



ICC-ES Evaluation Report

ESR-1699

Reissued November 2022

This report is subject to renewal November 2024.

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

REPORT HOLDER:

ABC POLYMER INDUSTRIES, LLC

EVALUATION SUBJECT:

ABC POLYMER'S FIBERFORCE 500, FIBERFORCE 350, FIBERFORCE 300, FIBERFORCE 150 AND FIBERFORCE 100 POLYPROPYLENE FIBERS

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2018, 2015, 2012, 2009 and 2006 *International Building Code*® (IBC)
- 2018, 2015, 2012, 2009 and 2006 *International Residential Code*® (IRC)
- 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.

For evaluation for compliance with codes adopted by Los Angeles Department of Building and Safety (LADBS), see [ESR-1699 LABC and LARC Supplement](#).

Properties evaluated:

- Durability
- Crack control in concrete

2.0 USES

ABC Polymer's FiberForce 500, FiberForce 350, FiberForce 300, FiberForce 150 and FiberForce 100 fibers are intended for use as concrete admixture to reduce plastic shrinkage cracking of reinforced concrete and structural plain concrete.

ABC Polymer's FiberForce 500, FiberForce 350 FiberForce 300 and FiberForce 150 are also used as concrete admixtures to reduce shrinkage and temperature cracks in structural plain concrete slabs-on-ground and other applications.

3.0 DESCRIPTION

3.1 FiberForce 500, FiberForce 350, FiberForce 300 and FiberForce 150 Fibers:

The ABC Polymer's FierForce 500, FiberForce 350, FiberForce 300, and FiberForce 150 fibers are extruded from

polypropylene resins. The FiberForce 150 monofilament fibers are 3/4 inch (19.1 mm) long that distribute upon mixing when added to a concrete mix. The FiberForce 300, FiberForce 350 and FiberForce 500 fibers are 3/4 inch (19.1 mm) long, are manufactured in collated fibrillated bundles that distribute upon mixing when added to a concrete mix. FiberForce 300 is a 1500 denier fiber. The FiberForce 350 is a 470 denier fiber. FiberForce 500 is 600 denier fiber. FiberForce 150 is a 15 denier fiber. A denier is defined as the weight in grams of an individual filament or fiber that measures 9,000 meters (29,520 feet) in length.

FiberForce 500, FiberForce 350, FiberForce 300 and FiberForce 150 are packaged in degradable bags suitable for adding directly to the concrete mixing system.

3.2 FiberForce 100:

ABC Polymer's FiberForce 100 is extruded from polypropylene resins. FiberForce 100 is a 1/2-inch (12.7 mm) to 3/4-inch-long (19.1 mm) monofilament polypropylene fiber. FiberForce 100 is 3 denier fiber.

FiberForce 100 is packaged in degradable bags suitable for adding directly to the concrete mixing system.

4.0 INSTALLATION

A copy of the manufacturer's published installation instructions must be available at all times at the concrete ready mix plant, with an additional copy of the installation instructions available at the jobsite during installation.

4.1 FiberForce 150, FiberForce 300, FiberForce 350 and FiberForce 500 Fibers:

The ABC Polymer's FiberForce 150, FiberForce 300, FiberForce 350 and FiberForce 500 fibers must be added and blended into structural plain normal-weight concrete mixtures in accordance with ASTM C1116 and the manufacturer's published installation instructions. The fibers must be used at a dosage rate of concrete per Table 1. The fibers must be dispersed uniformly into the mixer during the concrete batching process and mixed for a minimum of three minutes prior to concrete placement. Alternatively, the fibers can be added after the batching process, but the concrete mix with the fibers must be mixed at high speed for six to eight minutes to ensure uniform distribution of fibers. The concrete must be cured and finished in accordance with the applicable code.

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TABLE 1—DOSAGE REQUIREMENT

FiberForce PRODUCT	DOSAGE OF CONCRETE	
	PCY	KG/M ³
FiberForce 150	1.0	0.59
FiberForce 300	1.5	0.89
FiberForce 350	1.0	0.59
FiberForce 500	1.5	0.89

4.2 FiberForce 100:

ABC Polymer's FiberForce 100 fibers must be added to the concrete mixing system per ASTM C1116 and the manufacturer's published installation instructions. Fibers must not be added to the mixing system at the same time as the cement. When fibers are added after all of the conventional ingredients have been thoroughly mixed, an additional four minutes of mixing time is required. The FiberForce 100 must be added at the rate of 0.50 pound per cubic yard (0.30 kg/m³) of concrete as plastic shrinkage cracking reinforcement. The concrete must be cured and finished in accordance with the applicable code.

5.0 CONDITIONS OF USE

The ABC Polymer's FiberForce 100, FiberForce 150, FiberForce 300, FiberForce 350 and FiberForce 500 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 ABC Polymer's FiberForce 100, FiberForce 150, FiberForce 300, FiberForce 350 and FiberForce 500 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 installation 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 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

Chapter 20 and Section 26.6 of ACI 318-14 (Section 3.5 of ACI 318 -11, -08 and -05).

- 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 must be provided in accordance with 2014 ACI 318 Section 24.4 (2011, 2008 and 2005 ACI 318 Section 7.12).
- 5.7 Use of fibers must be approved by a registered design professional, if applicable.
- 5.8 A batch or delivery 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 the ICC-ES Acceptance Criteria for Concrete with Synthetic Fibers (AC32), dated October 2003 (editorially revised May 2018).

7.0 IDENTIFICATION

- 7.1 Each container of ABC Polymer's FiberForce 100, FiberForce 150, FiberForce 300, FiberForce 350, or FiberForce 500 fibers is identified with the ABC Polymer Industries name and address, the product name (FiberForce 100, FiberForce 150, FiberForce 300, FiberForce 350 or FiberForce 500), use instructions, the length of the fibers, the weight of the bags and the evaluation report number (ESR-1699).
- 7.2 The report holder's contact information is the following:

ABC POLYMER INDUSTRIES, LLC
POST OFFICE BOX 580
HELENA, ALABAMA 35080
(205) 620-9889
www.abcpolymerindustries.com

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

REPORT HOLDER:

ABC POLYMER INDUSTRIES, LLC.

EVALUATION SUBJECT:

FIBERFORCE 500, FIBERFORCE 350, FIBERFORCE 300, FIBERFORCE 150 AND FIBERFORCE 100
POLYPROPYLENE FIBERS

1.0 REPORT PURPOSE AND SCOPE**Purpose:**

The purpose of this evaluation report supplement is to indicate that FIBERFORCE 500, FIBERFORCE 350, FIBERFORCE 300, FIBERFORCE 150 and FIBERFORCE 100 polypropylene fibers, described in ICC-ES evaluation report [ESR-1699](#), have also been evaluated for compliance with the codes noted below as adopted by the Los Angeles Department of Building and Safety (LADBS).

Applicable code editions:

- 2020 *City of Los Angeles Building Code* (LABC)
- 2020 *City of Los Angeles Residential Code* (LARC)

2.0 CONCLUSIONS

The FIBERFORCE 500, FIBERFORCE 350, FIBERFORCE 300, FIBERFORCE 150 and FIBERFORCE 100 polypropylene fibers, described in Sections 2.0 through 7.0 of the evaluation report [ESR-1699](#), comply with the LABC Chapter 19, and the LARC, and are subject to the conditions of use described in this supplement.

3.0 CONDITIONS OF USE

The FIBERFORCE 500, FIBERFORCE 350, FIBERFORCE 300, FIBERFORCE 150 AND FIBERFORCE 100 polypropylene fibers, described in this evaluation report supplement, must comply with all of the following conditions:

- All applicable sections in the evaluation report [ESR-1699](#).
- The design, installation, conditions of use and identification of the FIBERFORCE 500, FIBERFORCE 350, FIBERFORCE 300, FIBERFORCE 150 and FIBERFORCE 100 polypropylene fibers are in accordance with the 2018 *International Building Code*® (2018 IBC) provisions noted in the evaluation report [ESR-1699](#).
- The design, installation and inspection are in accordance with additional requirements of LABC Chapters 16 and 17, as applicable.
- Under the LARC, an engineered design in accordance with LARC Section R301.1.3 must be submitted.

This supplement expires concurrently with the evaluation report, reissued November 2022.

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ABC POLYMER INDUSTRIES, LLC

EVALUATION SUBJECT:**ABC POLYMER'S FIBERFORCE 500, FIBERFORCE 350, FIBERFORCE 300, FIBERFORCE 150 AND FIBERFORCE 100 POLYPROPYLENE FIBERS****1.0 REPORT PURPOSE AND SCOPE****Purpose:**

The purpose of this evaluation report supplement is to indicate that ABC Polymer's FiberForce 500, FiberForce 350, FiberForce 300, FiberForce 150, FiberForce 100 fibers, described in ICC-ES evaluation report ESR-1699, have also been evaluated for compliance with the codes 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) AKA: California Department of Health Care Access and Information (HCAI) and the 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 ABC Polymer's FiberForce 500, FiberForce 350, FiberForce 300, FiberForce 150, FiberForce 100 fibers, described in Sections 2.0 through 7.0 of the evaluation report ESR-1699, comply with CBC Chapters 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 Chapter 19, 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 ABC Polymer's FiberForce 500, FiberForce 350, FiberForce 300, FiberForce 150, FiberForce 100 fibers, described in Sections 2.0 through 7.0 of the evaluation report ESR-1699, comply 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 and the additional requirements of CRC Section R301.1.

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