

High Early Strength Cement

PRODUCT DATA SHEET

Boral Cement's Blue Circle® High Early Strength Cement is a special purpose cement complying with AS 3972, Type HE. It is manufactured from specially prepared portland cement clinker and gypsum. Is more finely ground than cement, but chemically similar.

USES

High Early Strength Cement can replace General Purpose Cement in all applications but is commonly specified where higher than normal early strengths are required. Concrete product applications (roof tiles and masonry blocks), precast and tilt-up concrete and where early stripping of formwork is desired.

CEMENT PROPERTIES

High Early Strength Cement		AS 3972 Type HE
Setting Time:	Typical:	Requirement:
Initial	1.5-3 hours	45 minutes minimum
Final	2.5-4 hours	10 hours maximum
Soundness:	1.0mm	5.0mm maximum
Comp. Strength:		
Mortar Prism:		
1 day	26-29 MPa	No Requirement
3 day	38-45 MPa	25 MPa minimum
7 day	51-58 MPa	40 MPa minimum
28 day	62-70 MPa	No Requirement

COMPATIBILITY

Although High Early Strength Cement is compatible with other AS 3972 cements and AS 3582 supplementary cementitious materials (slag or amorphous silica), blending is not recommended as the strength gain characteristics may be affected.

Trials must be done to ascertain the suitability of High Early Strength Cement blends with any other product.

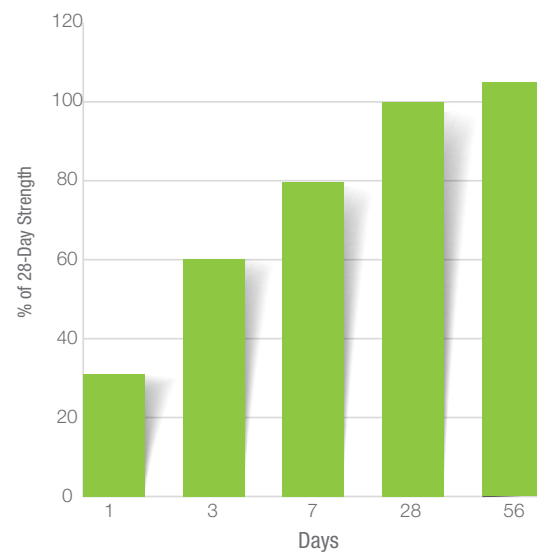
CONCRETE PROPERTIES

The composition and the fineness of High Early Strength Cement delivers faster strength gain when compared to coarser cement. Early strength depends on the water to cement ratio, types of admixtures used and the environmental factors such as the ambient temperature.

COLD WEATHER CONCRETING

The pre-hardening period during which concrete must be protected against frost may be reduced if High Early Strength Cement is used, especially if higher cement content is used.

RATE OF STRENGTH DEVELOPMENT OF HIGH EARLY STRENGTH CEMENT

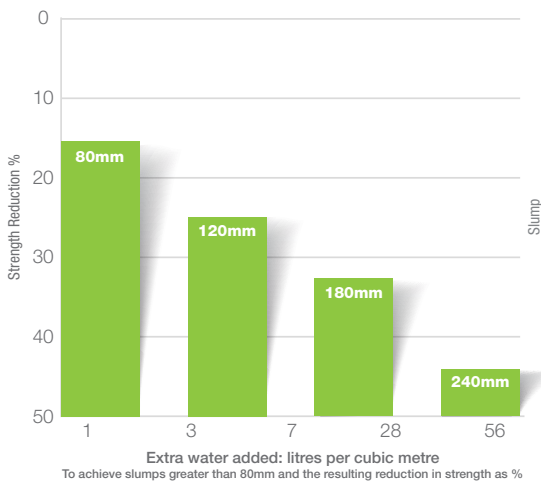


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EFFECT OF EXCESS WATER

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.

EFFECT OF ADDITION OF EXCESS WATER ON CONCRETE STRENGTH AND SLUMP



Other factors that affect the strength and durability of concrete containing High Early Strength Cement are:

- The mix design, including admixtures.
- Temperature (ambient and materials).
- Air content.
- Compaction of concrete.
- Curing of concrete.

MIX DESIGN

Dense, fully compacted concrete of low permeability is essential to minimise the aggressive effects of sulphate and chloride attack. Careful selection of mix components is essential and reference should be made to AS 1379 – The Specification and Manufacture of Concrete and AS 3600 – Concrete Structures when selecting the required strength and cement levels appropriate for the required durability.

MIXING

AS 1379 gives requirements for material quality and mixing of ready-mixed concrete. Presence of salts and organic matter in aggregates and mixing water may affect concrete performance and relevant requirements of AS 1379 must be observed.

PLACING

AS 3600 gives requirements for handling, placing and finishing of concrete. Exposure classification usually determines both the quality of concrete and the depth of cover to reinforcement. Appropriate selection of the exposure classification is therefore critical.

CURING

A minimum curing period of seven days or longer, depending on the exposure classification, is required and should begin as soon as practicable. Wet or moist techniques may be suitable, including curing compounds to AS 3799 or polyethylene sheeting.

Concrete will benefit from curing in terms of reduction in shrinkage cracking potential, improved surface quality with respect to abrasion resistance, permeability to air and water, improved carbonation resistance.

AVAILABILITY

High Early Strength Cement is available in bulk and 20kg bags.

STORAGE

The “shelf life” of High Early Strength Cement is dependent on the storage conditions, as contact with air and moisture will cause deterioration in cement performance. Cement bags are not waterproof and should be stored off the ground, in as dry a condition as possible. Cement storage silos must be kept in good repair, with no damp air or moisture ingress.

It is recommended that High Early Strength Cement be re-tested if the age of cement exceeds three months.

SAFE HANDLING

This product contains cement chemicals and trace amounts of hexavalent chromium. Avoid generating dust. Use personal protection equipment against exposure and alkali burns. Wash product off unprotected skin immediately with water. The use of goggles, dust masks, barrier creams and rubber gloves is recommended.

For further safety information consult the Safety Data Sheet for the product.

PRODUCT SUPPORT

NSW, ACT & QLD
1800 721 258

VIC, SA & TAS
1800 673 571

www.boral.com.au

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