

Premium Hydrated Lime

Boral Cement is a manufacturer and supplier of Premium Hydrated Lime. The product’s purity and surface area facilitate its chemical reactivity and settling rate. Boral Cement’s commitment to quality ensures these highly desirable characteristics are consistently produced providing users with a low residue, quality material.

TYPICAL APPLICATIONS

Premium Hydrated Lime is manufactured for the stabilisation of road surfaces.

Premium Hydrated Lime can also be used as a filler in asphalt to improve resistance to high temperature rutting.

Premium Hydrated Lime is supplied to the water treatment industry for softening, pH adjustment/coagulation and removal of impurities.

Premium Hydrated Lime assists with the removal of acidic gases that are harmful to the environment particularly sulphur dioxide and hydrogen chloride from flue gas.

Boral Cement’s Premium Hydrated Lime is manufactured and tested to AS 1672/1997.

A typical analysis is listed below:

Constituents		% Dry
Calcium Oxide	CaO	72.5%
Magnesium Oxide	Mg ₃	0.7%
Aluminium Oxide	Al ₂ O ₃	0.5%
Silicon Dioxide	SiO ₂	1.1%
Available Lime Index (as Ca[OH] ₂)		>90%
Loss on Ignition		24-25%
Residue 75µm (200 mesh)		>3.5%
Specific Gravity		2.0-2.2
Bulk Density		450 - 500kg/m ³

Tabulated data is based on results of information collected by Boral laboratories from internal and external sources.

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 Hydrated Lime is the hydrated oxide of calcium – Ca[OH]₂.

When water is added to the quicklime, it hydrates, or slakes to form calcium hydroxide (hydrated lime).

Calcium Oxide = Calcium Hydroxide



PHYSICAL/CHEMICAL TESTS FOR LIME

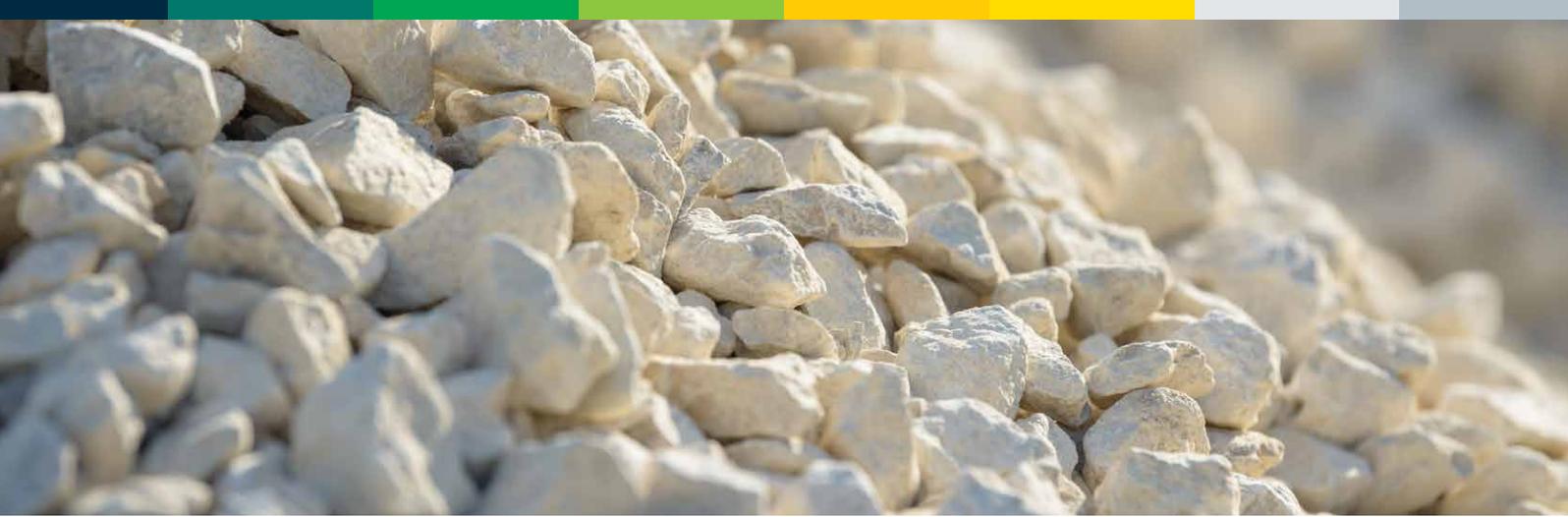
The Australian Standard covering lime manufacture and testing methods is “AS 1672-1997 – Building Limes”. This specification lays down the main physical and chemical requirements for high-calcium hydrated lime.

Physically, a high-calcium hydrated lime such as Boral Cement’s must meet tests for Fineness: specifies maximum sieve residues. Soundness: shows the effectiveness of hydration.

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.



Premium Hydrated Lime

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

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PACKAGING AND DELIVERY

Premium Hydrated Lime is available in bulk, delivered in typical 22 tonne loads by 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.

Premium Hydrated Lime may also be packaged into bulk bags 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 non-corrosive 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, with 70 degrees being desirable for Premium Hydrated Lime.

Air pads are also recommended for Premium Hydrated Lime, starting half-a-metre (up) and running through to 1.5 metres above the silo outlet. They should be connected to a source of aeration, reducing bridging. Vibrators can be installed in Hydrated Lime storage bins but can exacerbate “hang-ups” and “bridging” when operated incorrectly.

Premium Hydrated Lime	
Solubility (20°C)	1.65 g/L
(30°C)	1.53 g/L
Angle of repose – Fines	15-80°
Melting point	2570°C
Slurry Density	
S.G. 1.00	0
S.G. 1.08	130
S.G. 1.16	270
S.G. 1.23	390

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NEUTRALISING ABILITY (NOMINAL)

1.32 kg Premium Hydrated Lime = 1.00kg Quicklime.

NEUTRALISING ABILITY (TYPICAL PRODUCT)

1.26 kg Premium Hydrated Lime = 1.00kg Quicklime.

Lime DISSOLVES aluminium and lead and ATTACKS brass.

Boral Cement's Premium Hydrated Lime should be tested before use if the age of the product exceeds three months.

SAFETY CONSIDERATIONS

Problems in handling lime will not develop if some simple precautions are taken.

Prolonged exposure to Premium Hydrated Lime may cause drying and chapping of sensitive skin.

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 well-fitted P2 mask or better.

Workers exposed to Premium Hydrated Lime 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 is when lime 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 safety information consult the Safety Data Sheet for the product available at www.boral.com.au/cement.

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.

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