

ICC-ES Evaluation Report

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ESR-3441

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

REPORT HOLDER:

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EVALUATION SUBJECT

HELIX 5-25 MICRO REBAR FIBERS

1.0 EVALUATION SCOPE

Compliance with the following codes:

2012, 2009, 2006 and 2003 International Building $\textit{Code}^{\texttt{®}}$ (IBC)

Properties evaluated

- Shrinkage and temperature crack control in concrete
- Durability

2.0 USES

Helix 5-25 Micro Rebar fibers are used to reduce shrinkage and temperature cracking of concrete. These steel fibers are used as an alternative to the shrinkage and temperature reinforcement specified in Section 7.12 of ACI 318 (IBC and IRC) for structural plain concrete footings, structural plain concrete slabs supported directly over ground, and other structural plain concrete structures designed according to ACI 318 Chapter 22. The fibers must not be used to replace any control joints specified in 2012 IBC Section 1906 and 2009, 2006 and 2003 IBC Section 1909.

3.0 DESCRIPTION

Helix 5-25 Micro Rebar fibers are cold-drawn, deformed wire fibers complying with ASTM A820, Type I. Helix Micro Rebar fibers have a nominal diameter of 0.020 inch (0.5 mm) and are 1 inch (25 mm) long. Micro Rebar fibers are packaged in either 22.5-pound (10 kg) boxes or 45-pound (22.5 kg) boxes, or in 2450-pound (1100 kg) bags.

4.0 INSTALLATION

The fibers must be blended into the concrete mix at a nominal dosage of 9 pounds per cubic yard (5.4 kg/m^3) of concrete, and concrete with steel fibers must comply with ASTM C1116, Type I. Fibers may be added to the concrete

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at the ready-mix plant or at the jobsite. The manufacturer's published installation instructions and this report must be strictly adhered to, and a copy of manufacturer's published installation instructions must be available at all times on the jobsite during installation.

5.0 CONDITIONS OF USE

The Helix Micro Rebar 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** Helix Micro Rebar fibers must be blended into the concrete mix in accordance with Section 4.0 of this report and the manufacturer's published installation instructions. If there is a conflict between this report and the manufacturer's published installation instructions, the more restrictive governs.
- **5.2** Design and construction of concrete utilizing the Helix Micro Rebar must be in accordance with the requirements of the applicable codes.
- 5.3 Use of the fibers is limited to normal-weight concrete.
- **5.4** Use of Helix Micro Rebar fibers must be approved by a registered design professional, if applicable.
- **5.5** Structural plain concrete must comply with 2012 IBC Section 1906 or 2009, 2006 and 2003 IBC Section 1909, as applicable.
- 5.6 For structural plain concrete directly on the ground, control joints must be provided, as required by 2012 IBC Section 1906 or 2009, 2006 and 2003 IBC Section 1909.
- **5.7** When Helix Micro Rebar 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.
- **5.8** Helix Micro Rebar fibers are patented and are manufactured by Polytorx, LLC, d.b.a Helix Steel, at their Grand Rapids, Michigan, facility.

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Steel Fibers in Concrete (AC208), dated October 2005 (editorially revised November 2012).

7.0 IDENTIFICATION

Labels on the bags and pouches bear the company name and the name "Helix 5-25." Each shipment contains a packing slip that bears the ICC-ES evaluation report number (ESR-3441).

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