



Sulfate-resisting Portland Cement

B.S. 4027 : 1996 Class 42.5N

Sulfate-resisting Portland Cement (SRPC) is a special purpose cement used where sulfates are present in concentrations that would damage concrete made using CEM I or CEM II cements. Sulfate resistance is achieved by adjustments to chemical composition to limit the level of C3A in the SRPC.

The quality of all SRPC produced by the company is guaranteed to meet in full the requirements of British Standard 4027 : 1996 Sulfate-resisting Portland Cement, and the product is independently certified by the British Standards Institution.

SRPC is made by fusing together at high temperatures a precisely controlled blend of very finely ground limestone, shale, and iron oxide to form cement clinker. A small quantity of gypsum is added to this clinker before grinding to produce the final fine powder – Sulfate-resisting Portland Cement. SRPC is produced in Platin, Co. Meath and is supplied in bulk.

Applications

Sulfate-resisting cement is specified in concrete for certain sulfate exposure classes as described in Irish Standard I.S. EN 206-1:2002 (see National Annex Table NA.7) 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. The suitability of admixtures for use with SRPC should be specifically mentioned on admixture suppliers literature.

Product Data

Regular information is available on the performance aspects of SRPC which are of direct interest to specifiers and users.

The requirements of British Standard 4027 : 1996 (BS 4027) are compared hereunder to typical performance data for Sulfate-resisting Portland Cement class 42.5N.

Setting time

BS 4027 requires a minimum initial setting time of 60 minutes. Initial set for SRPC typically exceeds 100 minutes.

Strength

Minimum compressive strengths for standard mortar prisms of 10MPa at 2 days and 42.5MPa at 28 days are stipulated in BS 4027 for cement class 42.5N, in accordance with particular compliance rules.

Class 42.5N typical mortar prism strengths are in the range 50-60MPa at 28 days for SRPC, with approx. 70% of this strength achieved at 7 days.

Users are particularly interested in strength development and durability in concrete. Strength is significantly affected by mix constituents and proportions, ambient temperature and the efficiency of curing. A durable concrete requires an adequate cement content, a low water/cement ratio and to resist sulfate attack, the correct cement type. Guidance is available in Irish and British Standards for concrete and concrete products and, for all applications, directly from Irish Cement's Technical Marketing Department.





Chemical Composition

Sulfate-resisting Portland cement clinker consists predominantly of compounds formed from calcium, silica, alumina and iron. Calcium sulfate is present in cement due to the gypsum addition to control setting time.

Specific chemical data (e.g. alkalis and chlorides) are provided regularly on test certificates.

Detailed information on chemical and compound composition is available on request.

Test Certificates

Routine product test data covering the key physical and chemical parameters is made available on a weekly basis on request.

Quality Assurance and Certification

In addition to the company's own guarantee, SRPC is independently certified to BS 4027 by the British Standards Institution under their Kitemark scheme for cement.

Irish Cement Ltd holds Quality Systems Certification to I.S. EN ISO 9001: 2008 and Environmental System Certification to I.S. EN ISO 14001: 2004 from NSAI.

Storage

Cement should be stored dry, otherwise its quality will deteriorate through premature hydration and carbonation. Moisture from the air can be as harmful as direct moisture. Cement stored in bulk in a well-maintained silo should maintain its quality for some months.

Health & Safety

Cement is irritating to eyes, respiratory system and skin. Keep out of the reach of children. Avoid contact with the skin and eyes. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. After contact with skin, wash immediately with plenty of water. Wear suitable protective clothing. A chromium VI reducing agent has been added and is effective for 2 months from the date of despatch if stored in dry conditions. A detailed Safety Data sheet is available from Irish Cement Limited (Tel. 041 987 6000).

Advice and Information

As part of its ongoing commitment to the quality of design and construction in concrete, Irish Cement provides a comprehensive technical advisory service on the use of cement and concrete.

This technical support is provided by a team of civil engineers, with wide experience of cement and concrete technology, who are available to answer queries and give advice.

They can be contacted at: Technical Marketing Department, Irish Cement Ltd, Platin, Drogheda, Co Louth.

Tel: 041 987 6464 Fax: 041 987 6400
Email: info@irishcement.ie Web: www.irishcement.ie

Other Cements

Irish Cement Limited also manufactures Normal Cement (Bulk), Rapid Hardening Portland Cement, and Normal Cement (Bagged). Similar data sheets on each of these products are available on request.

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