

Rapid hardening high alumina cement

PRODUCT

weberep 318 FD is a normal setting, rapid hardening High Alumina Cement (HAC) with high early strength.

It differs substantially from the usual calcium silicate cements (Portland cements) in its manufacturing process, chemical composition and rapid strength gain. **weberep 318 FD** is composed of calcium aluminates with the following characteristics:

- High early strength
- Refractoriness
- High abrasion resistance
- Resistance to biogenic sulphuric acid corrosion (BSAC)

weberep 318 FD meets the requirements of British Standard BS 915 for High Alumina Cements and is controlled in accordance with EN 196.

weberep 318 FD is produced by melting selected raw materials (bauxite and limestone) in special kilns.

After cooling, the clinker is ground using ball mills.

TECHNICAL DATA

Chemical composition (%)

SiO ₂	2-5
Al ₂ O ₃	39-42
Fe ₂ O ₃	14-17
CaO	37-40
MgO	< 1.2
SO ₃	< 0.4

Mineralogical composition

weberep 318 FD contains mainly monocalcium aluminate (CA). This mineral phase is responsible for the high early strength. When mixed with water **weberep 318 FD** forms calcium aluminate hydrates as its hydration products. During the hydration of the **weberep 318 FD** no Ca(OH)₂ is created, as opposed to Portland cement.

Mineral phases of weberep 318 FD

Main mineral phase: CA,

Minor mineral phases: C₄AF, C-F-T, C₂AS, C₆fA₄S, C₁₂A₇

Cement technical properties

Bulk density	Around 1.15 g/cm ³
Specific gravity	3.2 - 3.3 g/cm ³
Fineness (blaine)	3000 - 3500 cm ² /g
Refractoriness in cement	Approx 1270 C
Residue on sieve at 90 micrometer	< 5 %



PACKAGING

Leb	Syria	Jordan	UAE	Qatar	Kuwait	KSA	Oman
25 kg	25 kg	25 kg	25 kg	25 kg	25 kg	25 kg	25 kg

Setting time and water demand

The testing of the setting time is performed using the mortar in order to describe the behavior of the **weberep 318 FD** in mixtures with a workable consistency. A mixture containing three (3) parts of standard sand and one (1) part cement with a water/cement ratio of 0.43 is produced for testing the mortar on the basis of EN 196.

Mortar

Initial set	1- 4 hours
Final set	Maximum 120 min after the initial set

DEVELOPMENT OF STRENGTH

After setting, strength develops very rapidly.

weberep 318 FD is cement with very high early strength and high compressive strength. After one (1) day, the compressive strength is higher than that of high grade Portland cements CEM I 52.5 R after 28 days.

Development of strength [N/mm²]

	6h	1d	3d
Compressive strength	30-70	60-100	70-120
Flexural strength	4-8	7-10	9-12

The tests are conducted with mortar prisms 4 x 4 x 16 cm produced according to EN 196 containing three (3) parts

standard sand and one (l) part cement with a water/cement ratio of 0.40.

RESISTANCE TO CORROSION

High resistance to waste waters in combination with extraordinary abrasion resistance and high resistance to biogenic sulphuric acid corrosion (BSAC) makes **weberep 318 FD** an ideal product for sewer systems and waste water plants. When **weberep 318 FD** is mixed with water, the hydration products of calcium aluminates are formed.

They are extremely resistant to aggressive, slightly acid waters (pH factor > 3) including water soluble sulphates.

REFRACTORINESS

After drying out, mortars and concretes made from **weberep 318 FD** slowly emit their hydrate water without destroying the matrix. At high temperatures (> 1000°C), ceramic bonding occurs between the high alumina cement parts and the refractory aggregates. These ceramic bonds make **weberep 318 FD** an excellent binder in refractory concretes and other refractory mortars or gunning mixes.

STORAGE

weberep 318 FD can be stored for 6 months, in its original packaging, in a dry ventilated area.

SAFETY PRECAUTIONS

The product contains cement powders which, when mixed with water, release alkalis that could be harmful to the skin. It is preferable that the application be done in a ventilated area, and to wear protective gear for hands, eyes and respiratory system and to avoid breathing of the dust. Splashes on the skin should be washed away by cleaning with soap and water. In case of contact with eyes, wash thoroughly with clean water. If swallowed, do not induce vomiting, in both cases seek medical attention. The product is non-flammable.

DISCLAIMER

While the company guarantees its products against defective materials, the use and application of these products are made without guarantee since the conditions of their application are beyond its control. It is recommended to verify with the company that the product is suitable for the intended use, and that this Data Sheet version is the latest one. The company may modify it without prior notice. Technical characteristics are listed for guidance only. For more information, please contact the company's office in your location.

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