ULTRACHEM
For Construction Chemicals

Ultra - ADD Micro Silica

Hight Preformens Fine powder Silica Fume for Concrete, Shotcrete and Mortars.

Admixtures For Concrete

Product Overview

Silica fume or micro silica is a pozzolanic material that resembles fly ashes or Portland cement in appearance. Silica fume itself consists of non-crystalline or amorphous Silicon Dioxide (SiO2), with particles that are 100 times smaller than a standard cement particle. This means that silica fume particles measure less than 1 micron in diameter and make up a superfine powder with a density of 2.2 g / $cm^{3.}$

Silica fume can be categorized into densified and undensified silica fume:

- Undensified silica fume posessesbulk density of 250-350 kg/m^3.
- Densified silica fume has a bulk density of 550 - 700 kg/m^3.

When one needs to modify or enhance the natural properties of concrete, silica fume can be added to the solution during batching or cement, enhancing the strength and durability of the material.

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Uses

Ultra - ADD Micro Silica is recommended for use in the applications and purposes below.

- Aplicable at traditional and wet system shotcrete applications.
- Aplicable at normal/lightweight, pumped/pumpless concrete production.
- Aplicable at concretes with low cement dosage.
- Favorable for production of high strength concrete.
- Favorable at back fill grouting application performed behind TBM Segments.

Advantages

- Enhances technical properties of every type of concrete such as compressive strength, flexural strength, fracture mechanics and impermeability.
- Decreases chloride permeability.
- Decreases accelerant usage ratio at shotcrete applications and allows application as thicker layers and decreases rebound ratio.
- Very Stable Chemical and Physical Properties , Silica fume serves as a neutral filler with incredibly stable properties, both chemical and physical. It does not contain crystalline water, does not take part in the curing reaction, and does not impact the reaction process in any way.
- Improved Corrosion Resistance, Silica fume is composed of silica, or Si O^2, which is an inert material. This means that silica fume doesn't react with most alkaloids or acids, and the silicon powder is evenly distributed over the surface of objects. As such, silica fume contributes to improved cavitation and corrosion resistance by 3 to 16 times.
- Shortened Induction Period , Adding silica fume to concrete can shorten the induction period and provide early strength.
- Improved Frost Resistance, The relative elastic modulus of micro silica is only 10 to 20 percent after 300-500 freeze-thaw cycles. At the same time, the average elastic modulus of usual concrete is 30 to 73 percent after 25-50 cycles. As such, adding micro silica to concrete can significantly improve its frost resistance.
- Crack Prevention ,Silica fume can reduce the peak temperature achieved during the curing reaction of epoxy resin. In addition, it reduces the shrinkage rate and linear expansion coefficient in solidified concrete, thus reducing the internal stress and preventing cracking.
- Reduced Overall Costs ,The bulk density of silica fume ranges between 0.2 and 0.8 or 1.0 and 2.2. When used as polymer filling material, microsilica can reduce the total cost of the product by saving the amount of polymer and minimizing the amount of loading.

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Description

Ultra - ADD Micro Silica is a mineral additive that can be used for normal and shotcrete that enhances compressive strength, flextural strength, fracture mechanics and impermeability of the cement paste by increasing its micro structure.

Properties

Color	Beton Gray
Density	0,55 - 0,70 kg/litre
Chloride Amount	< %0,1
Blaine	> 15000 m2/kg
Aktivity Index	< %95
Specific weight	2300 kg/m3
Particle Ratio <0,045 mm	< %40
Na_2O	0.028
MgO	0.018
Al_2O_3	0.120
P_2O_3	0.008
SO_3	0.079
K_2O	0.035
CaO	0.044
TiO_2	0.026
$fe2O_3$	0.007
ZnO	0.002
BaO	0.023
Cl	0.032
SiO_2	99.621

Recommended Dosage

The recommended dosage rate of Ultra ADD Micro Silica for general concreting operations is between 7% - 15% of the weight of cement. Overdose may increase water demand to be balanced with Lyksor Nanoment / Nanocast series of high water reducing admixtures. It should be considered that the required dosage of **Ultra - ADD Micro Silica** to achieve a target performance will be different for each concrete mixture. The appropriate dosage should be determined on trial batches. Please contact **ULTRACHEM R&D** department for technical support.

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Cleaning

Concreting tools contact with **Ultra - ADD Micro Silica** can be easily cleaned with water.

Estimating

Supply

Ultra - ADD Micro Silica	25 pag or 600,1000kg big pag.

Storage

Shelf life

Ultra - ADD Micro Silica	12 months when stored in its original package and recommended storage conditions.

Storage Conditions

Ultra - ADD Micro Silica	• should be stored in dry conditions. • It should be protected from frost. • Products that have been subjected to moisture and allowed to dry again might result in inferior performance.

Health and safety

In case of contact with skin, wash with clean water. In case of contact with eye, wash with clean water. Eye contact should be medical consulted immediately.
For further information please refer to Material Safety Data Sheet (MSDS).

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المنطقة الصناعية -أبو رواش - الكيلو 26

طريق القاهرة الأسكندرية الصحراوي - شارع عادل والي

Tel.: 0100 931 8094- 0100 044 9257

Email:sales@ultrachem-eg.com

website: www.ultrachem-eg.com

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