

Worksheet 8.6

Reactions of powdered metals with metal oxides

A mixture of a powdered metal and the oxide of a different metal was heated in a series of experiments and any observations were noted. The experiment was repeated until all combinations had been tried.

	Aluminium	Copper	Iron	Magnesium	Zinc
Aluminium oxide		no reaction	no reaction	the mixture glowed with a bright white light	no reaction
Copper oxide	bright white flash and bright sparks shot in the air		a dull red glow was observed	huge white flash and lots of smoke	mixture smoulders giving off green flames
Iron oxide	'burns' brightly and gets very hot; white fumes produced	no reaction		very bright white flames and lots of heat	a dull red glow was observed
Magnesium oxide	no reaction	no reaction	no reaction		no reaction
Zinc oxide	very little reaction was observed, just a dull glow	no reaction	no reaction	a bright light spread rapidly through the mixture and white smoke was produced	

Interpreting the results

Look at the observations given in the Table and give a score from 1 to 5 for the strength of the reaction that took place with each combination of metal and the oxide of another. A score of 0 means there was no reaction.

Then decide, from the reactions observed, what the order of reactivity of the five metals is.

Most reactive _____ → Least reactive

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Then predict whether there would be a displacement reaction in each of the following experiments with different combinations of metals and salt solutions shown in the table below. Place a tick (✓) in the boxes where you think there would be a reaction.

	Aluminium	Copper	Iron	Magnesium	Zinc
Aluminium sulfate					
Copper sulfate					
Iron sulfate					
Magnesium sulfate					
Zinc sulfate					

Give the chemical equation for the reaction between magnesium and aluminium oxide.

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Give the ionic equation (with state symbols) for the reaction between magnesium and zinc sulfate.

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