

# HA-BE SILICA FLUID FOR CONCRETE

**Silica fume suspension for durable concrete**





## HA-BE SILICA FLUID

### For sustainable concrete

Silica fume is a very fine powder, which is extracted from exhaust fumes of silicon and ferrosilicon smelting furnaces and utilized in concrete to improve its properties. The main purpose of applying the material in concrete is to use its reactive particles in order to produce a denser cement matrix. During the cement hydration process, the silica reacts with the available lime of the cement to Calcium-hydratesilicate, a durable and volume consistent composite. Silica Fume increases the compressive strength and reduces the permeability of the concrete providing a more durable and more sustainable product. It can be applied as powder or liquefied as slurry.

#### SILICA FUME OPTIMISES THE PARTICLE PACKING TO ACHIEVE THE FOLLOWING BENEFITS:

- ▶ Higher compressive strength
- ▶ Increased durability & sustainability (protection of reinforcement)
- ▶ Enhanced concrete rheology (segregation & bleeding)

## Ha-Be Silica Fluid

### FAQ'S ON SILICA FUME SUSPENSION

Out of durability considerations due to the harsh climate and frequent aggressive soil conditions, the usage of Silica Fume is very common in the Middle East. The liquefied delivery form – Ha-Be SILICA FLUID – offers a scope of benefits which are becoming increasingly apparent.

#### ▶ WHAT IS SILICA FLUID?

SILICA FLUID is a high quality suspension consisting of silica fume, water and especially designed additives.

#### ▶ HOW IS SILICA FLUID APPLIED?

SILICA FLUID is easily stored in IBC Containers or in vertical storage silos. To avoid sedimentation during longer storage periods, tanks are equipped with an integrated circulation. Suitable equipments for dosing are flow meters or water scales. The slurry is added to the concrete after a minimum of 70% of the required water is inserted.

#### ▶ WHAT ARE THE DOSAGE QUANTITIES?

The required quantity depends on the specific concrete design and varies typically between 5 – 20 mass-% of the cement content.

#### ▶ WHICH PROMINENT PROJECTS HAVE ALREADY USED LIQUID MICROSILICA?

- Segmental Lining Metro Golden Line, Doha
- IDRIS Sewage System, Doha
- Tunnel Project Ismaelis, Suez
- Precast Elements Dubai Sports City, Dubai

## WHAT ARE THE ADVANTAGES OF SILICA FLUID?

### Benefits in sum

#### ✓ ENHANCED CONCRETE QUALITY

The slurry material provides much better dispersion of the silica particles in the concrete during the mixing process, greatly enhancing the effect of the dosed quantity.

#### ✓ DECREASED HANDLING COSTS

SILICA FLUID is liquid. With specially designed equipment, it may be pumped and dosed as any other liquid additive. No cranes, lifts or personnel are required for unloading Big Bags or filling silos.

#### ✓ OPTIMISED WORK PROCESSES

Ideally stored in bulk silos provided by Ha-Be, the material may be conveniently dosed from the control room on the push of a button. The liquid form allows for fast handling and reduced mixing time.

#### ✓ LOWER INVESTMENT COSTS

SILICA FLUID is conveniently stored in IBC containers or in storage tanks with an enclosed circulation system. Both delivery options are provided by Ha-Be as an integrated service. The material is readily available in the required quantity at predefined lead times, excessive powder stocks may be avoided.

#### ✓ SAVED WASTAGE COSTS & INCREASED ENVIRONMENTAL-FRIENDLINESS

Using SILICA FLUID saves waste disposal cost, as containers can be reused. As a considerable benefit, the wastage of powder during the unloading of bags is eliminated. This recycling policy protects minimises negative environmental impacts and protects the climate.

#### ✓ IMPROVED HEALTH CONDITIONS

Handling silica fume bags creates dust emissions. The small particle size poses a potential health hazard to the workers handling the material and the environment. SILICA FLUID does not cause these problems and contributes to a sustainable and responsible policy.





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