

Reactions

4. Types of Reaction

CONCEPT 2

LESSON GUIDE

THERMAL DECOMPOSITION

PRECISE LEARNING POINTS

KNOW

I know what thermal decomposition is.

APPLY

I can apply my knowledge to write word equations for different thermal decomposition reactions.

EXTEND

I can extend my knowledge to explain applications of thermal decomposition.

NOTES

Some compounds break down when heated, forming two or more products from one reactant. This type of reaction is called thermal decomposition. Many metal carbonates can take part in thermal decomposition reactions. For example, copper carbonate breaks down easily when it is heated:

copper carbonate → copper oxide + carbon dioxide



Copper carbonate is green and copper oxide is black. You can see a colour change from green to black during the reaction. The carbon dioxide produced can be detected using limewater, which turns milky. Other metal carbonates behave in the same way such as; calcium carbonate, magnesium carbonate and potassium carbonate.

Thermal decomposition is an example of an endothermic reaction, a reaction that gains energy from the surroundings. This is why thermal energy must be supplied constantly for the reaction to keep going.

Thermal decomposition reactions can be useful. For example the thermal decomposition of Calcium Carbonate produces calcium oxide, known as lime. Lime is used make cement and glass. Many metals are found in ores in the form of metal carbonates. So by using heat and thermal decomposition it can be one of the first steps to extracting useful metals out of their ores.

