Off White Cement

PRODUCT DATA SHEET

Boral Cement's Off White Cement is a special purpose cement that exceeds the requirements of AS 3972 (general purpose and blended cements) as a type GP cement. It is produced from specially manufactured light coloured portland cement clinker that provides the unique colour of this cement.

USES

Off White Cement is suitable for professional tradespeople and for jobs around the house for a broad range of applications but is particularly suitable for the following applications.

- Mortars for face bricks
- Rendering
- Tile grouts
- Decorative pavers
- Pebblecreting of pools when mixed with coloured pebbles or white pebbles or sand.
- Terrazzo manufacture
- When used with an oxide it produces a deeper clearer colour than using grey cement. This is most evident when using light coloured oxides such as yellow.

For a more brilliant white finish use Southern White Cement.

Off white cement offers poor resistance to sulfate attack. Do not use Off White Cement in situations where sulfate attack is likely.

PROPERTIES

The performance of Off White Cement when tested using Australian standard test methods under standard conditions will typically be within the ranges given in the following table:

Property	Off White Cement	AS 3972
Setting Time:	**Typical:**	**Requirement:**
Initial	1-2 hours	45 minutes minimum
Final	2-3.5 hours	6hrs maximum
Soundness:	1.0mm	5.0mm maximum
Fineness	320-420m^2/kg	
Comp. Strength:		
3 day	32-40 MPa	
7 day	42-52 MPa	35 MPa minimum
28 day	55-67 MPa	45 MPa minimum
Lightness	68-72	

COMPATIBILITY

Off White Cement be blended with other cement complying with AS 3972 (general purpose and blended cements) or fly ash complying with AS 3582.1 (supplementary cementitious materials – fly ash). However, the blend would have different properties to those given in the previous table. In particular it will have a different colour. Even when a slightly darker appearance is required it is not recommended to blend Off White cement with other cementitious materials as it will be difficult to maintain a consistent colour. It would be preferable to achieve the desired colour by adding an appropriate oxide.

Off White Cement is also compatible with admixtures complying with AS 1478.1 (chemical admixtures for concrete and mortar). Admixtures should be used in accordance with the manufacturer's recommendations.

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COLOUR

Colour comparison: The colour of Off White Cement is controlled within close tolerances using a spectrometer. The colour falls midway between the grey normally associated with General Purpose cement and Southern White cement.

Colour control in concrete: The colour of the concrete will be influenced by the mix design, water content and the colour of sand. For projects likely to continue over a long period of time use sands that have an acknowledged colour consistency. Otherwise sufficient sand should be stockpiled for the whole project.

Slump control is essential: It is recommended that concrete that fails to comply with the slump tolerances contained in AS 1379 (specification and supply of concrete) is not used.

Colour control in mortar: Best results are achieved by the careful selection of a white coloured bricklayers sand. Coloured bricklaying sands may be used to produce some natural mortars i.e. creams to yellow.

BATCHING

For mortars and concrete accurate measurement of each constituent including water and admixtures is essential to produce a satisfactory and consistent product. Measurement can be by weight or by volume however the mix designs suggested in this product data sheet are based on volume batching.
When batching by volume, containers with a known volume such as buckets should be used for cement, sand and water, smaller containers are required for admixtures and oxides.

Accurate consistent batching is essential to maintain a consist colour throughout the project. Measuring volumes by shovel or trowel is not sufficiently accurate.

MORTAR AND RENDER PROPERTIES

MIX CONSTITUENTS

Off White Cement is suitable for the manufacture of concrete and mix designs for different applications given below. The quality of the other constituents will have a significant impact on the strength, durability and colour of the final product.

Use sand and coarse aggregate (blue metal and gravel) that are well-graded and clean. The Australian Standard AS 2758.1 specifies the requirements for coarse aggregates and sand used for concrete. Sand has a significant affect on the colour of the concrete so only use sand that has a record of consistent colour or stock pile sufficient sand for the whole project.

Use clean water. Water containing dissolved salts or organic matter will adversely affect the strength, durability and appearance of the concrete. The Australian Standard AS 1379 (specification and supply of concrete) includes requirements for the quality of water used for concrete.

MIX DESIGN

Off White Cement is suitable for most concrete applications. Where it is proposed for use in structural applications refer to the Australian Standard AS 1379 (specification and supply of concrete). If the concrete is to be used in a severe environment the durability requirements of the concrete should be assessed by a professional engineer.

As a guide for non-structural concrete in a benign environment the following mix designs can be used.

Application	Mortar Class (AS 3700)	Cement	Hydrated Lime	Sand
General use	M3	1	1	6
Severe Exposure * Subject to saline wetting and drying * Aggressive soils * Industrial * Severe marine	M4	1	0.5	4.5
General rendering	N/A	1	0.5	4

CONCRETE PROPERTIES

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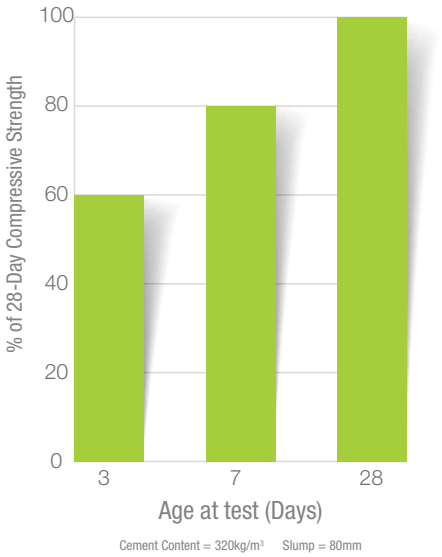
STRENGTH DEVELOPMENT

The following graph gives indicative data on the strength development of concrete containing Off White Cement.



The data is based on concrete tested under laboratory conditions.
The strength development in the field will be dependent on the ambient conditio*ns.*

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As a guide for non-structural concrete in a benign environment the following mix designs can be used.

Application	Cement	Sand	Stone/Gravel
General use: paths etc.	1	2.5	4
Higher strength	1	2	3

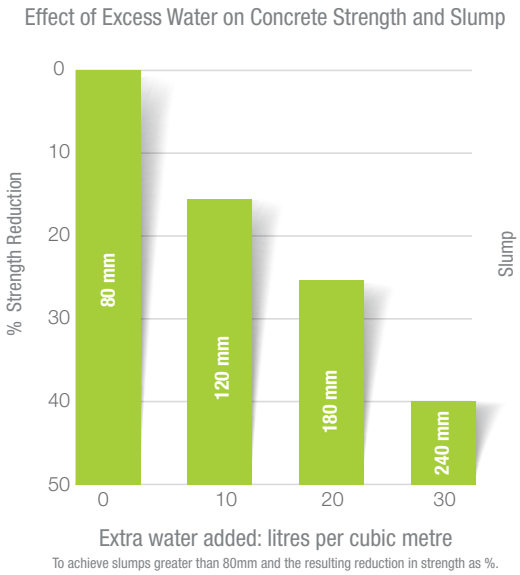
Figures shown are parts by volume

MIXING

If mixing concrete by hand, thoroughly mix all the aggregates and the cement before adding any water. Then add the minimum amount of water required to achieve the desired workability and mix again. If using a concrete mixer, mix the concrete in accordance with the manufacturers recommendations. For ready mix concrete refer to the requirements of the Australian Standard AS 1379 (specification and supply of concrete).

EFFECT OF EXCESS WATER

Use only the minimum amount of water to mix and place the concrete. Excess water will have a detrimental effect on the compressive strength and other properties of concrete. The following graph shows the reduction in concrete strength with increased water addition.



Other factors that will affect the strength and durability of concrete.

- Mix design including admixtures
- Temperature – ambient and that of the materials
- Air content
- Compaction
- Curing

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PLACING AND FINISHING

The concrete should be compacted and given a suitable finish. The type of finish has a significant affect on how light reflects on the surface. A wood float finish or broom finish will reflect less light than a steel trowel finish that will affect the appearance of the concrete.

Adequate cover to the reinforcing is required to avoid corrosion. The Australian Standard AS 3600- Concrete structures provide the requirements for the depth of cover.

CURING

Concrete should be prevented from drying out for at least seven days by either keeping the surface wet or applying a curing compound that complies with AS 3799 (liquid membrane forming curing compounds for concrete). Using plastic sheeting is not recommended when a consistent colour is required. Good curing will have the following benefits.

- Improve compressive and flexural strength
- Reduction in the potential for plastic shrinkage cracking.
- Improved abrasion resistance
- Reduction in the carbonation rate which will reduce the likelihood of reinforcement corrosion.

AVAILABILITY

Off White Cement is available in bulk and 20kg bags.

CLEANUP AND STORAGE

Avoid generating dust. Clean up by vacuum or sweeping.

Contact with air and moisture will cause hydration of the cement and alter the cement properties. The 'shelf life' of Off White Cement is dependent on the storage conditions.

Bag product should be off the ground and stacked to allow free circulation of air. Bags are not waterproof. It is recommended that Off White Cement be tested prior to use if the age of the cement exceeds three months or earlier if the storage conditions are not ideal.

SAFE HANDLING

Both dry and wet cement are hazardous and must be handled with care.

Exposure to dry cement dust can irritate eyes, skin, nose, throat and the upper respiratory system. Wet cement is alkaline and can cause skin irritation and can burn skin and eyes.

Avoid direct contact with both dry and wet cement. Wear suitable protective "clothing including gloves, barrier cream, goggles and a face mask. If cement comes into contact with skin or eyes wash it off immediately.

Where possible use mechanical aids or share the load with another person.

Seek medical assistance if the cement causes a physical injury.
Follow the instructions on the bag and for more safety information read the Safety Data Sheet which is available at www.boral.com.au.

PRODUCT SUPPORT

NSW, ACT & QLD 1800 721 258
VIC, SA & TAS 1800 673 571

www.boral.com.au

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