

Sulfate Resisting PORTLAND CEMENT (SRPC)

Technical Data Sheet



Sulfate resisting Portland cement (SRPC) is manufactured locally to comply with the requirements of BS EN 197-1 Sulfate resisting cement strength class 42,5R and ASTM C150 Type V. It is recommended as to improve the performance of concrete where the risk of sulfate attack may be present. It also provides improved durability for concrete in most aggressive environments, reducing the risk of deterioration of the structure and structural failure.

Applications

Sulfate-resisting cement is specified in concrete for certain sulfate exposure classes as described in BS EN 206:2013+A1:2016, typical applications include concrete structures in sewage treatment works, and substructures on reclaimed ground. Guidance on the use of SRPC in reinforced concrete in contact with seawater is given in BS 6349. Due to the lower level of alkalis in SRPC, arising from its chemical composition, it is sometimes used to provide greater resistance to the risk Alkali-Silica Reaction in concrete.

AKCC's SRPC is suitable for use with a wide range of additives and admixtures to extend the properties and uses of concretes. Sulfate Resisting Portland cement is recommended to improve durability. AKCC's SRPC may be used in a wide range of mortars and concrete. It is manufactured to comply with BS EN 197-1 and ASTM C150 Type V.

AKCC's SRPC is recommended to meet the following requirements:

- To minimize the risk of chemical attack resulting in concrete deterioration and structural failure, Sulfate Resisting Cement should be specified in the following applications:
- Abattoirs, piggeries, feedlots and food processing plants
- Geothermal areas
- Sewerage treatment plants
- Mines and other acidic soil environments
- Dairying, forestry, fishing and other environments with structures susceptible to chemical attack
- Riverbank and marinas
- Sea walls, dams and reservoirs
- Water and sewage pipelines and treatment plants
- Off-shore platforms

- Bridges and any other submerged structures in tidal and splash zones

Quality

AKCC's SRPC cement is produced using carefully selected raw materials. Strict quality control throughout each stage of the manufacturing process ensures that a consistent final product is achieved. It confirms that in addition to applying a system of factory production, control independent sampling and testing of the cement has confirmed conformity with all the requirements of BS EN 197-1 and ASTM C150 Type V.

Reports of tests providing data on fineness, setting times, soundness, chemical composition including alkali levels and compressive strengths of mortar prisms, are available on a weekly basis.

Strength

Optimum performance in terms of strength and durability is achieved in concrete when the water/cement ratio is kept as low as possible, consistent with ensuring satisfactory placing and thorough compaction.

Other factors affecting strength include conditions of curing as well as the individual properties of the constituent materials and their proportions in the mix.

The potential strength of any Sulfate Resisting cement based product will best develop under conditions where loss of mixing water is minimized during initial hardening. Appropriate curing for optimum performance is essential as well as preventing moisture loss to the surrounding materials. The rate of strength development will depend on ambient conditions and the initial temperature of the mix. As a general rule, concrete should be placed within the range of 10°C to 30°C. In hot weather, freshly poured concrete should be protected against risk of loss of water by evaporation; cracking caused by thermal stresses and reduced ultimate strength.

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Concrete mix design

Concrete mix design needs to be varied to suit individual circumstances. It is strongly recommended that trial mixes are carried out prior to commencement of work to ensure that the mix design and material combinations meet the requirements of the specification and method of use.

Please refer to current standards and recommendations for the manufacture of concretes renders, mortars and screeds.

Admixtures and additions

Admixtures such as air entraining agents and workability aids, extenders such as ground granulated blast furnace slag, Silica Fume and Fly Ash are compatible with AKCC's SRPC. It is recommended that trial mixes are carried out to determine optimum proportion.

Availability

AKCC's SRPC is available in bulk tankers throughout the state of Qatar.

Major Mineral Constituents in Portland cement

Compound	Abbreviation	Chemical Formula	Typical Concentration %
Tricalcium Silicate	C3S	$3\text{CaO}\cdot\text{SiO}_2$	60 – 70
Dicalcium Silicate	C2S	$2\text{CaO}\cdot\text{SiO}_2$	6 – 15
Tricalcium Aluminate	C3A	$3\text{CaO}\cdot\text{Al}_2\text{O}_3$	3.5 Max
Tetracalcium Alumino-ferrite	C4AF	$4\text{CaO}\cdot\text{Al}_2\text{O}_3\cdot\text{Fe}_2\text{O}_3$	8-15

Technical Support

For further advice please contact Technical Support at technicalsupport@alkhalijcement.qa