

Acids and Alkali: Predicting Salts

Title: Acids and Metal Oxides

Objectives: carry out an investigation into how metals oxides react with acids

I must be able to carry out a practical and write up the method and results effectively

I should be able to correctly predict the salts that will be formed

I could apply my knowledge to a question about copper coins

We've so far learnt that



An example of this is.....

Metal oxides are bases

- What do we already know about bases?
 - They can neutralise acids
 - Their pH can be measured
- What would we expect if we added a metal oxide (for example copper oxide) to an acid?
 - The pH would get higher
 - This is called neutralisation

We are going to test the reactions of different metal oxides with acids

Metal oxides produce a salt and water when reacted with acids

acid + metal oxide  salt and water

We know that:

Copper oxide + sulphuric acid gives us copper sulphate

What would lead oxide and sulphuric acid give us?

What about copper oxide and hydrochloric acid?

Salts that are formed

Nitric acid gives us nitrates

Sulphuric acid gives us sulphates

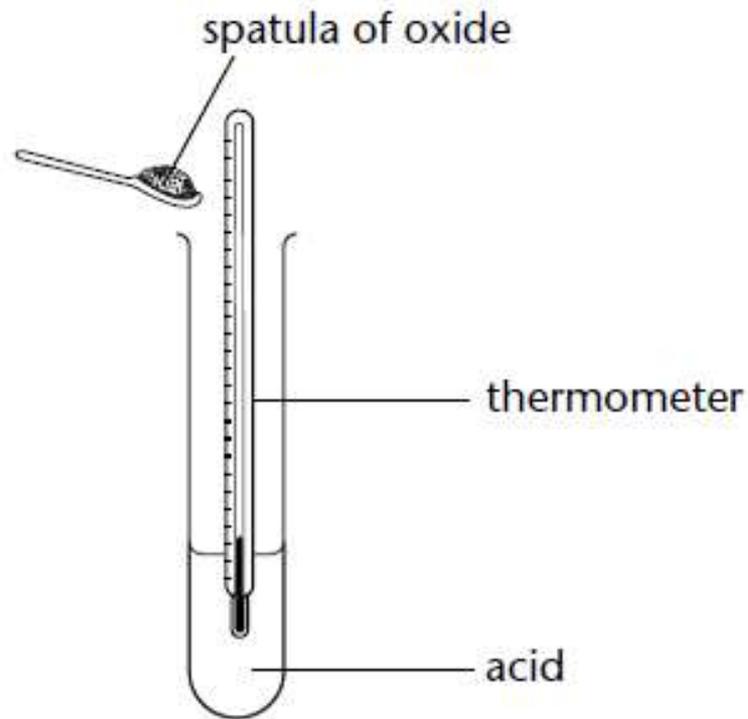
Hydrochloric acid gives us chlorides

Obtaining evidence

- 2 Carry out the reactions one at a time.
- 3 First, fill a test tube a quarter full of acid and measure its temperature.
- 4 Add a small amount of the solid you are testing.
- 5 Look for evidence that a reaction is happening. Fill in the second column of your table.

Considering the evidence

- 1 Decide whether or not a reaction happened in each test tube.
- 2 What evidence shows a reaction happening?



Oxide and acid	Predicted name of salt produced	Evidence that a reaction happens
copper oxide and nitric acid		
zinc oxide and hydrochloric acid		
copper oxide and sulphuric acid		
magnesium oxide and hydrochloric acid		

Carry out the practical

- Write a method and fill in the rest of your table

When finished, answer the question:

1. When copper coins (e.g. the 1p coin) turn a black colour it is because they have formed some copper oxide on their surface from the oxygen in the air. Suggest a household product you can use to get rid of the black colour.

Plenary

1. What results did you get?
2. Write 2 word equations for the reactions that happened in your investigations
3. How could we have made the experiment more accurate?