Product datasheet

SULFATE RESISTING CEMENT

PRODUCT DESCRIPTION

Sulfate Resisting Cement, Type SR, conforming to Australian Standard AS 3972.

Sulfate Resisting Cement is manufactured for Adelaide Brighton Cement Limited by Northern Cement Limited to exacting standards at our Darwin works for use in the construction and building industry, and domestic applications.

SUPPLY

Sulfate Resisting Cement is available in bulk, bulk bags, and 20 kg multi-walled paper bags from the Birkenhead works and customer service centres in regional areas. Paper bags are palletised and stretch wrapped.

SPECIFICATION

Sulfate Resisting Cement exceeds the minimum specification for Type SR, LH, and GB cement given in AS 3972.

Sulfate Resisting Cement is manufactured under a third party certified manufacturing and supply quality assurance system to ISO 9001 (BSI Certification No FS 604665).

Sulfate Resisting Cement is produced from Portland cement clinker, ground granulated blastfurnace slag, and gypsum.

APPLICATIONS

Sulfate Resisting Cement is used in concretes and mortars where the possibility of attack by sulfate bearing waters and soils is high. For example, marine conditions, sewage treatment works, or where sulfates are in the soil (wherever salts occur naturally within the soil or as contamination from industrial wastes).

The sulfate attack of concrete is simplistically explained as a result of the reaction between free and mobile sulfates and cementitious alumina bearing compounds in the concrete (from the cement) to form a complex and expansive crystalline mineral. The mineral product of this reaction is characterised by crystal growth of greater volume than the original hydrated cement matrix. This expansive crystalline growth ultimately leads to internal stresses in the concrete structure and general weakening of the concrete.

Sulfate Resisting Cement has a low content of alumina bearing compounds. This minimises the material liable to sulfate attack and reduces the possibility of expansive products forming.

When utilising Sulfate Resisting Cement in concrete where sulfates are present either within the soil or in sulfate bearing waters, minimum cement contents and maximum water cement ratios should be as recommended in the CCAA Technical Note 68 “Sulfate Resisting Concrete” and AS 3600.

As Sulfate Resisting Cement exceeds the requirements of Type LH cement, it can also be used in mass-fill structural pours where there is a need to control the rate of internal concrete temperature rise (heat of hydration) in order to reduce the risk of thermal cracking.

Supplementary cementitious materials (SCM’s):

Sulfate Resisting Cement is compatible with fly ash, amorphous silica, and ground granulated blast furnace slag conforming to the relevant sections of AS 3582.

Admixtures for concrete:

Sulfate Resisting Cement is compatible with concrete admixtures complying with AS 1478.

TYPICAL PROPERTIES

Sulfate Resisting Cement, containing slag, has enhanced workability and may set a little slower than Type GP cement. The ultimate strengths of the two cements are roughly equivalent.

Characteristics of Sulfate Resisting Cement compared to General Purpose Cement:

- Increased concrete bleed.
- Improved workability, compactability, flowability and plasticity.
- Extended setting times and slower initial strength development.
- More sensitive to poor curing practices.
- Lower heat of hydration.
- Better resistance to chemical attack (with adequate cement content).

Typical chemical properties

Test	Units	Max AS 3972	Typical values
Sulphur trioxide	%	3.5	2.7
Loss on ignition	%	-	0.5 – 1.5
Chloride	%	0.1	0.01
Equivalent alkalis	%	-	0.5
Hexavalent chromium	mg/kg	-	Trace
Crystalline silica	%	-	Trace
Components:			
Portland clinker	%	-	25 – 45
Slag	%	-	50 - 70
Gypsum	%	-	5 - 7
Mineral addition	%	-	up to 7.5

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Typical physical properties

Test	Sulfate Resisting Cement	AS 3972 requirement
Fineness index (m^2/kg) AS 2350.8		
	350 - 450	-
Setting time (hr:min) AS 2350.4		
Initial	2:55	Min 0:45
Final	4:15	Max 10:00
Soundness (mm) AS 2350.5		
	<3	Max 5
Mortar expansion due to sulfate exposure (microstrain) AS 2350.14		
16 weeks	100 - 450	Max 750*
Compressive strength ISO-CEN mortar bars (MPa) AS 2350.11		
3 day	9 - 17	-
7 day	22 - 32	Min 20
28 day	39 - 55	Min 35
Peak temperature rise (°C) AS 2350.7		
	18 - 23	Max 23

Note:

* When testing the sulfate resistance of cement mortar the difference in sulfate expansion between tests in the same laboratory, under conditions of repeatability can be up to 150 microstrain. To satisfy the requirements of sulfate resistance no single test may exceed 750 microstrain after 16 weeks.

HANDLING AND STORAGE

Transportation may be in bulk road or rail tankers, or in paper bags.

Manual handling of bag products without due care and attention may result in personal injury. Unless you have been trained in manual handling methods, it is suggested that you share the load with another person.

Sulfate Resisting Cement can be stored in concrete or steel silos, and bags for up to six months provided protection against ingress of moisture is observed throughout the storage of the product. To achieve optimum results, ideally use within 3 months of purchase.

Ingress of moisture can occur due to rain, liquid spillage (on or around the product) or a high humidity climate. Such exposure will degrade the performance of the product.

Do not use if the product has become hard or lumpy.

SAFETY INFORMATION

For safety information refer to the safety datasheet for Sulfate Resisting Cement.

CONTACT POINTS

For further information contact the Sales and Marketing department at:

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