

Heidelberg Materials Low Carbon Cement

Technical data sheet

Heidelberg Materials 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.

Heidelberg Materials Low Carbon Cement offers comparable performance to traditional CEM I cements with significantly less embodied CO₂. Low Carbon cement is suitable for use in all concrete and grout above or below ground or where sulfates are present even in high concentrations.

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	HM 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

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Applications

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

Durability

Heidelberg Materials 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. Heidelberg Materials Low Carbon Cement reduces sulphate attack and meets the requirements for all sulfate conditions except class DC-4m. Heidelberg Materials 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.

The appropriate cement content, water cement ratio and any other requirements set out in BS8500 shall be adhered to in order to meet the required Design Chemical Class. 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 Heidelberg Materials Low Carbon Cement are similar to those obtained with other cements classified as 42,5N. Heidelberg Materials Low Carbon cement contains evoBuild low carbon GGBS which is a latent hydraulic binder which can result in a slower set and lower early-age strengths. 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.

evoBuild Low Carbon GGBS

Heidelberg Materials Low Carbon Cement affords its impressive sustainability performance to the inclusion of Heidelberg Materials evoBuild Low Carbon GGBS. evoBuild Low Carbon GGBS is a cement substitute, manufactured from a by-product of the iron-making industry. Using one tonne of evoBuild Low Carbon GGBS in concrete significantly reduces the embodied CO₂ when compared to using one tonne of Portland cement.

	evoBuild Low Carbon GGBS	CEM I
Global Warming Potential (GWP)	155 kgCO ₂ e/tonne	804 kgCO ₂ e/tonne

Cement type or (equivalent combination)	Clinker proportion of cement %	Main constituent added at cement plant	CO ₂ e Including transport of all materials to cement plant
CEM III/A (CIIIA)	35-64%	36 - 65% GGBS	596 - 369 kgCO ₂ e/tonne

Credit - Mineral Products Association - Fact Sheet 18 - Table 1: CO₂e of UK cements

Quality

Heidelberg Materials Low Carbon Cement is UKCA Marked in accordance with the Construction Products Regulation (Amendment etc.) (EU Exit) Regulations 2020. Independent sampling and testing of Heidelberg Materials Low Carbon Cement, confirms conformity with all the requirements of BS EN 197-1. This is known as Assessment and Verification of Constancy of Performance (AVCP) System 1+. This is also in addition to applying a system of factory production control, based on ISO 9001 and defined in BS EN 197-2.

A Declaration of Performance (DoP) and UKCA mark are available online at www.heidelbergmaterials.co.uk.

heidelbergmaterials.co.uk

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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.heidelbergmaterials.co.uk**

Hexavalent Chromium (VI)

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 Heidelberg Materials Low Carbon cement is 6 months and is stated on the bag.

Availability

Heidelberg Materials Low Carbon Cement is available across the United Kingdom in 25kg 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 5°C to 30°C.
- In cold weather, freshly poured concrete should be protected from low temperatures to avoid frost damage.
- Heidelberg Materials cannot be held responsible for poor workmanship.
- Due to the nature of raw materials used in production, slight colour variations may occur

Health and safety

Cement causes skin, eye and respiratory irritation, severe burns and dermatitis. Always wear suitable personal protective equipment (PPE) and refer to the full Material Safety Data Sheet for further information.

Technical support and further information

Please refer to the Material Safety Data Sheet for full health and safety information

For further advice please contact Heidelberg Materials cement technical support on **0330 123 4525** or **cement@uk.heidelbergmaterials.com**

Further copies of this technical data sheet may be obtained from www.heidelbergmaterials.co.uk