

# IGCSE Coordinated Science: Carbonates

## Carbonates

1. Describe the manufacture of lime (calcium oxide) from calcium carbonate (limestone) in terms of the chemical reactions involved, and its uses in treating acidic soil and neutralizing industrial waste products.

Carbonates are "salts" of Carbonic Acids ( $H_2CO_3$ ).

A particularly significant carbonic acid is calcium carbonate ( $CaCO_3$ ).

### Uses of Calcium Carbonate

- Helping extraction of iron from its ore
- Manufacture of cement

### Manufacture of Lime

One industrial use of Calcium Carbonate is that it can be used to make "lime". This process takes place in a kiln, and is largely based on the thermal decomposition of Calcium Carbonate. Limestone is inserted in the Kiln and then is heated. The bottom of the Kiln is both where air is blown in and where lime is collected. Carbon dioxide is also produced.

We can describe this reaction with a simple equation, which you will have to memorize.



### Uses of Lime

- Used to neutralize soil acidity in farms. This is because lime is a basic oxide, so therefore can be used to neutralize the acidity of the soil.
- Another use is to neutralize sulfur waste in power stations. This is also because Sulphur is acidic whilst lime is a basic oxide. And as we've learned before, an acid and a basic involves a process of neutralization.