شركة أسس الشرق الأوسط لتجارة المواد الإنشائية ذ.م.م
MIDDLE EAST FOUNDATIONS Co.
FOR CONSTRUCTION MATERIALS TRADING W.L.L.
الرقم الوطني 200214967

OSOS-3M Silica Fume MS-45

PRODUCT DESCRIPTION

OSOS-3M Silica Fume MS-45 is a granular mineral admixture composed of submicron particles of silicon dioxide and manufactured as a co-product from the production of silicon and ferrosilicon metal. When added to concrete, **OSOS-3M Silica Fume MS-45** acts as both a micro filler, improving the physical structure by occupying the spaces between cement particles and as a pozzolan, reacting chemically to impart far greater strength and durability to concrete.

OSOS-3M Silica Fume MS-45 produces high-performance, high-strength concrete with an increased life span and improved structural economics.

OSOS-3M Silica Fume MS-45 is ideal for use in structures exposed to chemical and environmental attack.

OSOS-3M Silica Fume MS-45 conforms to ASTM C-1240 and EN 13263:2005 standards for use in concrete applications.

TECHNICAL SPECIFICATIONS / ASTM STANDARDS

Parameter	OSOS-3M Silica Fume MS-45	ASTM C-1240
pH	7.1 - 7.8	8.20 max
Moisture	0.2 - 1.9%	3.0% max
Surface Area	20 - 27 m^2/g	15 m^2/g min
Bulk Density	550 - 650 kg/m^3	—
SiO_2	85 - 93% min	85.00% min
Al_2O_3	0.62 - 0.78%	—
Fe_2O_3	0.21 - 0.35%	—
CaO	0.37 - 0.85%	1.0% max
MgO	0.65 - 0.88%	5.0% max
SO_3	0.1 - 2.2%	3.0% max
Loss on Ignition	1.5 - 3.0%	6.0% max
Na_2O	0.2 - 0.5%	1.5% max
K_2O	0.3 - 0.50%	—
Cl^-	0.04 - 0.50%	1.0% max
C	0.08 - 1.5%	4.0% max

ADVANTAGES

- Prevents reinforcing steel corrosion in concrete due to its extremely low permeability to chloride-ion intrusion and high electrical resistivity.
- Greater impermeability, barring the ingress of moisture, chemicals, and other contaminants.
- High early strengths, assuring increased efficiency and greater cost effectiveness in the production of pre-stressed and precast concrete.
- High ultimate compressive strengths (8,000 - 20,000 psi), proportionate to the amount of **OSOS-3M Silica Fume MS-45** and the water-to-cementitious ratio.
- Substantially greater resistance to corrosion, abrasion and erosion, chemical attack, and freeze/thaw damage.

DOSAGES

OSOS-3M Silica Fume MS-45 typical dosage levels range from 7.0 to 10% by weight of cement. With an addition of 15 percent, the potential exists for very strong, brittle concrete. It increases the water demand of a concrete mix; however, dosage rates of less than 5 percent will not typically require a water reducer. High replacement rates will require the use of a high range water reducer.

COMPATIBILITY / ADDITION

Although **OSOS-3M Silica Fume MS-45** is compatible with other concrete admixtures, but as known each admixture has to be added separately to the concrete using suitable equipment.

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APPLICATIONS

Effects on Air Entrainment and Air-Void System of Fresh Concrete

The dosage of air entraining agent needed to maintain the required air content when using **OSOS-3M Silica Fume MS-45** is slightly higher than that for conventional concrete because of high surface area and the presence of carbon. This dosage is increased with increasing amounts of **OSOS-3M Silica Fume MS-45** content in concrete.

Effects on Water Requirements of Fresh Concrete

OSOS-3M Silica Fume MS-45 added to concrete by itself increases water demands, often requiring the addition of a water reducer. This problem can be easily compensated for by using other SSCI admixtures.

Effects on Consistency and Bleeding of Fresh Concrete

Concrete incorporating more than 10% **OSOS-3M Silica Fume MS-45** becomes sticky; in order to enhance workability, the initial slump should be increased. It has been found that Silica Fume reduces bleeding because of its effect on rheological properties.

Effects on Strength of Hardened Concrete

OSOS-3M Silica Fume MS-45 is used to produce very high-strength, low-permeability, and chemically resistant concrete. Addition of **OSOS-3M Silica Fume MS-45** by itself, with other factors being constant, increases the concrete strength.

Incorporation of **OSOS-3M Silica Fume MS-45** into a mixture also enables the use of a lower water-to-cementitious-materials ratio than may have been possible otherwise. The modulus of rupture of concrete made with **OSOS-3M Silica Fume MS-45** is usually either about the same as or somewhat higher than that of conventional concrete at the same level of compressive strength.

Effects on Freeze-thaw Durability of Hardened Concrete

Experimental results indicated that the use of **OSOS-3M Silica Fume MS-45** has no significant influence on the production and stability of the air-void system.

Freeze-thaw testing (ASTM C 666) on Silica Fume concrete showed acceptable results.

Effects on Permeability of Hardened Concrete

Addition of **OSOS-3M Silica Fume MS-45** to concrete reduces its permeability. Rapid chloride permeability testing conducted on Silica Fume concrete showed that addition of 8% product significantly reduces the chloride permeability. This reduction is primarily the result of the increased density of the matrix due to the presence of Silica Fume.

PACKAGING

OSOS-3M Silica Fume MS-45 is available in 1000 kg to 2000 kg UV coated moisture resistant bags on pallets. Bulk tankers of 20 - 25 Tons are also available upon request.

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HEALTH, SAFETY & HANDLING

OSOS-3M Silica Fume MS-45 is unlikely to cause harmful effects when handled and stored as advised. However like other chemicals, the product should not be swallowed, inhaled or comes into contact with body and eyes. Protective clothing should be worn when handling the product such as goggles and gloves.

If swallowed please seek medical consultation immediately and do not induce vomiting.

If inhaled remove the exposed person from dusty area to fresh air. If discomfort persists seek medical attention.

Eye and skin splashes should be washed thoroughly with plenty of water and a mild detergent.

FIRE RISKS

Although **OSOS-3M Silica Fume MS-45** is nonflammable but it should be stored away from combustible material.

Please refer to MSDS for further details.

STORAGE & DISPOSAL

OSOS-3M Silica Fume MS-45 is not flammable but should be stored away from acids in a well ventilated place below 50°C.

OSOS-3M Silica Fume MS-45 is not classified as hazardous waste.

Please contact the local waste regulatory authority for guidance on methods of disposals.

TECHNICAL SUPPORT

For further information about the product, addition, storage, mixing, concrete field advice, please contact your **OSOS-3M** consultant or local agent.

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