

Edexcel Chemistry IGCSE

1.36 - Chemical formulae, Equations and Calculations

Determine the formula of a metal oxide by combustion or reduction

Flashcards

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List the apparatus required to find the change in mass of a metal oxide by combustion



List the apparatus required to find the change in mass of a metal oxide by combustion

- Crucible and lid
- Digital balance
- Bunsen burner
- Tripod and gauze



Describe how to find the mass of a metal oxide by combustion



Describe how to find the mass of a metal oxide by combustion

- Measure the mass of the metal solid
- Place the solid in the crucible on a tripod over a Bunsen burner
- Heat strongly, lifting the lid of the crucible regularly
- Stop heating when there's no sign of further reaction
- Reweigh the mass of the solid and repeat the heating and mass measurement until there is no further decrease in mass
- Record the mass of metal oxide formed



Metal oxides can be produced by heating metals in a crucible. Why must a lid be used and why should it be regularly lifted?



Metal oxides can be produced by heating metals in a crucible. Why must a lid be used and why should it be regularly lifted?

A lid prevents the metal oxide product escaping.

The lid should be regularly lifted to allow oxygen into the reaction.



Describe how to find the formula of a metal oxide by combustion



Describe how to find the formula of a metal oxide by combustion

- Find the initial mass of the solid metal
- Find the mass of oxygen used in the reaction by calculating the increase in mass when the oxide was formed
- Divide the masses of metal and oxygen by their molecular masses
- This provides a ratio of metal to oxygen, giving the empirical formula of the metal oxide



How can you accurately measure the mass of metal in the crucible before combustion?



How can you accurately measure the mass of metal in the crucible before combustion?

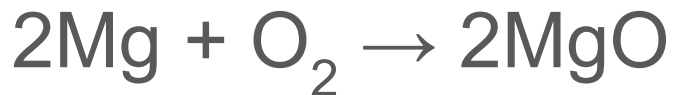
- Measure mass of the empty crucible and lid (1)
- Add the metal to the crucible, replace the lid and reweigh (2)
- Subtract (1) from (2)



Write the chemical equation for the combustion of magnesium to form its oxide



Write the equation for the combustion of magnesium to form its oxide



List the apparatus required to find the change in mass of a metal oxide by reduction



List the apparatus required to find the change in mass of a metal oxide by reduction

- Bunsen burner
- Reduction tube
- Bung and rubber tubing
- Clamp and stand



Describe how to find the change in mass
of a metal oxide by reduction



Describe how to find the change in mass of a metal oxide by reduction

- Measure the mass of the metal oxide
- Place the metal oxide in a horizontal reduction tube held by a clamp, insert a bung and connect to a source of methane or hydrogen
- Light the gas where it exits the hole in the reduction tube
- Heat the reduction tube using a Bunsen burner until the solid completely changes colour
- Measure the mass of the remaining solid



Describe how to find the formula of a metal oxide by reduction



Describe how to find the formula of a metal oxide by reduction

- Find the initial mass of the metal oxide
- Find the mass of metal remaining after the reaction
- Take the mass of metal from the mass of metal oxide to find the mass of oxygen
- Divide the masses of the metal and oxygen by their molecular masses
- This provides a ratio of the metal to oxygen, giving the empirical formula



Write the chemical equation for the reduction of copper(II) oxide using hydrogen



Write the chemical equation for the reduction of copper(II) oxide using hydrogen



Write the chemical equation for the reduction of copper(II) oxide using methane



Write the chemical equation for the reduction of copper(II) oxide using methane

