

Hanson Packed Products

Low Carbon Cement

Technical Data Sheet



Hanson Low Carbon Cement is a factory produced Blast Furnace cement manufactured to the requirements of BS EN 197-1 CEM III/A strength class 42,5L. Hanson Low Carbon Cement offers comparable performance to traditional CEM I cements with significantly less embodied CO₂.

SUSTAINABILITY BENEFITS

- Produces low CO₂ concrete and mortar
- Reduced mineral extraction and landfill
- Meets your criteria for sustainable construction

Typical embodied carbon dioxide (ECO₂) of common concrete mixes.

Concrete	Concrete Grade	Slump	ECO ₂ (kg/m ³)		
			CEM I	30% Fly Ash	(Hanson Low Carbon Cement)
Mass Fill	GEN1	70mm	173	124	98
Foundations*	RC25/30	70mm	318	266	201
Structural Concrete**	RC32/40	70mm	372	317	236
High Strength Concrete**	RC40/50	70mm	436	356	275

Credit – Technical Report 74 – The Concrete Society

* Includes 30kg/m³ steel reinforcement

** Includes 100kg/m³ steel reinforcement



APPLICATIONS

Low Carbon cement is suitable for use in all concrete, mortar and grout above or below ground or where sulfates are present even in high concentrations.

COMPATIBILITY

Hanson Low Carbon Cement is suitable for use with a wide range of admixtures to extend the properties and uses of concretes, mortars, renders and screeds. It is recommended that trial mixes are carried out to determine optimum proportions.

DURABILITY

Hanson Low Carbon Cement has sulfate-resisting properties and has the designation CEM III/A +SR as set out in BS 8500. Sulfates which may occur in soil and groundwater react with the tri-calcium aluminate (C3A) present in most Portland cements causing deterioration of concrete. Hanson Low Carbon Cement reduces sulphate attack and meets the requirements for all sulfate conditions except class DC-4m.

Hanson Low Carbon Cement also offers improved chloride resistance and minimises the risk of alkali-silica reaction and can therefore allow the use of high-alkali reactivity aggregates.

For further information see BS 8500, BRE Digest 330 and BRE Special Digest 1.

MIX DESIGN AND STRENGTH

Concrete mix designs need to be adapted to suit individual circumstances. 28-day concrete strengths using Hanson Low Carbon Cement are similar to those obtained with other cements classified as 42,5N, however early-age strengths are likely to be lower. 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.

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REGEN

Hanson Low Carbon Cement affords its impressive sustainability performance to the inclusion of Hanson Regen GGBS. Regen is a cement substitute, manufactured from a by-product of the iron-making industry. Using one tonne of Regen in concrete reduces the embodied CO₂ by around 900kg, compared to using one tonne of Portland cement.

Environmental Issue	Measured as	Impact	
		Manufacture of one tonne of GGBS ¹	Typical manufacture of one tonne of PC
Climate change	CO ₂ equivalent	0.05 tonnes	0.95 tonnes
Energy use	primary energy ²	1,300 MJ	5,000 MJ
Mineral extraction	weight quarried	0	1.5 tonnes
Waste disposal	weight to tip	1 tonne saved ³	0.02 tonne

1. No account taken of the impact of Iron-making as slag evolves, irrespective of whether it can be used.
2. Includes energy involved in the generation and distribution of electricity.
3. The use of slag for the manufacture of ggbs potentially saves it from having to be disposed of to tip.

Credit - Denis Higgins - Institute of Concrete Technology - Annual technical Symposium 28/03/06 - Sustainable Concrete: How can additions contribute?

QUALITY

Hanson Low Carbon cement is CE Marked in accordance with Constructions Products Regulation 305/2011/EU. In addition to applying a system of factory production control, based on ISO 9001 and defined in BS EN 197-2, independent sampling and testing of the product, known as Assessment and Verification of Constancy of Performance (AVCP) System 1+, also confirms conformity with all the requirements of BS EN 197-1. A Declaration of Performance and CE mark are available online at www.hanson.co.uk.

DATA AND CERTIFICATION

Current data and routine certification of tests for all essential characteristics are available on a weekly basis and can be accessed from www.hanson.co.uk.

HEXAVALENT CHROMIUM (VI)

In accordance with the Regulation EC 1907/2006 (REACH), the soluble chromium (VI) content is limited to a maximum of 2ppm. The chromium (VI) content is determined in accordance with EN 196-10. The maximum shelf life of bulk cement is 4 months.

AVAILABILITY

Hanson Low Carbon cement is available across the United Kingdom in 25 kg bags.

CONDITIONS OF USE

- Methods to prevent loss of moisture from exposed surfaces of concrete, known as curing, should be employed for at least the first 7 days after casting
- 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 from low temperatures to avoid frost damage.
- Hanson Cement cannot be held responsible for poor workmanship.
- Due to the nature of raw materials used in production, slight colour variations may occur

TECHNICAL SUPPORT

For further advice please contact Hanson Cement's Technical Helpline on 0330 123 2441.

HEALTH AND SAFETY

Please refer to Material Safety Data Sheet for full information.

For further information contact:

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