Adelaide Brighton Cement Ltd

Product Data Sheet

QUICKLIME

PRODUCT DESCRIPTION

Adelaide Brighton Quicklime is a calcium oxide produced by the calcination of selected marble in a rotary kiln at Angaston, South Australia. It is low in impurities and possesses a high degree of reactivity making it suitable for use in chemical processes.

It is manufactured as a granular product and is off-white in colour.

Quicklime is highly reactive with water, generating considerable heat in the hydration process.

What is Lime?

Lime is one of man's oldest and most vital chemicals and is often confused with limestone, from which it is derived.

Quicklime is manufactured by calcining high quality limestone at elevated temperatures, which causes volatilising nearly half of the stone's weight as carbon dioxide. The reaction is as follows:

1. Limestone + Heat (800°C) = Calcium Oxide + Carbon Dioxide

   $CaCO_3$ + Heat = $CaO+CO_2$

2. Quicklime + Water = Calcium Hydroxide + Heat

   $CaO+H_2O$ = $Ca(OH)_2$

SUPPLY

Adelaide Brighton Quicklime is available only in sealed bulk tankers from Angaston, South Australia.

SPECIFICATION

Adelaide Brighton Quicklime is a high Calcium Lime complying with the Australian Standard Specification AS1672.1 (Lime for Building).

All products are manufactured under a third party certified manufacturing and supply quality assurance system to AS/NZS ISO 9001 (NCS Certification No 6041).

APPLICATIONS

Quicklime is one of the most cost effective industrial chemicals available. Some uses are:

Steel industry:

Lime is a flux and removes impurities (silica, phosphorus, sulfur) in refining steel.

Non–Ferrous metallurgy:

Lime is used to beneficiate copper ore, make alumina and magnesia for use in aluminium and magnesium manufacture, extract uranium and recover gold, silver and other minerals.

Chemical industry:

Lime is used to make such chemicals as sodium alkalis, calcium carbide, calcium hypochlorite, citric acid and petrochemicals.

The paper industry uses lime as a causticising agent and for bleaching.

Construction:

Lime's traditional use in mortar and plaster still flourishes; however use in soil stabilisation for roads, dams, etc. is an important use.

TYPICAL PROPERTIES

Chemical Properties		
	AS 1672.1 Requirement	**Typical Analysis (%)**
SiO_2	No requirement	2.1
Al_2O_3	No requirement	0.6
Fe_2O_3	No requirement	0.5
CaO	No requirement	93
MgO	No requirement	1.1
Loss on Ignition	No requirement	2.5
Available Lime	≥ 60	88
CO_2 (Thermogravimetric)	5 max.	1.7
Physical Properties		
Slaking Rate	When Tested by **AS 4489.3.1-1997** Maximum Temperature Rise is 30ºC in 3 Minutes	
Residue on Slaking	<0.1% on 600 μm	
Specific Gravity	3.2 - 3.4	
Bulk Density	950 - 1100 kg/m^3	
Angle of Repose	The Angle of repose for quicklime varies considerably. A typical figure is 55 degrees.	

HANDLING AND STORAGE

Adelaide Brighton Quicklime is classified as a granular material and lends itself to pneumatic and mechanical conveying systems.

Because of Quicklime's affinity with water, material should be stored in a dry waterproof enclosure.

Quicklime can be stored in conventional steel or concrete bins.

SAFETY INFORMATION

Quicklime is caustic. Workers handling Quicklime must be adequately protected to avoid burns. The problem of protection from Quicklime burns is serious, particularly in hot weather when workers perspire freely. Therefore protective clothing must be used.

Because of the heat of hydration of Quicklime, care should be taken to avoid accidental contact with moisture or with chemicals possessing water of crystallisation, in order to avoid excessive heat generation which might lead to the combustion of flammable products in close proximity.

For more information, refer to the Safety Data Sheet for Quicklime.

AVAILABLE LIME INDEX

In accordance with the standard specifications AS 1672.1 Adelaide Brighton Quicklime has a typical available lime index, express in terms of calcium oxide (CaO), 88%.

ALKALI NEUTRALISATION CHART

The graph may be used to determine the weights of alkalis required to neutralise a given weight of any of the acids indicated. Since the graph is based on theoretically pure acids and alkalis, appropriate corrections should be made when applying this data.

The weight of 100% acid = weight of dilute acid x the % concentration of acid present. A similar equation applies for alkalis.

CONTACT POINTS

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ALKALI NEUTRALIZATION GRAPH