

Micro Silica

Other Product



DESCRIPTION

Micro Silica is a by product of the industrial manufacture of ferrosilicon and metallic silicon in high-temperature electric arc furnaces. It is a mineral admixture composed of very fine solid glassy spheres of silicon dioxide (SiO_2). Most **Micro Silica** particles are generally 50 to 100 times finer than average cement particles.

Micro Silica, also known as Silica fume is fine amorphous grey silicon oxide powder. Added to concrete, it changes the rheology and reacts with the cement hydration products to dramatically improve concrete strengths, durability and impermeability, allowing concrete to be used in ways never before possible.

BENEFITS

Micro Silica improves concrete through its chemical contribution, as adding the water to OPC will cause a hydration that forms Calcium Silicate Hydrates (CSH) + Calcium Hydroxide ($\text{CA}(\text{OH})_2$), as a result the Silicon Dioxide from the **Micro Silica** will react with the $\text{CA}(\text{OH})_2$ to produce more aggregate binding (CSH).

Micro Silica when added in concrete can give the below benefits:

- High ultimate compressive and flexural strength for greater structural capacity.
- High early strength gain for faster turnaround time.
- Low permeability for greater resistance to water and salt penetration.
- Increased abrasion and chemical resistance for a longer life expectancy.
- Greatly improved freeze/thaw and scaling resistance.

PACKAGING

- Bulk delivery on request

FIELDS OF APPLICATION

Micro Silica can be used in almost any applications for concrete containing Portland cement.

- All cement types
- Precast
- Concrete for highly reinforced structures
- Foundation concrete below water table
- High durability concrete
- High performance Concrete - Very High Performance Concrete - Ultra High Performance Concrete
- Ready-mix concrete
- High early age strength
- High early and ultimate strength
- Plastic or fluid concretes
- Pumped concrete
- Self consolidating concrete
- etc

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INDICATIVE INFORMATION

Product Nature	Fine powder
Color	Grey
Loss on calcination	< 4,00 %
Specific gravity	2,250 ± 0,150

METHOD OF USE

Typical addition rates of **Micro Silica** in concrete is <8% by weight of total cementitious content of the mix but can be up to 12.5% or more. To achieve optimum benefits, proper curing in line with good concrete practice should be followed.

The optimum dosage of **Micro Silica** can only be established after trial tests, taking into account local conditions, materials and specification requirements.

Addition rates of **Micro Silica** are dependent upon desired concrete performance characteristics and variables.

Because local job conditions vary, please contact your local CHRYSO sales representative for further assistance if using outside recommended addition ranges.

PRECAUTIONS

- Protect from humidity.
- Store in a well ventilated location.

Micro Silica can be handled in terms of batching, mixing, and delivery of concrete in the same way as cement. In dry powder form, it is often recommended to use aeration system for easy discharge from the silo (if stored in bulk).

Micro Silica when stored correctly has an indefinite shelf life. It must be protected from moisture and contamination as in the case of cement.

Compatibility:

Micro Silica can be used in combination with all types of Portland cement.

Micro Silica is compatible with a wide range of **CHRYSO** admixtures often resulting in more cost effective dosages.

SAFETY

Micro Silica is totally amorphous. Suitable attire and Personal Protective Equipment (PPE) should be used to prevent dust inhalation and direct skin contact. Please refer to the material safety data sheet for additional information.

Prior to any use, please read carefully the Material Safety Data Sheets.