid that is added before the silver nitrate solution in the test for halide ions.

.....

.....

.....

.....

[1 mark]

0 4

Halide ions in solution can be identified using a precipitation test.

0 4 . 1

Which solution is added in the test for halide ions?

Tick (✓) **one** box.

Barium chloride solution

☐

Limewater

☐

Silver nitrate solution

☐

Sodium hydroxide solution

☐

[1 mark]

0 4 . 2

Give the colour of the precipitate formed by chloride ions.

.....

.....

.....

.....

[1 mark]

0 4 . 3

Give the colour of the precipitate formed by bromide ions.

.....

.....

.....

.....

[1 mark]

0 4 . 4

A solution forms a yellow precipitate in the test.
Name the halide ion in the solution.

.....

.....

.....

.....

[1 mark]

0 5

A student has a sample of sodium bromide.

0 5 . 1

Predict the flame colour of sodium bromide in a flame test.

.....

.....

.....

.....

[1 mark]

0 5 . 2

The student dissolves some sodium bromide in water, then adds dilute nitric acid followed by silver nitrate solution.
Give the colour of the precipitate that forms.

.....

.....

.....

.....

[1 mark]

0 6

A student tests three solutions for halide ions by adding dilute nitric acid and then silver nitrate solution. One solution contains chloride ions, one contains bromide ions and one contains iodide ions.

0 6 . 1

Give the colour of the precipitate formed with each of these ions: chloride, bromide and iodide.

.....

.....

.....

.....

.....

.....

[3 marks]

0 6 . 2

Why does the student add dilute nitric acid before adding the silver nitrate solution?

.....

.....

[1 mark]

0 6 . 3

The student also adds dilute nitric acid and silver nitrate solution to a test tube containing only deionised water. Suggest why.

.....

.....

[1 mark]

0 7

A student tests three solutions, T, U and V, using a flame test and then dilute nitric acid followed by silver nitrate solution.

Table 1 shows the results.

Table 1

Solution	Flame colour	Result with silver nitrate
T	lilac	cream precipitate
U	orange-red	white precipitate
V	crimson	yellow precipitate

0 7 . 1

Name the compound in T.

.....

.....

.....

.....
[1 mark]

0 7 . 2

Name the compound in U.

.....

.....

.....

.....
[1 mark]

0 7 . 3

Name the compound in V.

.....

.....

.....

.....
[1 mark]

0 8

In the test for halide ions, dilute nitric acid is added to the solution, followed by silver nitrate solution.

0 8 . 1

Why is dilute nitric acid added first?

.....

.....

[1 mark]

0 8 . 2

Explain why dilute hydrochloric acid must **not** be used instead of dilute nitric acid.

.....

.....

.....

.....

[2 marks]

0 8 . 3

A student tested a solution of potassium bromide.
Give the result and name the precipitate formed.

.....

.....

.....

.....

[2 marks]

0 9

A student tested four solutions, P, Q, R and S. Each solution contains one compound.
Table 2 shows the results.

Table 2

Solution	Flame test	Result with dilute nitric acid then silver nitrate solution
P	yellow flame	white precipitate
Q	lilac flame	yellow precipitate
R	crimson flame	cream precipitate
S	green flame	no precipitate

0 9 . 1

Name the compound in P.

.....

.....

.....

.....
[1 mark]

0 9 . 2

Name the compound in Q.

.....

.....

.....

.....
[1 mark]

0 9 . 3

Name the compound in R.

.....

.....

.....

.....
[1 mark]

0 9 . 4

What does the result with silver nitrate solution show about solution S?

.....

.....

[1 mark]

0 9 . 5

S contains copper(II) sulfate.

Describe a test to show that S contains sulfate ions. Give the result.

.....

.....

.....

.....

[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: Halides · 31 marks

Question 1 (2 marks)

01.1 [1 mark]

Answer: AgCl

- AgCl (1)
-

01.2 [1 mark]

Answer: AgI

- AgI (1)
-

Question 2 (2 marks)

02.1 [1 mark]

Answer: orange-red

- orange-red (1)
-

02.2 [1 mark]

Answer: white

- white (1)
-

Question 3 (2 marks)

03.1 [1 mark]

- wear gloves / avoid getting it on the skin or clothing (1)
-

03.2 [1 mark]

Answer: (dilute) nitric acid

- (dilute) nitric acid / HNO₃ (1)
-

Question 4 (4 marks)

04.1 [1 mark]

Correct: Silver nitrate solution

04.2 [1 mark]

Answer: white

- white (1)
-

04.3 [1 mark]

Answer: cream

- cream (1)
-

04.4 [1 mark]

Answer: iodide

- iodide / I^- (1)

Notes: Do not accept 'iodine'.

Question 5 (2 marks)

05.1 [1 mark]

Answer: yellow

- yellow (1)
-

05.2 [1 mark]

Answer: cream

- cream (1)
-

Question 6 (5 marks)

06.1 [3 marks]

Answer: Chloride: white. Bromide: cream. Iodide: yellow.

- chloride: white (1)
- bromide: cream (1)
- iodide: yellow (1)

Notes: Allow 'pale yellow' for iodide. Do not accept 'yellow' for bromide.

06.2 [1 mark]

Answer: To remove other ions, such as carbonate ions, that would also form a precipitate with silver nitrate.

- to react with / remove other ions (e.g. carbonate ions) that would also form a precipitate with silver nitrate (1)
-

06.3 [1 mark]

Answer: As a control, to check that the reagents and apparatus contain no halide ions (no precipitate should form).

- as a control / to check that the reagents or test tubes are not contaminated with halide ions (no precipitate should form) (1)
-

Question 7 (3 marks)

07.1 [1 mark]

Answer: potassium bromide

- potassium bromide (1)
-

07.2 [1 mark]

Answer: calcium chloride

- calcium chloride (1)
-

07.3 [1 mark]

Answer: lithium iodide

- lithium iodide (1)
-

Question 8 (5 marks)

08.1 [1 mark]

- to remove / react with carbonate ions (which would also form a precipitate with silver nitrate) (1)

08.2 [2 marks]

- hydrochloric acid contains chloride ions (1)
- which would form a white precipitate (of silver chloride) whatever the sample contained (1)

08.3 [2 marks]

- cream precipitate (1)
 - silver bromide (1)
-

Question 9 (6 marks)

09.1 [1 mark]

Answer: sodium chloride

- sodium chloride (1)

09.2 [1 mark]

Answer: potassium iodide

- potassium iodide (1)

09.3 [1 mark]

Answer: lithium bromide

- lithium bromide (1)

09.4 [1 mark]

- S does not contain chloride, bromide or iodide ions / does not contain halide ions (1)

09.5 [2 marks]

- add dilute hydrochloric acid and then barium chloride solution (1)
 - white precipitate (1)
-