

# Reactions

## 1. Metals and non-metals

### CONCEPT 2

#### METAL REACTIONS WITH ACID

##### NOTES

In a Chemical reaction, **new** substances are made when atoms rearrange themselves and join back together in different ways. An example of a chemical reaction is combustion. One example of this is when a fuel reacts with oxygen to form carbon dioxide and water.

During chemical reactions energy is transferred to, or from, the surroundings. Chemical reactions are very difficult to reverse. At the start of a chemical reaction atoms separate from each other and rearrange into a different form, this new form is called a **product**. The number of atoms at the start of the reaction will always be the same after the reaction has finished, this is because the atoms just rearrange into something different. Therefore, the total mass of the products is equal to the total mass of the reactants you have at the start. We therefore say that mass is conserved in a chemical reaction.

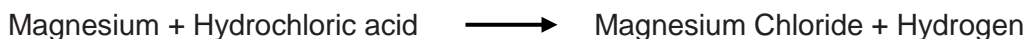
In order to determine if a chemical reaction has occurred we can look for evidence that will suggest it has; chemical reactions often cause a change in colour, temperature change, odour being produced, solid precipitate forming or the production of a gas. When a metal reacts with an acid a chemical reaction takes place. The reactants rearrange themselves to form a salt and hydrogen gas.

The general equation for this reaction is



Some metals are more reactive than others due to their position on the reactivity series. Some metals are very unreactive so will not react easily with dilute acid.

An example of an acid metal reaction is;



Most Reactive	
POTASSIUM	<sup>19</sup> K
SODIUM	<sup>11</sup> Na
CALCIUM	<sup>20</sup> Ca
MAGNESIUM	<sup>12</sup> Mg
ALUMINIUM	<sup>13</sup> Al
CARBON	<sup>6</sup> C
ZINC	<sup>30</sup> Zn
IRON	<sup>26</sup> Fe
TIN	<sup>50</sup> Sn
LEAD	<sup>82</sup> Pb
HYDROGEN	<sup>1</sup> H
COPPER	<sup>29</sup> Cu
SILVER	<sup>47</sup> Ag
GOLD	<sup>79</sup> Au
PLATINUM	<sup>78</sup> Pt
Least Reactive	