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## Product Guide Specification

Specifier Notes: This product guide specification is written according to the Construction Specifications Institute (CSI) 3-Part Format, including *MasterFormat*, *SectionFormat*, and *PageFormat*, as described in *The Project Resource Manual—CSI Manual of Practice, Fifth Edition*.

The section must be carefully reviewed and edited by the Architect or Engineer to meet the requirements of the project and local building code. Coordinate this section with other specification sections and the Drawings. Delete all "Specifier Notes" after editing this section.

Section numbers are from *MasterFormat* 1995 Edition, with numbers from *MasterFormat* 2004 Edition in parentheses. Delete version not required.

### SECTION 03240 (03 24 00)

#### FIBROUS REINFORCING

Specifier Notes: This section covers Solomon Colors Solomon UltraFiber 500™ concrete reinforcing fiber manufactured from alkali-resistant, virgin cellulose fibers. Consult Solomon Colors for assistance in editing this section for the specific application.

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Alkali-resistant, virgin cellulose concrete reinforcing fiber.

##### 1.2 RELATED SECTIONS

Specifier Notes: Edit the following list of related sections as required for the project. List other sections with work directly related to this section.

- A. Section 03300 (03 30 00) – Cast-in-Place Concrete.

- B. Section 03400 (03 40 00) – Precast Concrete.

### 1.3 REFERENCES

Specifier Notes: List standards referenced in this section, complete with designations and titles. This article does not require compliance with standards, but is merely a listing of those used.

- A. ASTM C 94 – Standard Specification for Ready-Mixed Concrete.
- B. ICC Evaluation Service (ICC-ES) AC217 – Acceptance Criteria for Concrete with Virgin Cellulose Fibers.
- C. ICC Evaluation Service ESR-1032.

### 1.4 PERFORMANCE REQUIREMENTS

- A. Reinforcing fibers, at a dosage rate of 1.5 pounds/cubic yard (0.6 kg/m<sup>3</sup>), meet ICC-ES AC217 as reported in ICC-ES ESR-1032.
- B. Can be used at a dosage rate of 3.0 -4.0 pounds/cubic yard to replace mild temperature steel

### 1.5 SUBMITTALS

- A. Comply with Section 01330 (01 33 00) – Submittal Procedures.
- B. Product Data: Submit manufacturer's product data, including mixing instructions, dosage rate, and fiber dispersion assessment procedure.
- C. Manufacturer's Certification:
  - 1. Submit manufacturer's certification that reinforcing fibers comply with specified requirements.
  - 2. Submit manufacturer's ISO 9001:2000 certification.

### 1.6 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: ISO 9001:2000 certification.

### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver bagged reinforcing fibers in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name, manufacturer, and weight of fibers.
- B. Storage: Store reinforcing fibers in dry area in accordance with manufacturer's instructions.
  - 1. Bagged Reinforcing Fibers: Keep bags sealed until ready for use.
  - 2. Bulk Packaged Reinforcing Fibers: Install manufacturer's dispensing system in accordance with manufacturer's instructions to provide dry, watertight environment, when bulk packaged reinforcing fibers are loaded into dispensing system.
- C. Handling: Protect reinforcing fibers during handling to prevent contamination.

## PART 2 PRODUCTS

## 2.1 MANUFACTURER

- A. Solomon Colors Inc., 4050 Color Plant Road, PO Box 8288, Springfield, Illinois 62702. Toll Free (800) 624-0261. Website [www.ultrafiber500.com](http://www.ultrafiber500.com).
- B. Fiber Sales Representative is Solomon Colors, Inc. Springfield, Illinois

## 2.2 FIBROUS REINFORCING

- A. Fibrous Reinforcing: "Solomon UltraFiber 500" concrete reinforcing fiber.
  - 1. Material: Alkali-resistant, virgin cellulose fibers.
  - 2. Average Length: 2.1 mm (0.083 inch).
  - 3. Average Denier: 2.5 g/9,000 m.
  - 4. Average Diameter: 18  $\mu$  ( $0.63 \times 10^{-3}$  inch).
  - 5. Count: 1,590,000 fibers/g (720,000,000 fibers/pound).
  - 6. Density: 1.10 g/cm<sup>3</sup>.
  - 7. Surface Area: 25,000 cm<sup>2</sup>/g (12,200 ft<sup>2</sup>/pound).
  - 8. Average Tensile Strength: 750 N/mm<sup>2</sup> (110 ksi).
  - 9. Average Elastic Modulus: 8,500 N/mm<sup>2</sup> (1,200 ksi).
  - 10. Fiber Spacing: 550  $\mu$ m at 0.9 kg/m<sup>3</sup> dosage rate (0.026 inch at 1.5 pounds/cubic yard dosage rate).

## PART 3 EXECUTION

### 3.1 MIXING

- A. Add reinforcing fibers into concrete mixture in accordance with manufacturer's instructions and ASTM C 94.
- B. Add reinforcing fibers at a dosage rate of 1.5 pounds/cubic yard (0.6 kg/m<sup>3</sup>) of concrete directly into concrete mixer at beginning of batch cycle. Higher dosage rates of 2 -4 pounds can be used for replacement of welded wire or mild temperature steel. Please refer to manufacturer's recommendations.
- C. Allow a minimum of 4 minutes at mixing speed in concrete mixer for full reinforcing fiber dispersion.

Specifier Notes: Edit the following sentence as required. Specify Section 03300 (03 30 00) for cast-in-place concrete or Section 03400 (03 40 00) for precast concrete.

- D. Concrete shall be as specified in Section [03300 (03 30 00)] [03400 (03 40 00)].

### 3.2 FIELD QUALITY CONTROL

- A. Confirm uniform fiber dispersion throughout concrete in accordance with manufacturer's instructions.

**END OF SECTION**