



# مصنع اسمنت الشارقة SHARJAH CEMENT FACTORY

## MODERATE SULFATE RESISTING PORTLAND CEMENT

Sharjah Cement Factory Sulfate resisting Portland cement products are manufactured to comply with the requirements of BS 4027:1996. In addition we manufacture C150 - 09 Type II and Type V, Moderate sulfate resisting cement and sulfate resisting cement respectively.

### Application

Sulfate ( $SO_4$ ) is a chemical compound found in some soils and water that attacks concrete. Sewage and some ground waters both contain dangerous amounts of sulfate. Dissolved in water, sulphate will penetrate hardened concrete and attack it by converting calcium aluminates and sulphaaluminates into calcium sulphaaluminates (Ettringite). The effect on the concrete is expansion which tears the concrete apart.

Type II cement Moderate Sulfate resistant cement has greater resistance to sulfate attack than Type I because the amount of tricalcium aluminate ( $C_3A$ ) in Type II cement is limited to less than 8%. The calcium aluminates are the compounds in hardened cement with which the sulfate reacts, therefore taking them out of cement prevents or limits the formation of the expansive compounds. The  $C_3A$  content in Type V high sulfate resistant cement is limited to less than 5%. Cement manufactured to BS 4027:1996 is required to have a  $C_3A$  content of less than 3.5%.

In ground conditions requiring increased resistance to chemical attack Sharjah Cement Factory SRPC, manufactured to comply with BS4027:1996, Moderate Sulfate resistant cement C150 - 09 type II and C150 - 09 Type V Sulfate resistant cement is recommended to give improved durability and service life. In addition these cements offer a moderate reduction in the heat of hydration.

### Quality

Sharjah Cement Factory OPC 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. Portland cements are predominantly compounds of calcium silicate and calcium aluminate with a small proportion of gypsum. They are produced by burning or sintering, at a temperature in excess of  $1400^\circ C$ , a finely ground mixture of raw materials which contain predominantly calcium carbonate, aluminium oxide, silica and iron oxide. The cooled clinker formed is ground under controlled conditions with the addition of typically 5% gypsum.

Technical information on the quality of Sharjah Cement Factory SRPC is available to customers on request from Sharjah Cement Factory marketing department. Reports of tests providing data on fineness, setting times, soundness, chemical composition including alkali levels and compressive strengths of mortar prisms, are also 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 Portland cement based product will only be best developed under saturated conditions. Loss of any water to the surroundings should be guarded against and for a period of at least seven days precautions should be taken to keep the concrete moist and to prevent premature drying. The rate of strength development will depend on ambient conditions and the initial temperature of the mix. At higher temperatures there is increased risk of loss of water by evaporation, cracking caused by thermal stresses and reduced ultimate strength.



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