

| | | |
|------------------|---------------|--------|
| Uniclass L621 | EPIC F2112 | Oct 02 |
| CI/SIB | Eq2 | |

Castle White Portland Cement complies with the requirements of BS EN 197-1 : 2000 type CEM I Portland cement strength class 52,5N.

Castle White Portland Cement is recommended for use in concrete, mortar and renders with or without pigments. The setting properties and strengths of Castle White Portland Cement are similar to grey Portland cements.

Applications

Castle White Portland Cement is naturally chosen for its high degree of light reflection. To obtain white or light coloured concrete specially selected white or light coloured sand and stone aggregates are required. Coloured concretes and renders are achieved by adding pigments to BS1014 : 1975 (1992) Pigments for Portland cement and Portland cement products. For extremely white concrete the white pigment Titanium Dioxide may be added in amounts of up to 5% by weight.

Typical applications for Castle White Portland Cement include:

- cast stone
- renderings
- cladding panels
- roadmarking, kerbs and bollards
- exposed aggregate finishes
- structural concrete
- floor and wall tiles
- swimming pools
- pointing mortars
- terrazzo finishes
- precast units

Quality

Castle White Portland Cement is produced using carefully selected raw materials avoiding minerals which would colour the cement. The resultant clinker is ground in ceramic lined mills to ensure an excellent degree of whiteness. Strict quality control throughout each stage of the manufacturing process ensures that a consistent final product is achieved.

Castle White Portland Cement is licensed under the European Union system of conformity evaluation and carries the CE conformity mark which provides independent third party certification of product conformity. It confirms that in addition to applying a system of factory production control based on BS EN ISO 9002, independent sampling and testing of the cement has confirmed its compliance with all of the requirements of BS EN 197-1.

Technical information on the quality of Castle White Portland Cement is available to customers on request from Castle'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 strength and durability performance is achieved 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. Excessive loss of water by evaporation 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. As a general rule, concrete should be kept 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. The following table gives a guide towards producing durable concrete.

Mixes for durable concrete

| Conditions of exposure | Minimum cement content (kg/m ³) | Maximum free water/cement ratio |
|--|---|---------------------------------|
| Mild | | |
| Concrete surfaces protected against weather or aggressive conditions | 220 | 0.80 |
| Moderate | | |
| Concrete surfaces sheltered from severe rain or freezing whilst wet Concrete subject to condensation Concrete surfaces continuously under non-aggressive water Concrete in contact with non-aggressive soil | 275 | 0.65 |
| Severe | | |
| Concrete surfaces exposed to severe rain, alternate wetting and drying or occasional freezing or severe condensation | 300 | 0.60 |
| Very severe | | |
| Concrete surfaces occasionally exposed to sea water spray, de-icing salts (directly or indirectly), corrosive fumes or severe freezing conditions whilst wet | 325 | 0.55 |
| Most severe/abrasive | | |
| Concrete surfaces frequently exposed to sea water spray or de-icing salts Concrete surfaces exposed to abrasive action, eg machinery, vehicles or water carrying solids | 350 | 0.50 |

Notes:

Recommendations are for unreinforced concrete made using 20mm aggregate. For concretes containing reinforcing steel increase the requirements by one grade. Where the concrete is to be subjected to freezing and thawing conditions whilst wet, or is to be exposed to de-icing salts, controlled air-entrainment should be used.

Admixtures and extenders

Admixtures which are compatible with Castle Portland cements are normally equally compatible with Castle White Portland Cement. It is recommended however that trial mixes are carried out to determine optimum properties. Care should be taken to select an admixture which does not adversely affect the product colour.

Castle White Portland Cement in mortars

Castle White Portland Cement is suitable for use as a mortar in the jointing of brick, cast stone and as internal and external renders. Performance of mortars will depend on the properties of the sand, mix design and site practice. Technical advice on the use of Castle White Portland Cement in mortars is available on request from Castle's Technical Helpline on 0845 722 7853.

For further information please contact:

Castle Cement Limited
Park Square 3160 Solihull Parkway
Birmingham Business Park
Birmingham B37 7YN

Technical Helpline:

tel: 0845 722 7853
(calls charged at local rate)

fax: 01780 727154

technical.help@castlecement.co.uk

Customer Services:

tel: 0845 600 1616
(calls charged at local rate)

fax: 0121 606 1436

customer.services@castlecement.co.uk

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. The paper used to produce this leaflet is totally chlorine free and uses pulp from sustainable forests.

L006(CF)/10/02/pdf