

When a metal carbonate and an acid react together they produce a salt, carbon dioxide and water.

We can show this by reacting copper carbonate with sulfuric acid.

To do this we need:

A beaker containing sulfuric acid.

Copper carbonate.

A conical flask.

A filter funnel lined with filter paper.

And a crystallising dish.

The first stage is to add copper carbonate powder to the sulfuric acid.

This causes effervescence as carbon dioxide gas is produced.

Water is also produced, as is the salt copper sulfate.

The reaction observed can be shown by the chemical equation:

Copper carbonate plus sulphuric acid produced copper sulfate plus water plus carbon dioxide.

Wait until the acid is fully neutralised by the copper carbonate.

This is shown when no more carbon dioxide is released.

The reaction causes a colour change from the green colour of copper carbonate to the blue colour of copper sulfate solution.

Some excess unreacted copper carbonate is left behind.

This can be removed by filtration.

Pour the contents of the beaker into the filter-paper lined funnel.

The filtrate passes through the paper, leaving a residue of green copper carbonate behind.

This is because the copper carbonate is insoluble.

The collected filtrate is copper sulfate solution.

Transfer this to a crystallising dish and leave it for a few days to allow water to slowly evaporate.

After a few days, we can see that rhombus shaped crystals have formed.

These are crystals of the salt copper sulfate.