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ESR-2720

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

REPORT HOLDER:

FORTA CORPORATION

**100 FORTA DRIVE
GROVE CITY, PENNSYLVANIA 16127-6399**

EVALUATION SUBJECT:

FORTA® ULTRA-NET®, SUPER-NET®, ECONO-NET®, MIGHTY-MONO®, ECONO-MONO®, AND NYLO-MONO® POLYPROPYLENE AND NYLON FIBERS



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DIVISION: 03 00 00—CONCRETE
Section: 03 24 00—Fibrous Reinforcement

REPORT HOLDER:

FORTA CORPORATION
100 FORTA DRIVE
GROVE CITY, PENNSYLVANIA 16127-6399
www.forta-ferro.com

EVALUATION SUBJECT:

**FORTA® ULTRA-NET®, SUPER-NET®, ECONO-NET®,
 MIGHTY-MONO®, ECONO-MONO®, AND NYLO-MONO®
 POLYPROPYLENE AND NYLON FIBERS**

1.0 EVALUATION SCOPE
Compliance with the following codes:

- 2009 *International Building Code*® (2009 IBC)
- 2009 *International Residential Code*® (2009 IRC)
- 2006 *International Building Code*® (2006 IBC)
- 2006 *International Residential Code*® (2006 IRC)
- 1999 BOCA® *National Building Code* (BNBC)
- 1999 *Standard Building Code*® (SBC)
- 1997 *Uniform Building Code*™ (UBC)
- 2013 *Abu Dhabi International Building Code* (ADIBC)[†]

[†]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:

- Durability
- Crack control in concrete

2.0 USES

FORTA® ULTRA-NET®, SUPER-NET®, ECONO-NET®, MIGHTY-MONO®, ECONO-MONO®, and NYLO-MONO® fibers are polypropylene and nylon fibers for use as admixtures in plain concrete for the purpose of reducing plastic shrinkage of structural plain concrete and reducing shrinkage and temperature cracking in structural plain concrete slabs on grade.

3.0 DESCRIPTION
3.1 FORTA® ULTRA-NET®:

This product consists of twisted bundles of collated,

fibrillated, virgin polypropylene fibers manufactured from thin film sheets. The fibers are produced in lengths of ³/₄, 1¹/₂, 2¹/₄, and 2¹/₂ inches (19.1, 38, 57, and 64 mm). The 2¹/₂-inch (64 mm) length of this fiber is limited to use in concrete where the maximum aggregate size is equal to or greater than size No. 57, as determined in accordance with ASTM C 33.

3.2 FORTA® SUPER-NET® and ECONO-NET®:

This product consists of straight bundles of collated, fibrillated virgin polypropylene fibers manufactured from thin film sheets. The fibers are produced in lengths of ³/₄ inch and 1¹/₂ inches (19.1 mm and 38 mm).

3.3 FORTA® MIGHTY-MONO® and ECONO-MONO®:

This product consists of fine, circular-cross-section, monofilament, virgin polypropylene fibers, which are produced in a length of ³/₄ inch (19.1 mm).

3.4 FORTA® NYLO-MONO®:

This product consists of fine, circular-cross-section, monofilament, virgin nylon fibers which are produced in a length of ³/₄ inch (19.1 mm).

3.5 Structural Plain Concrete:

Structural plain concrete must comply with Section 1909 of the IBC, Section 1922 of the UBC, Section 1901.1 of the BNBC or Section 1901.1.2 of the SBC.

4.0 INSTALLATION

Fibers must be blended into the normal-weight concrete mix at the dosage rates indicated below, and the concrete with synthetic fibers must comply with ASTM C 1116, Type III. The manufacturer's instructions for mixing must be followed to provide for adequate dispersal of fibers throughout the batch.

4.1 FORTA® ULTRA-NET®:

Fibers are blended into ready-mix concrete at a maximum rate of 1.6 lb/yd³ (0.95 kg/m³) for the applications noted in Section 3.1.

4.2 FORTA® SUPER-NET® and ECONO-NET®:

The fibers are blended into the concrete at a maximum rate of 1.5 lb/yd³ (0.89 kg/m³) for the applications noted in Section 3.3.

4.3 FORTA® MIGHTY-MONO® and ECONO-MONO®:

The fibers are blended into the concrete at a maximum rate of 1.0 lb/yd³ (0.59 kg/m³) for the applications noted in Section 3.4.

4.4 FORTA® NYLO-MONO®:

The fibers are blended into the concrete at a maximum rate of 1.0 lb/yd³ (0.59 kg/m³) for the applications noted in Section 3.4.

5.0 CONDITIONS OF USE

The FORTA® ULTRA-NET®, SUPER-NET®, ECONO-NET®, MIGHTY-MONO®, ECONO-MONO®, and NYLO-MONO® polypropylene and nylon fibers described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

- 5.1 Design and construction of concrete utilizing the FORTA® fibers must be in accordance with the requirements of the applicable codes and ACI 318-08 (2009 IBC), ACI 318-05 (2006 IBC), Chapter 19 of the UBC and ACI 318-95 (SBC and BNBC), 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 Section 3.5 of ACI 318 (IBC) or Section 1903.5 of the UBC, or Section 3.5 of ACI 318-95 (BNBC and SBC).
- 5.5 For structural plain concrete, control joints, as required by Section 1909.3 of the IBC, Section 1922.3 of the UBC, Section 1909.4 of the BNBC or Section

1907.4 of the SBC, must be provided.

- 5.6 For reinforced concrete, structural reinforcement and shrinkage and temperature reinforcement must be provided in accordance with Section 1907.12 of the IBC, Section 1907.12 of the UBC, or Section 7.12 of ACI 318-95 (BNBC and SBC).
- 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 C 94, the type and amount of fibers added to the concrete mix.
- 5.9 FORTA® ULTRA-NET®, SUPER-NET®, ECONO-NET®, MIGHTY-MONO®, ECONO-MONO®, and NYLO-MONO® polypropylene and nylon fibers are manufactured by Forta Corporation in Grove City, Pennsylvania.

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Concrete with Synthetic Fibers (AC32), dated October 2003 (editorially revised March 2007).

7.0 IDENTIFICATION

Each container of FORTA® ULTRA-NET®, SUPER-NET®, ECONO-NET®, MIGHTY-MONO®, ECONO-MONO®, and NYLO-MONO® polypropylene and nylon fibers must bear the manufacturer's name, trademark and address; the product name; and the ICC-ES evaluation report number (ESR-2720).