Hanson General Purpose Cement technical data sheet

Hanson Cement is manufactured to comply with the requirements of BS EN 197-1 CEM II/A-LL (Portland-limestone cement) strength class 32,5R and 42,5N (dependent on the version being manufactured at any given point).

Hanson uses the most efficient dry-process kilns to manufacture cement, the benefit of which includes lower energy consumption. These burn up to 60% recycled and non-fossil fuels and use waste as a source of raw material – all of which would otherwise go to landfill or incineration. Hanson is one of the lowest emitters of carbon dioxide per tonne of cement clinker in the UK and is committed to further reductions into the future.

CEM II cement with reduced clinker content which enhances sustainability through the use of carefully selected constituent materials, further reducing the carbon footprint of the cement.
All these cements are CE marked under the Construction Products Regulations 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 its compliance with all of the requirements of BS EN 197-1

Applications

Cement is recommended for general purpose use in concrete, mortar, render and screed.

Quality

Strict quality control throughout each stage of the manufacturing process ensures that a consistent final product is achieved. Cement is CE marked under the Construction Products Regulations 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 its compliance with all of the requirements of BS EN 197-1

Strength

The strength requirements of concretes, mortars, renders and screeds are variable depending on the application and Cement is designed to be adaptable in performance to accommodate most requirements. For a limited range of applications a minimum compressive strength may be required. In such cases the quantity of Cement in the mix will need to be determined through trial mixes using the proposed materials. The potential strength of Cement (or any Portland cement based product) will only be best developed under saturated conditions. Loss of any water 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, mixes should be used within the range of 10°C to 30°C.

Curing Methods

The term curing refers to methods to prevent loss of moisture from exposed surfaces of concrete in the first 7 days after casting, the following are the most common methods.

• Covering with impermeable sheeting insuring that the edges are held down

• Covering with wet sacking but this must be keep wet by spraying with clean water

• Ponding with clean water

• Spraying with a propriety curing membrane preferably pigmented to ensure full coverage

Guide to mix design

Cement in concrete

Cement is suitable for use in a wide range of concretes. Optimum performance in terms of strength and durability is achieved in concrete when the water content 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. 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 and cracking caused by thermal stresses resulting in reduced ultimate strength. For further information on mixes for specific uses see BS EN 206-1 and BS8500.

Suitable mixes for Cement in concrete

Material	Proportions by volume	Yield per 25kg bag of cement	Batch weights per cement bag	Batch weights for 1m³ (approx)
General purpose mix – For most uses except for foundation work and outdoor paving				
Cement	1	0.08m³	25kg	12.8 bags
Concreting sand	2		55kg	680kg
20mm aggregate	3		90kg	1175kg
(combined aggregates)	(4)		(145kg)	(1855kg)
Foundation mix – For footings, foundations and bases for precast paving				
Cement	1	0.09m³	25kg	11.2 bags
Concreting sand	2.5		65kg	720kg
20mm aggregate	3.5		105kg	1165kg
(combined aggregates)	(5)		(170kg)	(1885kg)
Paving mix – For all exposed in-situ paving, e.g. for pool surrounds and driveways*				
Cement	1	0.06m³	25kg	16 bags
Concreting sand	1.5		40kg	600kg
20mm aggregate	2.5		75kg	1200kg
(combined aggregates)	(3.5)		(115kg)	(1800kg)
* It is recommended that proprietary air-entraining agent is added in accordance with manufacturers recommendations to improve durability.				

Concrete mix design needs to be varied to suit individual circumstances. For further advice please call the Hanson Cement Customer Services on 0330 123 2074.

Cement in mortars

Cement is suitable for use in mortars. Mortars must be designed to give the correct strength for the application. An unnecessarily strong mortar will concentrate the effects of any differential movement between the mortar and the brickwork leading to cracking and reduced durability and resistance to rain. A properly designed mortar will accommodate some differential movement and if cracking does appear will generally ensure that it is distributed as hairline cracks in the joints without affecting the integrity of the bricks themselves.

Suitable mixes for Cement in mortar

	Designation/use	Cement: Building sand* (by volume)
I	Conditions where strong dense mortar is essential (e.g. where heavily loaded and some classes of work below ground level)	–
II	Work in severe conditions of exposure to weather; work below DPC	1: 3-4
III	Normal construction	1: 4-5
IV	External work above DPC, if not carried out in winter	1: 7-8
* Small amounts of air-entraining mortar plasticiser may be necessary.		

Cement in rendering

Cement is suitable for use in all types of renders. Care should be taken to ensure that the surface to be rendered is clean and free from dust. Mixes for successive coats should neither be stronger nor thicker than the previous coat. Each coat should be allowed to cure for several days before a subsequent coat is applied.

Suitable mixes for Cement in rendering

Mix type	Uses	Yield per 25kg bag of cement m^2/10mm thick (approx)	Cement: Rendering sand* (by volume)
II	First coat – strong backgrounds and metal lathing. Roughcast and dry-dash	7.5m^2	1: 3-4
III	First coat – moderate backgrounds Second coat – strong backgrounds	10m^2	1: 4-5
IV	First coat – weak backgrounds Second coat – moderate and weak backgrounds	12.5m^2	1: 7-8
* Small amounts of air-entraining mortar plasticiser may be necessary.			

Cement in screeds

Cement is suitable for floor screeds. When mixing screeds ensure that the correct water content is used so that it will hold together without crumbling when pressed into a ball. A pan type of mixer is recommended as most efficient for low water mixes of this type. Precautions should be taken to ensure that water is not lost from the mix before placing and that after compaction the work is covered with plastic sheeting for at least seven days to prevent premature drying out. Newly laid screed should be protected from frost.

Suitable mix for Cement in screeds

Material	Proportions by volume	Yield per 25kg bag of cement	Batch weights per cement bag	Batch weights for 1m^3 (approx)
Cement	1	0.06m^3	25kg	16 bags
Dry screeding sand	3.5	–	112.5kg	1800kg

Admixtures and additions

Cement is compatible with a wide range of air-entraining agents and workability aids to extend further the properties and uses of mixes. However it is strongly recommended that trial mixes are carried out to determine optimum proportions.

Environment

Hanson General Purpose Cement is a reduced CO_2 cement through;

- Energy efficient production
- Use of sustainable fuels
- Contains recycled content

Shelf life
Cement is compliant with the Chromium (VI) Directive and should be used within the declared shelf life shown on the bag.

Availability
Available in 25kg bags.