

Lime Manufacture and Dispatch

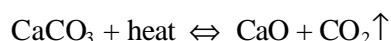


Who uses lime?

Quicklime and hydrated lime have applications in mining, minerals processing, sugar milling, water treatment, biosolids management, soil and road stabilisation, alumina refining, steel making, flue gas scrubbing, construction and many other industries.

How is quicklime made?

Quicklime (CaO) is produced by heating limestone (CaCO₃) to approximately 900°C according to the following reaction:



Raw Materials

High quality, locally mined limestone is crushed, then screened into specified size ranges and delivered by road or rail to the lime manufacturing plant where it is stockpiled. In some cases, washing of the limestone is required to maintain high purity.

Low ash coal, delivered by rail from the Bowen Basin is milled before being fed into the kiln. The finely pulverised coal is the fuel used to heat the kiln.

Quicklime Manufacture

Hot air and gases are drawn towards the back end of the kiln and through the pre-heater. Limestone pieces (within a specified size range) are fed into the top of the pre-heater and are heated as they move down towards the rotary kiln. The partially calcined limestone then moves down the kiln due to the downhill slope and slow rotation of the kiln. As the material moves down the kiln it is heated further to approximately 900°C and calcination as described in the chemical reaction above is completed with end products being quicklime (CaO or calcium oxide) and carbon dioxide (CO₂). The hot quicklime enters a grate cooler, where it is cooled to approximately 100°C by air blown in through the grates.

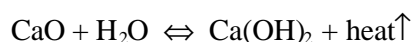
The pre-heater exhaust gases are cleaned of dust in the baghouse and the collected dust is either sold as an acid neutralising material or used as a raw material in clinker production (clinker production is a major step in cement manufacture).

Storage and Dispatch

The cooled quicklime is conveyed to storage silos. Samples are tested regularly during production to ensure that high quality is maintained. The quicklime is either milled or remains in pebble form and is conveyed to product silos from where it is dispatched in bulk or bulk bags by rail or road transport.

Hydrated Lime Manufacture

Hydrated lime is produced by reacting quicklime with a carefully controlled amount of water to produce a fine dry powder according to the following chemical reaction:



The quicklime is fed to a 3-compartment hydrator at a constant rate. Water is added in the first compartment where mixing takes place. The mixture passes through the remaining two compartments, allowing the highly exothermic chemical reaction to finish. The exhaust is cleaned in a dust collector and the dust is returned to the hydrator. The hydrated lime passes through a 2-stage separation system where coarse particles are removed. Samples are tested regularly during production to ensure that high quality is maintained. The hydrated lime is conveyed to storage silos ready for bagging in 20kg paper bags or dispatch in bulk or bulk bags by rail or road transport.