

# RHEOMAC® SF100

(Formerly MB SF) Silica fume mineral admixture

## DESCRIPTION:

RHEOMAC® SF100 dry compacted silica fume admixture is formulated to produce extremely strong, durable concrete possessing special performance qualities. RHEOMAC SF100 meets ASTM C1240 Standard Specification for Silica Fume for Use in Hydraulic-Cement Concrete and Mortar.

## BENEFITS:

RHEOMAC SF100 silica fume is a critical component in the production of high-performance concrete with the following unique engineering properties:

- Dramatically **Reduced Permeability** that effectively inhibits the ingress of moisture, chlorides and other contaminants into concrete.
- Effective **Corrosion Protection** of steel-reinforced concrete.
- **Highly Durable** concrete with **increased resistance to:**
  - Corrosion
  - Abrasion/erosion
  - Chemical attack
  - Sulfates
  - Freeze/thaw damage
- **High-Strength** concrete with strengths in excess of 15,000 psi (105 MPa).
- Extremely **High Modulus of Elasticity** exceeding 6,000,000 psi (40,000 MPa).
- **High-Early Strengths** that enable more efficient and cost effective production of prestressed and/or precast concrete.

## HOW IT WORKS:

RHEOMAC SF100 silica fume is a micro-filling material that physically fills the voids between cement particles. RHEOMAC SF100 silica fume dramatically lowers concrete permeability, and reduces the size and number of capillaries that allow contaminants to enter concrete.



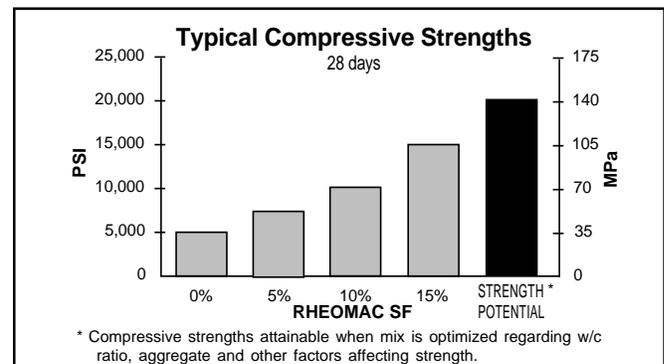
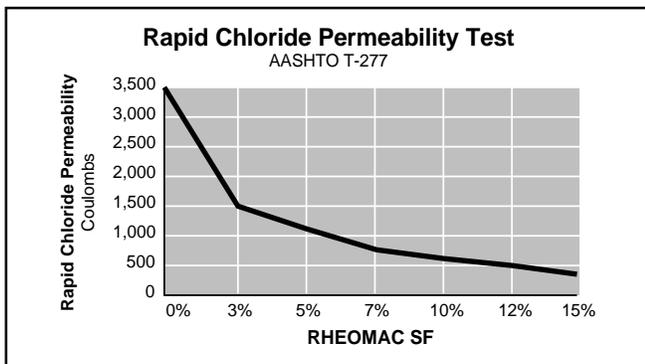
*RHEOMAC SF silica fume maximizes concrete service life by providing superior resistance to attack from damaging environmental forces.*

As a pozzolan, RHEOMAC SF100 silica fume reacts chemically within concrete to increase the amount of calcium silicate hydrate (CSH) that is formed. CSH is the bonding agent that holds concrete together. The additional CSH significantly increases the compressive strength and decreases the permeability of concrete.

## WHERE TO USE:

RHEOMAC SF100 silica fume will improve performance in precast, paving, shotcrete and ready-mixed concrete applications. RHEOMAC SF100 silica fume increases concrete strength and reduces permeability, thereby increasing the concrete's resistance to environmental attack. This makes RHEOMAC SF100 silica fume ideal for use in structures exposed to deicing salts such as **parking garages** and **bridge decks**, as well as for marine structures, slabs, and in any construction **project requiring the protection provided by highly durable, low permeability concrete**. RHEOMAC SF100 silica fume's pozzolanic and void-filling

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properties enable concrete to attain ultra-high compressive strengths. RHEOMAC SF100 silica fume is ideal for use in projects requiring **high strength/high performance** concrete for **reducing member size, increasing span lengths, improving structural economics**, and meeting other high-performance structural requirements.

#### **DRY COMPACTED VS. SLURRY:**

The high-performance benefits of silica fume concrete can be achieved by using either dry compacted or slurried forms of silica fume. Dry compacted and slurried forms of silica fume provide identical performance in concrete. Both require effective mixing for maximum results.

Master Builders provides both dry compacted and slurried forms of silica fume for the convenience of the concrete producer in storing, handling and batching.

#### **DIRECTIONS FOR USE:**

RHEOMAC SF100 silica fume is batched at the ready-mix plant in a manner similar to cement or other cementitious materials such as fly ash and granulated slag. It may be batched in a central or truck mixer, and may be added at any point in the batching process. Follow ASTM C-94 procedures to ensure effective mixing and distribution throughout the mixer.

#### **QUANTITY TO USE:**

RHEOMAC SF100 silica fume is recommended for use at an addition rate of 5 to 15% by weight of cement. Dosage rates may vary according to application and desired concrete properties. For dosages outside the recommended range, contact your local Master Builders representative.

#### **STORAGE/HANDLING/DISPENSING:**

RHEOMAC SF100 silica fume stores, handles, and dispenses similar to cement or fly ash. In bulk, RHEOMAC SF100 silica fume may be stored in a silo. Packaged material may be stored indefinitely in a dry area. RHEOMAC SF100 silica fume requires no special dispensing equipment.

#### **PACKAGING:**

RHEOMAC SF100 silica fume is available in 25 lb (11.6 kg) shreddable bags, 50 lb (23 kg) bags, 2,000 lb (907 kg) bulk bags or bulk delivery.

#### **SPECIFIC GRAVITY:**

The specific gravity of RHEOMAC SF100 silica fume is 2.2.

#### **COMPATIBILITY:**

RHEOMAC SF100 silica fume can be used with Portland cements approved under ASTM, AASHTO, or CRD specifications. It is compatible with most concrete admixtures, including all Master Builders admixtures. RHEOMAC SF100 silica fume is recommended for use with high-range water-reducing admixtures, such as RHEOBUILD 1000 admixture, for maximum workability while maintaining a low water-cementitious materials ratio.

#### **RATE OF HARDENING:**

Setting time of concrete is influenced by the chemical and physical composition of the cement and/ or cement type used to produce the concrete, temperature of the concrete, weather conditions, and the use of chemical admixtures. Trial mixes should be made with job materials to determine the setting time of a specific mixture.

#### **NON-CHLORIDE:**

RHEOMAC SF100 silica fume will not initiate or promote corrosion of reinforcing steel embedded in concrete, prestressed concrete, or concrete placed on galvanized steel floor and roof systems. Neither calcium chloride nor any chloride-based ingredients are used in the manufacture of RHEOMAC SF100 silica fume.

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