

Group 2 elements are shiny, silvery-white, and reactive at standard temperature and pressure.

Ca(OH)₂: neutralise acidity in soils
 CaCO₃: manufacturing cement & marble
 MgO & Mg(OH)₂: antacid
 CaO: neutralises the sulphur dioxide in pollutants

Uses of group 2 compounds

BaCl₂: along with dil. HCl -test for sulphates
 CaCO₃: manufacturing cement & marble
 Ba: used to take X-rays. BaSO₄ is given to patients.

Use of magnesium in the extraction of titanium

Step 1: $\text{TiO}_2 + 2\text{Cl}_2 + 2\text{C} \rightarrow \text{TiCl}_4 + 2\text{CO}$
 (1000°C)

Step 2: $\text{TiCl}_4 + 2\text{Mg} \rightarrow \text{Ti} + 2\text{MgCl}_2$
 (in the presence of Ar at 1000°C)

Solubility in water down the group:
 nitrates and chlorides: **increases**
 sulphates: **decreases**
 hydroxides: **increases**

Group 2 elements have 2 electrons in the outermost s sub-shell. Forms **+2 ions**.
Ionisation energy: decreases down the group

Reactivity: increases down the group.

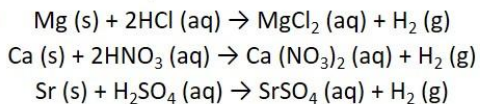
Melting point: decreases down the group

Reactivity of group 2 metals

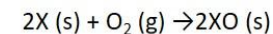
Group 2 elements

Reaction with acids

Group 2 metals react with acids to form salt and hydrogen. The reaction with hydrochloric acid forms chlorides, the reaction with nitric acid forms nitrates and the reaction with sulphuric acid forms sulphates.



Group 2 metals burn in air to form **white solid** metal oxides.



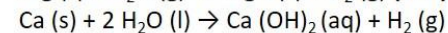
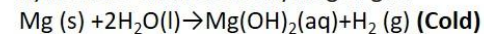
Group 2 metal oxides are **basic** in nature.
 Group 2 metals burn with distinct flame colours.

Reaction with oxygen

Element	Colour
Beryllium (Be)	White
Magnesium (Mg)	Bright white
Calcium (Ca)	Brick red
Strontium (Sr)	Scarlet/red
Barium (Ba)	Apple-green

Reaction with water

Group 2 metals react with water to form hydroxides and release hydrogen gas.



Down the group, the metals react more rapidly with water and, hence, hydrogen gas is released more rapidly.

pH of hydroxide solution: **increases** down the group.