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## Cem 1 Portland Cement technical data sheet

Cem 1 Portland Cement (PC) is manufactured to comply with the requirements of BS EN 197-1 : 2000 type CEM I Portland cement strength class 42,5/52.5N.

Cem 1 Portland Cement is recommended as a general purpose cement for use in concretes, mortars, renders, screed and grouts.

### Applications

Portland cement is the most commonly used cement for a wide range of applications. These applications cover dry-lean mixes through general purpose ready-mix, to high strength pre-cast and pre-stressed concretes.

PC is suitable for use with a wide range of additives and admixtures to extend the properties and uses of concretes. Sulfate resisting cement, is recommended to give improved durability (see Hanson's Sulfate-resisting Cement). Hanson's PC may be used in a wide range of mortars. For mortars for use in brick and block laying and in renders, Castle Multicem, manufactured to comply with BS EN 197-1 or Castle Masonry Cement, manufactured to comply with BS5224, may give enhanced performance in some circumstances (see Castle Multicem and Castle Masonry Cement).

### Quality

Cem 1 Portland 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.

Each Cem 1 Portland Cement is CE marked under the European Union system of conformity evaluation which provides independent third party certification of product conformity. It confirms that in addition to applying a system of factory production control (defined in BS EN 197-2), independent sampling and testing of the cement has confirmed conformity with all the requirements of BS EN 197-1 (see Quality Assurance).

For further advice please contact Hanson Cement's Technical Helpline on 0845 722 7853. 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 Portland cement based product will best develop under conditions where loss of mixing water is minimised 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 cold weather, freshly poured concrete should be protected against frost to avoid damage. At higher temperatures there is increased risk of loss of water by evaporation, cracking caused by thermal stresses and reduced ultimate strength.

### 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

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## Castle OPC in mortars

Cem 1 PC is suitable for use in a wide variety of mortars for floor screeds, jointing of brick and blockwork and renders for internal and external applications. Performance of mortars will depend on the properties of the sand, mix design and site practice. For any special needs or further advice please contact Hanson Cement's Technical Helpline on 0845 722 7853.

## Admixtures and additions

Admixtures such as air entraining agents and workability aids, extenders such as ground granulated blastfurnace slag and Hanson BS EN 450 Fly Ash, are compatible with Cem 1 PC. It is recommended that trial mixes are carried out to determine optimum proportion.

Please note: Reference to a Technical Standard number in this leaflet is deemed to include the latest published edition and/or any published amendments issued after the standard's publication, unless a date of issue is quoted in which case reference is to the provisions stated in that edition.

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