SPECIALTY ADMIXTURES

Master Format #: 03 30 00 03 40 00 03 70 00

EUCON™ MSA

POWDERED, Ddensified MICROSILICA ADMIXTURE

EUCLID CHEMICAL

PRODUCT INFORMATION

PACKAGING

Packaged in 25 lb (11.3 kg) pulpable bags and can be delivered in bulk tankers

SHELF LIFE

2 years in original, unopened container

SPECIFICATION/COMPLIANCES

ASTM C1240

TECHNICAL INFORMATION

Specific Gravity: ~ 2.2

Bulk Density ~ 30 lb/ft^3 (481 kg/m^3)

Microsilica Content: ~ 100%

Amorphous SiO_2 ~ 92 to 98%

Appearance:

Very finely textured gray powder

DESCRIPTION

EUCON MSA is a ready to use powdered microsilica (silica fume) concrete admixture. This product reacts chemically with the calcium hydroxide in the cement paste which yields a calcium silicate hydrate gel that significantly enhances strength and durability. The super fine microsilica fills the voids between cement particles creating a very dense, less permeable concrete. EUCON MSA contains no added chlorides or chemicals known to promote the corrosion of steel.

PRODUCT CHARACTERISTICS

FEATURES & 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
- Improves concrete performance to reduce column size, increase production and lower transportation and erection costs

PRIMARY APPLICATIONS

- High strength concrete
- High density concrete
- Bridge decks
- Parking structures
- Marine environments

PRECAUTIONS/LIMITATIONS

- Test batches/mix designs/sample slabs may be required due to variations in local cement and aggregates.
- Keep concrete from freezing until a minimum strength of 1,000 psi (7 MPa) is reached.
- In all cases, consult the Safety Data Sheet before use.
- Clean tools and equipment with water before the material hardens.

DIRECTIONS FOR USE

Due to the fineness of the EUCON MSA particles, the admixture needs to be thoroughly mixed and dispensed in and around the cement particles. The proper dispersion is accomplished by adding the microsilica first in the truck mixing process. A typical mix sequence would be:

1. EUCON MSA
2. 75% coarse aggregate, plus sand and 75% water
3. Air entraining admixture (if required)
4. Cement
5. Any Euclid Chemical high range water reducer(*).
6. Coarse aggregate 25% and 25% water

(*) Water demand will be increased when using microsilica. Most mixes will require the use of a high range water reducer to maintain workability, a low water content and a low water/cement ratio.

Dosage: The use of EUCON MSA is normally used at the rate of 5 to 10% by weight of cement. Contact The Euclid Chemical Company for guidance where higher dosages of up to 15% by weight of cement are needed.

Placement: Concrete treated with EUCON MSA may be placed in the same fashion as conventional concrete.

Finishing: Concrete containing EUCON MSA will bleed much less than conventional concrete; at higher dosage rates bleeding will be essentially eliminated. Plastic shrinkage cracks occur due to rapid moisture loss from the surface of the concrete. Because concrete containing EUCON MSA will have a reduced amount of bleed water to replenish what has evaporated, it will be more susceptible to plastic shrinkage cracking.

Also, plastic shrinkage cracking is most likely to occur when low humidity, wind, high air temperature and high concrete temperature are present in any combination. When these conditions do exist, the use of an evaporation retardant such as EUCOBAR should be used. (See page 1 of the EUCOBAR technical data sheet for a table which will show when conditions are favorable for the occurrence of plastic shrinkage cracking.) Note that plastic shrinkage cracking on concrete containing EUCON MSA will occur at lower evaporation rates than for normal concrete.

Methods other than EUCOBAR can be employed to help reduce the possible occurrence of shrinkage cracking. These include erecting windbreaks, fog spray between finishing operations, covering concrete with wet burlap and reducing concrete temperature with ice or cooled aggregates. Placing concrete later in the day to avoid direct sunlight and high temperatures can also be done.

If plastic shrinkage cracks do occur, prompt reworking of the fresh concrete can effectively close them, preferably using magnesium or steel tools. To prevent the reoccurrence of the shrinkage cracks, the concrete should be promptly and thoroughly covered or kept moist.

If a high dosage of EUCON MSA is used in the concrete mix and conditions are favorable for plastic shrinkage cracking, the concrete may become very difficult to finish. In situations such as this, it is recommended to use a one pass finishing procedure of screeding, bullfloating and broom finishing or texturing of the surface followed immediately by curing procedures.

Curing: Proper curing of concrete containing EUCON MSA is absolutely critical in order to achieve the designed high strength and high durability. Proper curing requires the maintenance of proper moisture and proper temperature conditions in the concrete.

All curing of concrete containing EUCON MSA should begin immediately after the finishing procedure is completed. Acceptable curing methods are wet burlap, polyethylene and the use of a high solids liquid membrane forming curing compound such as SUPER REZ-SEAL or SUPER AQUA-CURE VOX.

If a curing compound is not desired, wet cure for a minimum of seven (7) days.

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