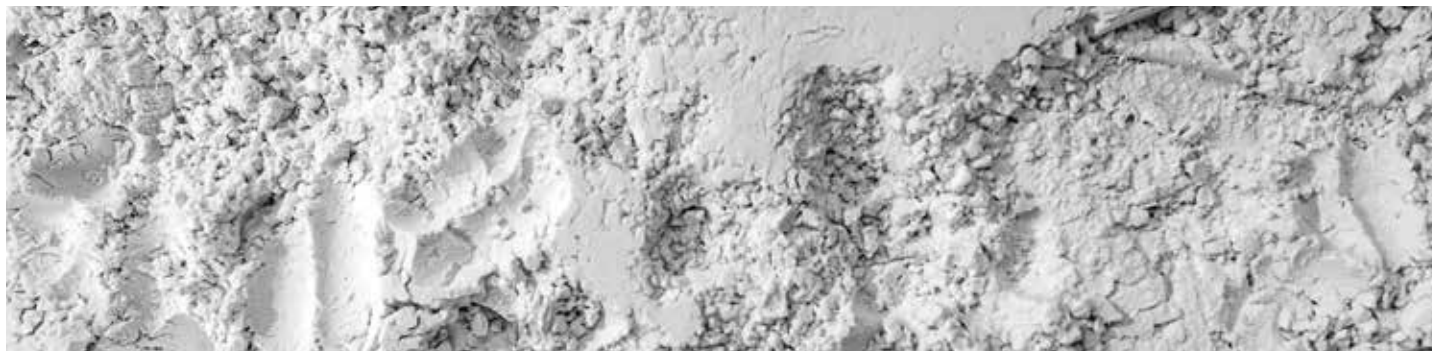


# ECA MICROSILICA-D

Densified Silica Fume Powder



### Product Description

ECA MICROSILICA-D is a dry densified silica fume powder designed to increase concrete compressive and flexural strength, reduce permeability, increase durability and improve hydraulic abrasion/erosion resistance. ECA MICROSILICA-D improves concrete through two mechanisms. The extremely fine silica fume particles are able to fill the microscopic voids between the cement particles, creating a less permeable structure. In addition, the silica fume reacts with the free calcium hydroxide within the concrete to form additional calcium silicate hydrate (glue), producing a tighter paste-to-aggregate bond. ECA MICROSILICA-D can be used to consistently produce high strength concrete with locally available materials and existing methods. It may also be used in precast and prestressed applications where high early strengths are required. The addition of ECA MICROSILICA-D also produces concrete with increased water tightness and dramatically reduced permeability compared to conventional mixes. Reduced permeability is an important advantage in slowing the intrusion of chloride where corrosion of reinforcing steel is a potential problem. Examples are parking garages, bridge decks and concrete in a marine environment. ECA MICROSILICA-D also enhances the durability of concrete against aggressive chemical attack and in hydraulic abrasion/erosion applications.

### Advantages

- Reduces permeability.
- Enhances durability against aggressive chemical attack.
- Improved resistance to abrasion.
- Reduces the intrusion of chloride.
- Compressive strength increase.

### Typical Properties

Appearance: Ultra-fine amorphous light to dark grey, colored powder  
Specific Gravity:  $2.25 \pm 15\%$  at  $20^\circ\text{C}$   
Sulphate Content:  $<1.0\%$  as  $\text{SO}_3$   
Air Entrainment: Nil.  
Bulk Density:  $\geq 550 \text{ kg/m}^3$   
 $\text{SiO}_2$  Content:  $90\%$  min  
Freezing Point: N.A

### Compatibility

**With cements:** ECA MICROSILICA-D can be used with all types of Portland Cements, including cement replacement materials. For use with special cements we recommend that you consult European Concrete Additives.

**With Other Admixtures:** ECA MICROSILICA-D is compatible with all conventional water reducers, superplasticizer, set retarders and EUNICOR DCI Corrosion Inhibitor. Only non-chloride set accelerators may be used with ECA MICROSILICA-D concrete. All admixtures must be added separately to assure their prescribed performance. Trial mixtures and pretesting of concrete are recommended to optimize dosage rates, and ensure ultimate performance.

### Addition Rates Range

2% - 15% (w/w) by weight of cement ECA MICROSILICA-D dosage rates will vary based on the requirements of the application. When used to improve compressive strength, ECA MICROSILICA-D is dosed at a level of 8% - 10% by weight of total cementitious material. Dosages as low as 2% - 4% of ECA MICROSILICA-D may be used to improve the rheology of mixtures. Normally a dosage of EUNICEM SP6 of 1% v/w total cementitious material is used in combination with ECA MICROSILICA-D. It is strongly

recommended that trial mixtures be made several weeks before construction start up. This will allow the concrete producer an opportunity to determine the proper batching sequence and amounts of other admixtures needed in order to deliver the required concrete mixture to the site. A trial mixture will also help determine whether the construction practices will allow the concrete to meet a specified performance. European Concrete Additives experience with this product can help the concrete producer deliver a satisfactory product regardless of the mix proportions. ECA MICROSILICA-D is supplied bagged and ready for use. The method of addition of ECA MICROSILICA-D is important as it is vital that Complete, uniform dispersion is achieved. ECA MICROSILICA-D is best added after the coarse aggregates and water, and given an extended mix prior to the addition of fines and cement. ECA MICROSILICA-D is always used in combination with a Superplasticizer as the water demand for a concrete containing ECA MICROSILICA -D is increased. ECA MICROSILICA-D will reduce the surface bleed water of concrete in large applications. Good Practice for curing concrete must be followed to ensure that problems occurring due to decreased bleeding are minimized.

### **Effects of Overdosing**

Will normally produce a decrease in workability and a reduction in setting time. The hardened properties of the concrete may be enhanced, but only if the concrete is thoroughly mixed.

### **Dispensing**

ECA MICROSILICA-D is a powder product, and requires manual dispensing techniques. It is recommended that you consult European Concrete Additives should dispensing of the product become problematic.

### **Packaging**

ECA MICROSILICA-D is available in 25 kg bags or 1250kg jumbo bags. Manual dispensing by tearing the bags is the normal method. A simple dust mask should be used when dispensing the bagged product.

### **Storage**

Bagged ECA MICROSILICA-D should be stored in a dry, protected area.

### **Health and Safety**

See ECA MICROSILICA-D Safety Data Sheet or consult European Concrete Additives.

### **Technical Service**

The Technical Service department of European Concrete Additives is available to assist you in the correct use of our products and its resources are at your disposal entirely without obligation.

### **Contact Information**

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