

Multicem

Portland Cement + CKD



THE PRODUCT

Multicem is a blend of CKD and cement from Cementa. It is ready-mixed in the factory and delivered in bulk trucks. It has equivalent properties and mixing ratio as Kalkcement (KC). The benefit of Multicem compared with KC is the fact that the CO₂ content is around 500 kg lower per tonne of finished product. A lower proportion of virgin material is used in production as the limestone has been replaced with CKD. A lower CO₂ content, combined with a lower proportion of non-virgin material, creates a product with a better environmental profile than KC.

GROUND STABILISATION

Deep stabilisation is an effective method used primarily in loose soils with good volumes of water, at least 20%. The binder reacts with the water that is already in the ground. This is where the so-called Multicem pillars are installed. This produces stable ground in even the loosest soils. Multicem pillars can be installed down to a depth of approximately 25 metres, and the diameter is usually between 400 and 1,000 mm. The centre-to-centre for single pillars distance is usually 0.8 – 1.7 m.

AREAS OF APPLICATION

Multicem is used to reduce subsidence and improve stability. The method is also used reinforce the soil for roads and railway embankments, slopes, shafts and water and sewage pipelines.

STRENGTH

The strength of the Multicem pillars increases with time. It normally increases 10 – 20 times within one month. The increased strength is even down to the maximum depth.

QUALITY AND ENVIRONMENTAL MANAGEMENT SYSTEMS

Production and sales comply with Cementa's ISO 9001 compliant quality system. This system defines who is responsible for quality, internal control procedures and documentation procedures.

The buyer is fully entitled to assure itself that the seller is performing quality procedures in accordance with the system. Cementa also has environmental certification in accordance with ISO 14001 and works continuously on environmental improvements to products and production.

Both systems are certified by DNV, Det Norske Veritas. The certificate for the quality system is as follows: No. 2001-SKM-AQ-1632 and for the environmental system No. +2001-SKM-AE-480.

MANUFACTURING

Multicem is mixed at Cementa's factory in Slite.

PACKAGING AND DISTRIBUTION

Multicem is supplied loose (bulk) directly from Cementa's depots.

APPLICATION

The Multicem pillar is created by using a tool on an excavator to drill down to a specified depth or a more solid layer, max. 25 m. When the correct depth has been reached, a valve is opened and the mixture is forced out and mixed with the soil or clay. The drill is then raised at a predetermined rate of ascension and rotation. This is to make sure that the correct amount of Multicem is applied. The amount is usually 80 – 100 kg/m³ stabilised soil. When the drill reaches the surface, the valve is closed and the machine is moved to the location of the next pillar. This is controlled by means of GPS. All pillars are documented in the machine's computer.

STORAGE

Multicem is a very finely ground product that is more sensitive than normal cement because of its high reactivity.

Storage in an environment with moist air or direct contact with, for example, ground moisture, damages Multicem very quickly (days, weeks). Multicem should not, however, be stored any longer than six months because the chromate reduction applied gradually loses its effect.

STABILISATION CONCEPT

The concept is based on the soil's properties being changed when it is mixed with Multicem. CKD

combined with the increase in the strength of the cement gives Multicem pillars good strength within a short time.

CHROMATES

The cement used in Multicem usually contains small amounts of sparingly soluble and freely soluble chrome compounds. It is believed that the latter may contribute to hypersensitivity and cause eczema in people who are already hypersensitive.

Cementa has therefore been producing chromate-reduced cement since 1983. People with advanced hypersensitivity to chrome should, however, avoid all skin contact with cement.

ECONOMY AND ENVIRONMENT

As this method involves the stabilisation of existing masses, there is no need to remove masses or to transport new base course material, thereby reducing the environmental impact. All transport operations to the mainland are by ship.

Multicem reduces the CO₂ impact by approx. 500 kg/tonne compared with KC and replaces limestone, which is a virgin material.

SAFETY REGULATIONS

See safety data sheets for cement and Multicem.

HEALTH RISKS

Multicem must be stored out of the reach of children and is dangerous to consume. Multicem in the eyes creates a risk of serious eye damage. Moist cement forms calcium hydroxide, which irritates the skin. For complete information and safety instructions, see: Safety Data Sheet.

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