BASF
The Chemical Company

Note to Specifier:

The **Admixture Systems** business of **BASF Corporation** previously conducted business as **Degussa Admixtures, Inc.** and **Master Builders, Inc.**

BASF has launched the **Master Builders Solutions** brand on January 1, 2014. Master Builders Solutions will be BASF's global brand for construction, combining the established strengths of the Master Builders legacy with BASF's other well-known construction product brands such as Chemrex, Sonneborn, MBT and others.

For a MS Word version of this specification section, please send an email to admixtures@basf.com

This is not a complete Section on its own. The information provided in this Section can be included at the appropriate locations in the Concrete Specification Sections.

Options are provided in square brackets. Delete those that are not required.

To see the hidden notes, press Show/Hide feature ¶ (MS Word version only)

# SECTION 03 24 01

# MICROSYNTHETIC FIBER REINFORCEMENT

## PART 1 GENERAL

### 1.1 SECTION INCLUDES

A. Section includes microsynthetic fiber reinforcement for concrete.

### 1.2 RELATED SECTIONS

A. Section 01 10 00 - Summary
B. Section 01 33 00 - Submittal Procedures
C. Section 01 45 00 - Quality Control
D. Section 01 60 00 - Product Requirements
E. Section 03 01 30 - Maintenance of Cast-in-Place Concrete
F. Section 03 10 00 - Concrete Forming and Accessories
G. Section 03 20 00 - Concrete Reinforcing
H. Section 03 30 00 - Cast-in-Place Concrete
I. Section 03 31 26 - Self-Consolidating Concrete
J. Section 03 35 00 - Concrete Finishing
K. Section 03 39 00 - Concrete Curing



MASTER® BUILDERS SOLUTIONS

## 1.3 REFERENCES

A. ASTM International (ASTM):

1. ASTM C 94/C 94M - Standard Specification for Ready-Mixed Concrete
2. ASTM C 1116/C 1116M - Standard Specification for Fiber-Reinforced Concrete
3. ASTM C 1579 - Standard Test Method for Evaluating Plastic Shrinkage Cracking of Restrained Fiber Reinforced Concrete (Using a Steel Form Insert)

B. American Concrete Institute (ACI):

1. ACI 544.1R Report on Fiber Reinforced Concrete
2. ACI 544.3R Guide for Specifying, Proportioning, and Production of Fiber-Reinforced Concrete
3. ACI 544.5R Report on the Physical Properties and Durability of Fiber-Reinforced Concrete

C. ICC Evaluation Service, Inc. (ICC-ES):

1. AC32 Acceptance Criteria for Concrete with Synthetic Fibers

## 1.4 DEFINITIONS

A. Equivalent diameter: Diameter of a circle having an area equal to the average cross-sectional area of a fiber.

B. Microsynthetic fiber: Synthetic fibers with diameters or equivalent diameters less than 0.012 in. (0.3 mm).

C. Monofilament: Single filament fiber typically cylindrical in cross-section.

D. Fibrillated: A slit film fiber where sections of the fiber peel away, forming branching fibrils.

E. Plastic shrinkage: A reduction in volume of concrete prior to its final set.

## 1.5 SUBMITTALS

A. Submit under provisions of Section 01 33 00 Submittal Procedures.

B. Product Data: Manufacturer's data sheets of fibers to be used.

C. Samples: For each type of fiber specified, submit samples representing actual product.

D. Manufacturer's Certificate: Certificate showing the conformance of fibers to specified performance requirements.

## 1.6 QUALITY ASSURANCE

A. Provide products from one manufacturer.

B. A meeting shall be held two weeks prior to placement of fiber reinforced concrete to discuss the Project and materials. Fiber Manufacturer's Representative shall be present at the meeting.

## 1.7 DELIVERY, STORAGE AND HANDLING

A. Microsynthetic fiber shall be delivered to the manufacturer of concrete in a ready-to-use package such as in pre-weighed degradable bags.

B. User of microsynthetic fibers shall store the fibers in a dry, covered area free of contamination.

C. Use of microsynthetic fibers shall be as recommended by the manufacturer.

# PART 2 - PRODUCTS

## 2.1 MANUFACTURER

A. BASF Corporation – Admixture Systems, 23700 Chagrin Blvd., Cleveland, OH 44122. Telephone: (800) 628-9990. Fax: (216) 839-8821. Email: admixtures@basf.com.

## 2.2 MICROSYNTHETIC FIBERS

A. Monofilament fibers:

1. Shall conform to ASTM C 1116/C 1116M, Type III and the requirements of ICC-ES AC32 Section 3.1.1 (plastic shrinkage reinforcement).
2. Shall provide a minimum crack reduction ratio (CRR) of [40] [ ] percent when tested in accordance with ASTM C 1579.
3. Dosage shall be as recommended by the manufacturer.
4. Approved Product: "MasterFiber® M" Series.

B. Fibrillated Fibers:

1. Shall conform to ASTM C 1116/C 1116M, Type III and the requirements of ICC-ES AC32 Section 3.1.1 (plastic shrinkage reinforcement) [and Section 3.1.2 (shrinkage and temperature reinforcement)].
2. Shall provide a minimum crack reduction ratio (CRR) of [40] [ ] percent when tested in accordance with ASTM C 1579.
3. Dosage shall be 1.5 lb/cu. yd (0.9 kg/cu. m).
4. Approved Product: "MasterFiber F" Series.

# PART 3 - EXECUTION

## 3.1 BATCHING, MIXING AND TRANSPORTING

A. Batching of materials shall be in accordance with ASTM C 94/C 94M.

B. Introduce fibers into the mixing system at any time, except when the cement is being introduced. Mix for at least 5 minutes after the addition of the fibers.

C. Mixing and transporting concrete shall be in accordance with ASTM C 1116/C 1116M.

## 3.2 PLACING, CONSOLIDATION AND FINISHING

A. Placing, consolidation and finishing of concrete shall be in accordance with the recommendations of ACI 544.3R.

1. Additional water shall not be added in the field to increase workability based on the appearance of the mixture. A mid-range or high-range water-reducing admixture may be added to increase workability of the mixture in the field when authorized by the Architect/Engineer.

## 3.3 CURING AND PROTECTION

A. Curing and protection of concrete shall be in accordance with Section 03 39 00.

END OF SECTION