

SECTION 03 24 00
FIBROUS REINFORCING

PART 1 GENERAL

1.01 REFERENCES

A. The following is a list of standards which may be referenced in this section:

1. ASTM International (ASTM):
 - a. C78, Standard Test Method for Flexural Strength of Concrete (Using Simple Beam with Third-Point Loading).
 - b. C1116, Standard Specification for Fiber-Reinforced Concrete and Shotcrete.
 - c. E119, Standard Test Methods for Fire Tests of Building Construction and Materials.

1.02 DEFINITIONS

- A. Aspect Ratio: The ratio of length to diameter of the fiber.
- B. Fibrillated Fibers: Fibers in bundles that, when added to concrete during mixing, separate into uniformly distributed angular fibrils (fiber strands) which act as secondary concrete reinforcement.
- C. Macro-Fibers: Longer length, higher volume, typically 0.4 percent to 0.7 percent by volume fiber, sometimes referred to as structural fibers.
- D. Micro-Fibers: Shorter length, low dose, typically 0.1 percent by volume fibers designed to control plastic shrinkage cracking.
- E. Monofilament Fiber: Single filament fiber.

1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Minimum residual strength index of 50 psi.

1.04 SUBMITTALS

- A. Action Submittals:
 1. Product data for fibrillated fibers.
 2. Fiber reinforced concrete mix design.

B. Informational Submittals:

1. Manufacturer's written instructions for mixing and batching of fibrillated fibers.
2. Fiber manufacturer's Certificate of Compliance.
3. Manufacturer's written test procedure for the residual strength index of fiber reinforced concrete.
4. Certificate of Compliance from concrete supplier as to type, brand name, and amount of fibers added to mix.
5. Fiber manufacturer's certification of registration as proof of ISO 9002 Fiber Manufacturing Facility Certification.

PART 2 PRODUCTS

2.01 MATERIALS

A. Micro-Fibers:

1. Manufacturers and Products:
 - a. Propex Concrete Systems Corporation, Chattanooga, TN; Fibermesh 300.
 - b. Or equal.
2. Physical Characteristics:
 - a. 100 percent virgin polypropylene self-fibrillating fibers.
 - b. Multidesign gradation.
 - c. Specific Gravity: 0.91 minimum.
 - d. Reprocessed olefin materials are not allowed.
 - e. Type III fibers conforming to ASTM C1116, Part 4.1.3.
 - f. Fiber Length: 0.50 inch to 1.0 inch.
3. Functional Characteristics: None.
4. Performance Characteristics: Fibrillated bundles to allow uniform distributed angular fibrils (fiber strands) when mixed into concrete.

B. Macro-Fibers:

1. Manufacturers and Products:
 - a. Propex Concrete Systems Corporation, Chattanooga, TN; Fibermesh 650.
 - b. Or equal.
2. Physical Characteristics:
 - a. Polypropylene/polyethylene monofilament.
 - b. Specific Gravity: 0.92.
 - c. Tensile Strength: 85 ksi minimum.
 - d. Type III fibers conforming to ASTM C1116.
 - e. Aspect Ratio: 70 minimum.
 - f. Fiber Length: 1.5 inch to 2 inch.
3. Functional Characteristics: None.

- C. Performance Characteristics: None.
- D. Concrete: Components shall conform to Section 03 30 00, Cast-in-Place Concrete.

2.02 CONCRETE MIX DESIGN AND CONCRETE MIXING

- A. In accordance with Section 03 30 00, Cast-in-Place Concrete.
- B. Add 1.5 pounds (minimum) micro-fibers per cubic yard at the time concrete is batched.
- C. Contractor shall coordinate with manufacturer's technical representative for assistance in determining the minimum dosage (pounds per cubic yard) of the macro-fibers.
- D. Mix fibers into concrete in accordance with fiber manufacturer's instructions.

PART 3 EXECUTION

3.01 PLACING, PROTECTING, CURING, AND FINISHING

- A. In accordance with Section 03 30 00, Cast-in-Place Concrete.

3.02 FIELD QUALITY CONTROL

- A. Test as specified in Section 03 30 00, Cast-in-Place Concrete.
- B. Test fiber reinforced concrete with a modified version of ASTM C78 test using the printed test procedure provided by Fibermesh.

3.03 MANUFACTURER'S SERVICE

- A. Provide the services of a technical representative to instruct the concrete supplier in proper batching and mixing of materials.

END OF SECTION

