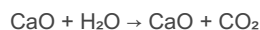


Manufacture of lime

Lime

- Limestone consists of calcium carbonate, CaCO_3
- Lime (calcium oxide) is manufactured from calcium carbonate by *thermal decomposition*



Slaked lime (calcium hydroxide)

- It is made by adding a small amount of water slowly to calcium oxide



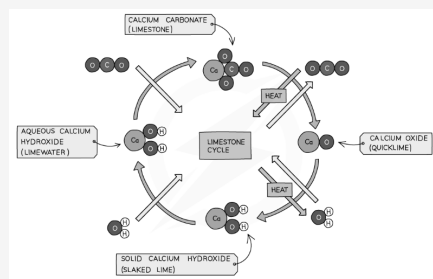
→ Limewater is a solution of calcium hydroxide in water (hence it is alkaline)

Addition of CO_2

- Addition of carbon dioxide to calcium hydroxide produces, calcium carbonate

→ This reaction is the basis of the standard chemical test for CO_2

Limestone cycle



The combination of the three reaction above constitute the limestone cycle

Uses of quick lime

- Making steel from iron
- To neutralize acidity in soil
- Drying agent in industry

Uses of slaked lime and lime

- Neutralize acidity in soil and lakes affected in soil
- Neutralizing acidic industrial waste products (flue gas desulphurization)

Uses of limestone (CaCO_3)

Making cement

- Manufactured by heating a mixture of powdered limestone and clay in rotary kiln. Once heated, calcium sulfate and water are added which produce cement

→ Adding gypsum (calcium sulfate) and grinding up the final solid to give a powder

Making iron

- Limestone is added to blast furnace where it decomposes to form lime (CaO) and carbon dioxide. The lime reacts with silica impurities to form calcium silicate (slag), which floats to the top of the molten iron and is removed and is then used for road building

