

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

REPORT HOLDER:

FORTA CORPORATION

EVALUATION SUBJECT:

FORTA-FERRO®

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2018 and 2015 *International Building Code*® (IBC)
- 2018 and 2015 *International Residential Code*® (IRC)

Properties evaluated:

- Durability
- Crack control in concrete

2.0 USES

FORTA-FERRO® is polyolefin chopped strand fibers that are used as shrinkage and temperature reinforcement for plain concrete footings and plain concrete slabs supported directly on the ground.

FORTA-FERRO® is also used to reduce shrinkage and temperature cracking in structural plain concrete footings and structural plain concrete slabs supported directly on the ground.

FORTA-FERRO® is also used as an alternative to shrinkage and temperature reinforcement for concrete of composite steel floor deck-slabs in accordance with SDI-C as referenced by IBC.

Under the IRC, an engineered design in accordance with IRC Section R301.1.3 must be submitted to the code official for approval.

3.0 DESCRIPTION

3.1 The FORTA-FERRO® product is a hybrid of macro and micro fiber strands and (both) are chopped or cut to the specified uniform (same) length for the product ordered. The product length of 2.1 inches (54 mm) is called 2-1/4 or two and a quarter.

The FORTA-FERRO® product is packaged in bags by unit weight or unit mass. A number of bags are added to the mixer based on the dosage per the concrete mixture unit volume. The bags separate and are torn open and apart in

the mixing process and aid in blending the fiber product into the concrete mixture.

3.2 Structural Plain Concrete:

Structural normal-weight plain concrete must comply with Section 1906 of the 2018 and 2015 IBC.

4.0 INSTALLATION

The concrete with fibers must comply with ASTM C1116, Type III. Fibers must be blended into the concrete mixture equal to or within the range of volume fractions of 0.2 percent to 0.6 percent of the specified volume fraction (reinforcement ratio). The volume fraction can also be expressed as dosage or an amount (mass or weight) per unit volume of concrete (3 to 9 lb/yd³ or 2 to 5.5 kg/m³).

The fiber product may be added to the concrete at the concrete batch plant or to the ready-mix truck at the jobsite. The manufacturer's published installation instructions and this report must be strictly adhered to for adequate dispersal of fibers throughout the batch mixture. A copy of the manufacturer's published installation instructions must be available at all times at the location of the fiber installation into the concrete.

5.0 CONDITIONS OF USE

The FORTA-FERRO® polyolefin chopped strand 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** Concrete with polyolefin chopped strand must comply with ASTM C1116/C1116M, Type III.
- 5.2** Fiber must be blended into the concrete mixture in accordance with the installation requirements in the ICC-ES evaluation report and the manufacturer's published installation instructions. If there is a conflict between the evaluation report and the manufacturer's published installation instructions, the more restrictive governs.
- 5.3** Registered design professional must approve the use of polyolefin chopped strand fibers and the mixture proportions.
- 5.4** Structural plain concrete including concrete over composite steel decks must comply with the applicable IBC sections.
- 5.5** Structural reinforcement for continuity must be provided in accordance with the approved engineering design of a registered design professional and the applicable codes (IBC).

- 5.6** Polyolefin chopped strand fiber must not be used to replace any structural reinforcement or the joints specified in the IBC (ACI 318-14 Sections 24.4 and 14.3.4, respectively).
- 5.7** When polyolefin chopped strand fibers are added at the ready-mix plant, a batch ticket signed by a ready-mix representative must be available to the code official upon request. The delivery ticket must include information noted in Section 12 of ASTM C1116/C1116M.
- 5.8** Volume fractions of polyolefin chopped strand fibers are 0.2 percent to 0.6 percent of the specified volume fraction (reinforcement ratio). The volume fraction can also be expressed as dosage or an amount (mass or weight) per unit volume of concrete (3 to 9 lb/yd³ or 2 to 5.5 kg/m³). Interpolation for other volume fractions between the tested volume fractions are permitted.
- 5.9** The fire-resistance rating of fiber reinforced concrete composite steel deck constructions has not been evaluated by ICC-ES and is outside the scope of this report. When requested, evidence of the fire-resistance rating of the construction must be submitted to the code official for their approval.
- 5.10** The use of fibers in concrete of composite steel floor deck-slabs construction must comply with Section 2.4.B.13.a.3 of ANSI/SDI C with the specified minimum 4.0 lb/yd³ dosage.

5.11 FORTA-FERRO[®] polyolefin chopped strand fibers are manufactured by FORTA Corporation in Grove City, Pennsylvania.

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Polyolefin Chopped Strands For Use in Concrete (AC383), dated January 2018.

7.0 IDENTIFICATION

7.1 Each container of FORTA-FERRO[®] must bear the manufacturer's name, trademark and address; the product name; and the ICC-ES evaluation report number (ESR-2522).

7.2 The report holder's contact information is the following:

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1.0 REPORT PURPOSE AND SCOPE**Purpose:**

The purpose of this evaluation report supplement is to indicate that FORTA-FERRO®, recognized in ICC-ES evaluation report ESR-2522, has also been evaluated for compliance with the code(s) noted below.

Applicable code edition(s):

- 2019 California Building Code (CBC)

For evaluation of applicable chapters adopted by the California Office of Statewide Health Planning and Development (OSHPD) and Division of State Architect (DSA), see Sections 2.1.1 and 2.1.2 below.

- 2019 California Residential Code (CRC)

2.0 CONCLUSIONS**2.1 CBC:**

The FORTA-FERRO®, described in Sections 2.0 through 7.0 of the evaluation report ESR-2522, complies with CBC Chapter 19, provided the design and installation are in accordance with the 2018 *International Building Code*® (IBC) provisions noted in the evaluation report and the additional requirements of CBC Chapters 16 and 17, as applicable.

2.1.1 OSHPD:

The applicable OSHPD Sections of the CBC are beyond the scope of this supplement.

2.1.2 DSA:

The applicable DSA Sections of the CBC are beyond the scope of this supplement.

2.2 CRC:

The FORTA-FERRO®, described in Sections 2.0 through 7.0 of the evaluation report ESR-2522, complies with CRC Chapter 3, provided the design and installation are in accordance with the 2018 *International Residential Code*® (IRC) provisions noted in the evaluation report.

This supplement expires concurrently with the evaluation report reissued April 2020.