

GRACE MICROFIBER™ Synthetic fiber for concrete

ASTM C1116, ASTM C94

Product Description

Grace MicroFiber™ is a synthetic fiber for concrete, manufactured from 100% virgin polypropylene in a microfilament form. Grace MicroFiber is produced on a state-of-the-art production line which is specifically designed to yield an ultrathin concrete reinforcing fiber. Grace MicroFiber contains over 50 million individual fibers for each 1.0 lb/yd³ dosed. Engineered specifically for use in concrete, it is alkali resistant, non-absorptive and completely noncorrosive. Grace MicroFiber protects concrete from stresses which cause cracking while the concrete is most vulnerable during the first 24 hours after placement. Grace MicroFiber complies with ASTM Designation C1116, *Standard Specification for Fiber-Reinforced Concrete and Shotcrete, Type III Synthetic Fiber-Reinforced Concrete or Shotcrete*. Grace MicroFiber is ¾ in. (19 mm) in length.

Uses

Grace MicroFiber may be used in any application where decreased plastic shrinkage cracking and improved durability are desired. Specifically, such applications include but are not limited to, slabs on grade, pavements, overlays, sloped walls, pools, shotcrete,

stucco, precast and prestressed products.

It is suggested that this product be used in conjunction with properly compacted base materials and jointing in accordance with ACI guidelines and standards.

Grace MicroFiber may be used as an alternative to welded wire fabric, depending on the application. Grace MicroFiber may not be used as a replacement for structural or post-crack control steel reinforcement. For temperature or shrinkage post-crack control, please consult a Grace representative regarding our STRUX® synthetic macro fibers

Advantages

Grace MicroFiber uniformly distributes multi-dimensionally throughout the concrete mixture. The extremely high number of fibers in the fresh concrete matrix protects the concrete when its tensile strength is lowest, reducing the formation of plastic shrinkage cracking. This cracking and other internal stresses would otherwise permanently weaken the resulting concrete. The concrete permeability is decreased, while surface characteristics, impact and toughness properties are improved.

Product Advantages

- Reduces plastic shrinkage cracking and improves durability
- Protects concrete from stresses that cause cracking
- Provides cost effective control of plastic shrinkage
- Provides overall higher quality of concrete



Technically advanced production techniques make Grace MicroFiber a highly durable fiber that is virtually invisible in fresh concrete. This minimizes fiber-reinforced concrete finishing concerns while providing the highest level of crack protection available.

Typical Properties

Specific gravity	0.91
Absorption	None
Modulus of elasticity	500 ksi
Melt point	320°F (160°C)
Ignition point	1094°F (590°C)
Alkali, acid and salt resistance	High

Addition Rates

Grace MicroFiber may be added to concrete at any point during the batching or mixing process. Grace MicroFiber may be added to the aggregate during weighing or charging, or to the central mixer or truck before, during, or after charging. The concrete must be mixed at high speed for 5 minutes, or 70 revolutions, after the addition of Grace MicroFiber to ensure uniform distribution. The standard range of addition for Grace MicroFiber is 0.5 to 1.0 lb/yd³ (300 to 600 g/m³) of concrete.

Compatibility with Other Admixtures

Grace MicroFiber is compatible with all Grace admixtures. Its action in concrete is purely mechanical and will not affect the hydration process. Each admixture should be added separately.

Packaging & Handling

Grace MicroFiber is available in convenient Concrete-Ready™ Bags which are added, unopened, to the truck drum or central mixer. The specially designed cellulose fiber bags disintegrate and disperse the fibers throughout the mix. Grace MicroFiber is available in 0.5 lb and 1.0 lb Concrete-Ready Bags in the U.S. and 600 g Concrete-Ready Bags in Canada.

Specifications

Fibers shall be 3/4 in. (19 mm) microfilament polypropylene fibers as supplied by Grace Construction Products, 62 Whittemore Avenue, Cambridge, MA 02140. One pound (450 grams) of fibers shall contain no less than 50 million individual fibers, 0.5 lb (225 grams) of fibers shall contain no less than 25 million individual fibers. Required dosage rate shall be as specified by the design engineer or architect. Grace MicroFiber shall be used in strict accordance with the supplier's recommendations and within time as specified in ASTM C94. The fiber shall comply with ASTM Designation C1116 Type III 4.1.3. Standard ACI 302 procedures for placing, finishing and curing shall be followed when using Grace MicroFiber.

References

Building Codes—
BOCA National Building Codes, SBCCI Standard Building Code, ICBO Uniform Building Code and all supplements as adopted by the Council of American Building Officials

American Concrete Institute (ACI)—
ACI 544.1 R *State of the Art Report of Fiber-Reinforced Concrete*
ACI 302 *Guide for Concrete Floor and Slab Construction*

American Society of Testing and Materials (ASTM)—
ASTM C1116 *Standard Specification for Fiber-Reinforced Concrete and Shotcrete*

ASTM C1579 *Standard Test Method for Evaluating Plastic Shrinkage Cracking of Restrained Fiber Reinforced Concrete (Using a Steel Form Insert)*

ASTM C94 *Standard Specification for Ready-Mixed Concrete*

www.graceconstruction.com

North American Customer Service: 1-877-4AD-MIX1 (1-877-423-6491)

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