MICROFORCE

Densified Microsilica for Concrete and Mortar

1. Product Description

a. Basic Use: Microforce is a microsilica based additive designed to enhance the hardened properties of concrete and mortar. Through direct addition to cement based materials, concrete and mortar strengths and durability can be greatly enhanced. Because Microforce chemically reacts with the cement matrix, it permanently densifies the concrete or mortar to produce excellent resistance to water and salt penetration. Compressive, flexural and bond strengths are significantly increased.

b. Features/Benefits:

- Increases compressive strengths by 50% or more.
- Excellent high early strengths for minimum downtime.
- Extremely resistant to salt water penetration.
- Enhances durability in freeze/thaw cycling environments.
- Gives concrete better wear and abrasion resistance.
- Allows cement mortars to be used as high grade repair materials.
- Helps prevent corrosion of reinforcing steel.

c. Typical Applications: Parking decks, pavements, bridges, containment walls, mooring cells, wharfs, piers, walls, beams and floors.

d. Limitations: Microforce will increase the water demand of concrete or mortar. Microforce can be used in conjunction with Superslump and is strongly recommended to maintain water content and workability.

e. Composition: Microforce is a bulk powder made up of 99% plus microsilica dust which has been densified to a fine powder.

f. Color/Appearance: Microforce is a medium gray powder which has virtually no effect on the color of mortar or concrete.

2. Packaging

Microforce is packaged in 50-lb. (22.7 kg) bags.

3. Estimating/Yield

Microforce can be used to add to or replace a portion of the cement in a concrete or mortar mix. Normal dosages range from 5% to 10% by weight of cement. Estimate job requirements at 5 lb. (2.3 kg) to 10 lb. (4.5 kg) per sack of cement plus 10 oz. (0.80 liter) of Superslump high range water reducer per 100 lbs. (45 kg) of cementitious material.

4. Technical Data

a. Compressive Strength: ASTM C 109, 2 in. (50 mm) cubes.

Sand/Cement Mortar

Age	*Plain*	*With 8% Microforce*
1 day	*1,200 psi (8.3 MPa)*	*2,500 psi (17 MPa)*
3 days	*2,400 psi (17 MPa)*	*4,000 psi (28 MPa)*
7 days	*3,500 psi (24 MPa)*	*5,000 psi (34 MPa)*
28 days	*4,000 psi (28 MPa)*	*6,000 psi (41 MPa)*

b. Bulk Density: 30 ±pcf (480 kg/cu. m).

c. Specific Gravity: 2.2

5. Directions for Use

a. Mixing: Microforce blends and mixes best when added in the proper sequence. First add 75% of the aggregate and water to the mix; next, add the proper amount of Microforce and mix until thoroughly wetted. Follow with air entraining admixtures (if any) that are required. Add all of the portland cement followed by Superslump. Normal Superslump dosage is 10 oz. (0.80 liter) to 16 oz. (0.47 liter) per 100 lbs. (45 kg) of total cement plus Microforce weight in the mix. Follow with the remainder of the water and aggregate. The mixer should be running continuously during this process. Minor adjustments in the water or Superslump dosage may be made to give the desired slump or workability.

b. Placing: Transport concrete or mortar to site. Place into form or onto repair area. Microforce enhanced materials generally will not bleed due to the addition of the powder. Consequently, the surface will more easily experience plastic shrinkage cracking at

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early ages, particularly in hot, windy, or low relative humidity conditions. Prevent moisture loss by spraying on Waterhold, covering with wet burlap, or using fog sprayers.

c. Finishing: Concrete or mortar with Microforce will be comparatively sticky, particularly if the surface has dried out. During finishing, keep the surface moist with Waterhold or a fog spray. Float surface to achieve a good paste and apply a textured broom, brush, or float finish. (Note: Hard troweling is also possible, but requires good timing).

d. Curing: Proper curing is extremely important. Outside or in rapid drying conditions, cure with water, wet burlap, or polyethylene for 24 to 48 hours. Follow with Seal N Kure 30 or Metcure 30 curing and sealing compound. Inside, cure with two coats of Seal N Kure 30 or Metcure 30.

6. Availability

Microforce is normally available immediately from your local distributor or it will be shipped within 5 working days upon receipt of order. Please contact your local Metalcrete representative or call Metalcrete directly for more information.

7. Warranty

Microforce is manufactured in strict accordance with the quality control standards of Metalcrete Industries. It is guaranteed to perform as indicated on this data sheet when used in accordance with printed instructions.

8. Technical Service

Metalcrete technical service representatives are available to provide on-site assistance with a minimum three day notice.

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