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# ICC-ES Report

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# ESR-1032

Reissued 03/2017

This report is subject to renewal 03/2019.

**DIVISION: 03 00 00—CONCRETE**  
**SECTION: 03 24 00—FIBROUS REINFORCING**

**REPORT HOLDER:**

**SOLOMON COLORS, INC.**

**4050 COLOR PLANT ROAD**  
**SPRINGFIELD, ILLINOIS 62702**

**EVALUATION SUBJECT:**

**ULTRAFIBER 500® VIRGIN CELLULOSE FIBERS**



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**DIVISION: 03 00 00—CONCRETE**  
**Section: 03 24 00—Fibrous Reinforcing**

**REPORT HOLDER:**

**SOLOMON COLORS, INC.**  
**4050 COLOR PLANT ROAD**  
**SPRINGFIELD, ILLINOIS 62702**  
**(800) 624-0261**  
<http://www.solomoncolors.com>

**EVALUATION SUBJECT:**

**ULTRAFIBER 500® VIRGIN CELLULOSE FIBERS**

**1.0 EVALUATION SCOPE**

**Compliance with the following codes:**

- 2015, 2012, 2009 and 2006 *International Building Code*® (IBC)
- 2015, 2012, 2009 and 2006 *International Residential Code*® (IRC)
- 2013 *Abu Dhabi International Building Code*® (ADIBC)<sup>1</sup>

<sup>1</sup>The ADIBC is based on the 2009 IBC. 2009 IBC code sections referenced in this report are the same sections in the ADIBC.

**Properties evaluated:**

- Fiber durability
- Crack control in concrete
- Fire-resistance-rated construction
- Noncombustible construction

**2.0 USES**

UltraFiber 500® virgin cellulose fibers are used as a fiber admixture in normal-weight concrete in buildings of any construction type for:

- Reducing plastic shrinkage cracking of reinforced concrete and structural plain concrete.
- Reducing shrinkage and temperature cracking in structural plain concrete slabs on grade.
- Components of fire-resistance-rated floor/ceiling and floor-design assemblies.

**3.0 DESCRIPTION**

**3.1 Cellulose Fibers:**

UltraFiber 500® is made from virgin cellulose fibers that have been chemically processed and then treated with a

mineral-based chemical that results in an alkaline-resistant fiber. The fibers have an average denier of 2.8.

**3.2 Structural Plain Concrete:**

Structural plain concrete must comply with 2015 and 2012 IBC Section 1906 (2009 and 2006 IBC Section 1909). Concrete must be proportioned as normal weight and comply with applicable requirements set forth in Section 1904 of the IBC.

**4.0 INSTALLATION**

**4.1 General:**

UltraFiber 500® virgin cellulose fibers must be dispersed uniformly through the concrete mixture in accordance with ASTM C1116.

The fibers must be blended into the concrete mix at a minimum rate of 3/4 pound per cubic yard (0.44 kg/m<sup>3</sup>) of concrete. The dosage must not exceed 15 pounds per cubic yard (8.9 kg/m<sup>3</sup>). When concrete slabs are exposed to abrasive and/or impact conditions (e.g. forklifts), the dosage rate must be a minimum of 1.5 pounds per cubic yard (0.89 kg/m<sup>3</sup>) of concrete.

The manufacturer's published installation instructions using either a dispersible bag system or a bulk time metric system and this report must be strictly adhered to, and a copy of the manufacturer's installation instructions must be available at all times on the jobsite during installation.

**4.2 Fire-resistance-rated Construction:**

UltraFiber 500® virgin cellulose fibers may be used as an alternative to welded wire fabric in concrete and steel floor units of listed fire-resistant-rated floor/ceiling and floor-design assemblies at a minimum dosage rate of 1.0 pound per cubic yard (0.59 kg/m<sup>3</sup>) and maximum dosage rate of 2.0 pounds per cubic yard (1.19 kg/m<sup>3</sup>) of concrete for up to two-hour fire-resistance ratings. Concrete-steel form unit floor assemblies must be a minimum of No. 22 gage steel for fluted decks and No. 20/20 gage for cellular units, and must have minimum 2 1/2-inch-thick concrete over the top of the flutes. Except for substitution of the fibers for the welded-wire fabric, all other aspects of the fire-resistance-rated assembly must comply with its listing.

**5.0 CONDITIONS OF USE**

The UltraFiber 500® virgin cellulose fibers described in this report comply with, or are a suitable alternative to what is specified in, those codes specifically listed in Section 1.0 of this report, subject to the following conditions:

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- 5.1 Design and construction of concrete utilizing the UltraFiber 500<sup>®</sup> fibers must be in accordance with the requirements of the applicable codes and ACI 318, as applicable.
- 5.2 The fibers must be blended in accordance with the manufacturer's published instructions and Section 4.0 of this evaluation report. If there is a conflict between this report and the manufacturer's published installation instructions, this report governs.
- 5.3 The use of the fibers is limited to normal-weight concrete.
- 5.4 The fibers must not be used to replace any structural reinforcement. Structural reinforcement is described in 2014 ACI 318 Section 20.2 (2011, 2008 and 2005 ACI 318 Section 3.5).
- 5.5 For structural plain concrete, control joints, as required by 2014 ACI 318 Section 14.3.4 (2011, 2008 and 2005 ACI 318 Section 22.3), must be provided.
- 5.6 For reinforced concrete, structural reinforcement and shrinkage and temperature reinforcement in accordance with 2014 ACI 318 Section 24.4 (2011, 2008 and 2005 ACI 318 Section 7.12), must be provided.

5.7 Use of fibers must be approved by a registered design professional, if applicable.

5.8 A batch ticket, signed by a ready-mix representative, must be available to the code official upon request. The delivery ticket must include, in addition to the items noted in ASTM C94, the type and amount of fibers added to the concrete mix.

## 6.0 EVIDENCE SUBMITTED

Data in accordance with ICC-ES Acceptance Criteria for Concrete with Virgin Cellulose Fibers (AC217), dated June 2010 (editorially revised March 2015).

## 7.0 IDENTIFICATION

Each box of UltraFiber 500<sup>®</sup> virgin cellulose fibers must be identified with the Solomon Colors, Inc.'s name and/or trademark, address and telephone number; product trade name; dosage rate; use instructions; and the evaluation report number (ESR-1032).

## ICC-ES Evaluation Report

## ESR-1032 FBC Supplement

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### EVALUATION SUBJECT:

ULTRAFIBER 500® VIRGIN CELLULOSE FIBERS

### 1.0 REPORT PURPOSE AND SCOPE

#### Purpose:

The purpose of this evaluation report supplement is to indicate that UltraFiber 500® virgin cellulose fibers, recognized in ICC-ES master evaluation report ESR-1032, has also been evaluated for compliance with the codes noted below.

#### Applicable code editions:

- 2014 *Florida Building Code—Building*
- 2014 *Florida Building Code—Residential*

### 2.0 CONCLUSIONS

Use of the UltraFiber 500® virgin cellulose fibers The UltraFiber 500® virgin cellulose fibers, described in Sections 2.0 through 7.0 of the master evaluation report ESR-1032, comply with the 2014 *Florida Building Code—Building* and the 2014 *Florida Building Code—Residential*, provided the design and installation are in accordance with the *International Building Code*® (IBC) provisions noted in the master report.

For compliance with the High-Velocity Hurricane Zone provisions of the 2014 *Florida Building Code—Building* and the 2014 *Florida Building Code—Residential* has not been evaluated and is outside the scope of this supplemental report.

For products falling under Florida Rule 9N-3, verification that the report holder's quality-assurance program is audited by a quality-assurance entity approved by the Florida Building Commission for the type of inspections being conducted is the responsibility of an approved validation entity (or the code official when the report holder does not possess an approval by the Commission).

This supplement expires concurrently with the master report, reissued March 2017.