

Reactions of metals with water, acid and air

Aims

To study the reactions of copper, iron, zinc and magnesium with water, hydrochloric acid and air.

Apparatus

Goggles
Bench mat
Test tube
Test tube rack

Tongs
Bunsen burner
Dilute hydrochloric acid
Copper, iron, zinc, magnesium



EYE PROTECTION
MUST BE WORN

Methods

1. Draw a table in your book like the one shown in the Results section.

Reactions with water

2. Put water into the test tube to about 1cm deep. Put the test tube in the test tube rack.
3. Put the piece of copper into the test tube. Record any reaction in your table.
If there is no reaction after 1 minute, write down "No reaction" in your table.
Carefully pour the water into the sink. If possible, keep the piece of metal for another experiment.
4. Repeat steps 2 and 3 for the remaining metals (iron, zinc and magnesium).

Reactions with dilute hydrochloric acid

5. Put hydrochloric acid into the test tube to about 1cm deep. Put the test tube in the test tube rack.
6. Put the piece of copper into the test tube. Record any reaction in your table.
If there is no reaction after 1 minute, write down "No reaction" in your table.
Carefully pour the hydrochloric acid into the sink and rinse out the test tube.
If possible, keep the piece of metal for another experiment.
7. Repeat steps 5 and 6 for the remaining metals (iron, zinc and magnesium).



IRRITANT

Reactions with air

8. Carefully hold the piece of copper in tongs and heat it in a blue Bunsen flame.
Record any reaction in your table.
If there is no reaction after 1 minute, write down "No reaction" in your table.
Leave any hot metal on the bench mat to cool before putting it into the waste bin.
9. Repeat step 8 for the remaining metals (iron, zinc and magnesium).
10. Tidy away carefully. Write your Analysis (what the results mean) and your Evaluation (could the experiment be improved at all?) after your Results.

Results (suggested table to copy – make your table about a third of a page deep)

Metal	Reaction in water	Reaction in acid	Reaction in air
Copper			
Iron			
Zinc			
Magnesium			