Ultrafine 20

CEM I 52,5 R - SR 3 LA

APPLICATIONS

Ultrafine 20 is a micro cement with excellent penetration characteristics ideal for extremely demanding injections. It has been extremely finely ground to a specific particle size distribution, that makes it ideal to meet the requirements for demanding injection applications. The unique combination of the special grinding process and the specially selected clinker produce a cement with an excellent penetration capacity in rock and soil.

Ultrafine 20 is sulphate resistant, chromate reduced and low alkaline injection cement.

INJECTION CHARACTERISTICS

Ultrafine 20 makes it possible to manufacture injection grout with extremely good flowing properties even at low water content ratios. Test results show excellent stability, flow and filtering characteristics at temperatures of 20 °C and 8 °C.

STANDARDS AND INSPECTION

Ultrafine 20 complies (with the exception of setting time) with the requirements in SS-EN 197-1 part 1: *Composition, Specifications and Conformity Criteria for Common Cements.*

Designation in accordance with SS-EN 197-1 and SS 13 42 03.

QUALITY AND ENVIRONMENTAL MANAGEMENT SYSTEM

Production and sales are covered by Cementa´s quality system in accordance with SS-EN ISO 9002. The system indicates quality supervisors, routines for in-house inspection, and documentation routines. The buyer is fully entitled to make sure that the seller implements quality routines in accordance with the system. Cementa is also environmentally certified in accordance with SS-EN ISO 14001and continuously works for the environmental improvement of products and production. Both systems are certified by DNV, Det Norske Veritas. The certificate for the quality system is; No. 2001-SKM-AQ-1623 and for the environmental management system is No. 2001-SKM-AE-480.

MANUFACTURING

Ultrafine 20 is manufactured at Cementa's terminal in Degerhamn using a fine grinding process developed by Cementa. Ultrafine 20 is based on the same clinker as Anläggningscement. The grinding is done in mills specially developed for Ultrafine cement.

PACKING AND DISTRIBUTION

Ultrafine 20 is supplied in 20 kg sacks, in big bags or in bulk. The 20 kg sacks are supplied in unit loads of 48 sacks on pallets completely enclosed in plastic. Ultrafine 20 is supplied direct from Cementa's terminal in Degerhamn.

STORAGE

Ultrafine 20 is a finely ground product. Its high reactivity makes it more sensitive than normal cement.
Storage in environments with damp air or direct contact with ground moisture damages the cement very quickly causing negative effects on rheology, penetrability and strenght development. Unbroken bags or sacks can be stored, regardless temperature, without risking the quality and performance of the product.
Since the chromate reduction succesively loses its effect the storage time is limited to:

- Maximum 18 months from date of package for unbroken 20 kg sacks.
- Maximum 12 months from date of package for unbroken bigbag.
- Maximum 6 months from the date of delivery when stored in a dry and sealed silo.

Additives used together with Ultrafine 20 should be stored and used in accordance with the manufacturer`s recommendations.

SETTING TIME AND BET SPECIFIC SURFACE AREA

	Setting time, guideline value (min)	Specific surface area guideline value (m^2/kg)
Ultrafine 20	70	1600

The specific surface area of Ultrafine 20 is determined using the BET method (nitrogen absorption). The product has a very high specific surface area and difficult to determine using the traditional Blaine method.

PARTICLE SIZE DISTRIBUTION

Ultrafine 20 has a particle size distribution where 95 percent of the material is less than 20 µm.

SULPHATE RESISTANCE

Ultrafine 20 has a low C_3A content and satisfies the requirements for sulphate resistance of SR 3 type cement in EN 197-1. Ultrafine 16 normally has tricalcium aluminate (C_3A) content of 2 percent.

ALKALI-SILICA REACTIONS

Ultrafine 20 complies with the requirement for low alkaline content in accordance SS 13 42 03 ($\leq$0.6 percent by weight calculated as equivalent to Na_2O). The cement therefore does not contribute to the concrete damaging reactions with alkali reactive aggregate. Ultrafine 20 has an alkali content of approx. 0.5 percent.

CHROMATES

Portland cement normally includes small quantities of chrome compounds of both the sparingly soluble and soluble types. The latter are considered to be able to contribute to hypersensitivity to chrome and cause eczema in persons already allergic.

Since 1983, therefore, Cementa has produced cement with a reduced chromate content. Nevertheless persons with a developed hypersensitivity to chrome should avoid all contact with cement.

PHYSICAL PROPERTIES

Compact density	approx	3100	-	3200	kg/m^3
Bulk density	approx	800	-	1500	kg/m^3
Specific surface area (BET)		2040 m^2/kg			

CHEMICAL PROPERTIES

The chemical composition is basically the same as for Anläggningscement, but can vary in detail.
A quality certificate is obtainable upon request.

MgO	max. 5,0 % by weight
SO_3	max. 3,5 % by weight
Chlorides, calculated as Cl	max. 0,1 % by weight

HEALTH RISKS

Cement should be stored out of reach of children. It is dangerous if consumed. If cement gets into the eyes it can lead to serious eye injuries. Moist cement forms calcium hydroxide which is an irritant to the skin.

For detailed information and safety instructions please see the *Material Safety Data Sheet*.

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2020-08-05