

Quicklime

PRODUCT DATA SHEET

Boral Cement is a manufacturer and supplier of premium quality Quicklime. Boral Cement's commitment to quality ensures that end users are provided with a low residue, high purity material which meets their requirements.

USES

Quicklime is used in the steel industry as a flux in purifying steel in the production process. It is also used for a variety of other applications in the steel industry, including wire drawing.

Quicklime is also used in the building industry in three main areas, being in the production of bricks & mortar, concrete panels and as an ingredient in plastering.

Quicklime is supplied to civil contractors for use in stabilisation & soil modification.

Quicklime used in treating both industrial liquids and wastewater.

Boral Cement Quicklime is manufactured and tested to AS1672/1997. A typical analysis is listed below:

Quicklime Specifications:

Constituents		% Dry
Calcium Oxide	CaO	>90.0%
Magnesium Oxide	MgO	>2.0%
Aluminium Oxide	Al ₂ O ₃	>1.0%
Silicon Dioxide	SiO ₂	>3.0%

Available Lime Index (as CaO) >85%

Loss on Ignition 1.0-5.0%

Residue on Slaking 600u m >5.0%

Specific Gravity: 3.2 - 3.4

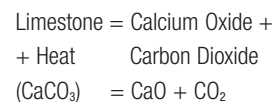
Bulk Density: 1000 - 1050kg/m³

Boral Cement operates a Quality Assurance System meeting the requirements of ISO 9001. Lime quality verification is provided by the issue of NATA certificates generated at our Berrima Laboratory.

CHEMICAL COMPOSITION

Generally Quicklime is the oxide of calcium – CaO

Quicklime is usually made by calcining limestone. The heating process liberates carbon dioxide from the limestone leaving calcium oxide.



PHYSICAL/CHEMICAL TESTS FOR LIME

The Australian Standard covering lime manufacture and testing methods is "AS 1672-1997 – **Building Limes**". This specification lays down the main physical and chemical requirements for high calcium and Quicklime.

Physically, a high calcium Quicklime like Boral Cement's must meet tests for: **Residue on Slaking**: consists of minor impurities and calcium carbonate core and measures the completeness of burning the stone.

For chemical requirements there is a minimum limit for available lime and maximum limits for magnesium and carbon dioxide.

The magnesia content, and impurities like silica, alumina, and iron are a function of the limestone from which the lime is made. Boral Cement's limestone deposit at Marulan South is of extremely high quality. Variations in the slight impurities are minimised by stockpiling and blending the raw material.

The Available Lime Index (ALI) shows how much lime is available for reaction. This index is vital to customers, as it shows how much of the lime received is useful to you. Available lime is always less than the total lime. Total lime includes lime combined as carbonate, silicate and other forms not available for chemical combination.

pH Solution of Lime @ 25°C:

CaO g/L	pH
0.064	11.27
0.065	11.28
0.122	11.54
0.164	11.66
0.271	11.89
0.462	12.10
0.680	12.29
0.710	12.31
0.975	12.44
1.027	12.47
1.160	12.53

PACKAGING & DELIVERY

Quicklime is available in bulk, delivered in typical 20-22 tonne loads by tipper trucks or pneumatic tankers. For safety and environmental considerations fines material (<3mm) is loaded only into bulk pneumatic tankers that are capable of elevating product into a silo. These vehicles are capable of discharging large amounts of product in a relatively short period of time. For such deliveries, the silo should be fitted with a properly designed filter or dust collector capable of handling the large volumes of air blown during discharge.

Roll Crush and rock lime can be loaded into tipper trucks if adequate covers are provided to protect the material from the weather.

Quicklime can be packaged into bulk bags, drums or other means by request to suit varied customer requirements. Bulk bags are generally delivered on flat top vehicles.

BULK STORAGE – DESIGN CONSIDERATIONS

Storage facilities must be watertight to avoid product deterioration. As lime is noncorrosive to steel or concrete, these materials may be used to fabricate lime silos or hoppers.

Special care and thorough investigation are necessary before final selection of a storage design.

The two major problems are bin "hang-up" and "flooding" of the discharge opening.

Flow ability is enhanced when the internal surfaces of the silo are as smooth as possible. Projections such as bolt heads and welding ridges can resist material flow. The cone section of the silo or hopper should have a minimum slope of 60 degrees from the horizontal.

OTHER INFORMATION

Quicklime	
Solubility (20°C)	1.25 g/L
(30°C)	1.16 g/L
Angle of Repose – Fines	50-55°
Roll Crush	60°
Heat of Solution	200 J/g
Melting Point	2570°C
Slurry Density	g/l Ca[OH] ₂
S.G. 1.00	0
S.G. 1.08	100
S.G. 1.16	200
S.G. 1.23	300

NEUTRALISING ABILITY (NOMINAL)

1.00kg Quicklime = 1.32kg Hydrated Lime.

NEUTRALISING ABILITY (TYPICAL PRODUCT)

1.00kg Quicklime = 1.32kg Hydrated Lime.

Lime DISSOLVES aluminium and lead and ATTACKS brass.

Boral Cement Quicklime should be tested before use if the age of the product exceeds 3 months.

SAFETY CONSIDERATIONS

Problems in handling lime will not develop if some simple precautions are taken. Quicklime dust on the skin or in the eyes can cause burns. Where dust may be encountered (in emptying bags or in working in a lime handling plant), workers should wear snugly fitting safety goggles with side shields and a lightweight filter mask.

Workers exposed to Quicklime dust should also wear long-sleeved shirts, trousers, head protection and gloves. Use of a protective cream on exposed parts of the body is advisable.

The greatest risk of serious injury when it comes to lime is when it comes in contact with the eyes. Special attention must be paid to eye protection and flushing facilities should be readily available to clear lime from eyes should contact occur.

For further details please contact the Lime Department for a Material Safety Data Sheet on **02 9033 4000** or visit the Boral Cement website.

IMPORTANT NOTE

The information and/or specifications contained herein are given in good faith as being true and accurate but no liability is accepted by us, our employees, distributors, representatives, or agents for any loss or damage, direct or indirect, resulting from using the information, following the specifications or adopting recommendations and/or suggestions as actual conditions of use are beyond our control.

The information in this Data Sheet and any advice given should be viewed as a guide only. Boral makes no guarantee of the accuracy or completeness of the information and recommends you conduct your own testing to determine suitability for your specific purpose.

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