GRACE FIBERS™

Synthetic fiber for concrete

ASTM C1116, ASTM C94

Product Description

Grace Fibers™ are synthetic fibers for concrete, manufactured from 100% virgin polypropylene in collated, fibrillated form. Designed specifically for use in concrete, they are alkali resistant, non-absorptive and completely noncorrosive. Their use protects concrete from stresses which cause cracking while it is most vulnerable during the first 24 hours after placement. Grace Fibers comply with ASTM Designation C1116, *Standard Specification for Fiber-Reinforced Concrete and Shotcrete*, Type III Synthetic Fiber-Reinforced Concrete or Shotcrete. They are available in ¾ in. (19 mm) length.

Uses

Grace Fibers 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 Fibers may be used as an alternative to welded wire fabric, depending on the application. Grace Fibers 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 Fibers uniformly distribute multi-dimensionally throughout the concrete mixture. The small fibrillated fibers mechanically lock in the fresh concrete matrix providing reinforcement for the mixture while its tensile strength is the weakest. This reinforcement reduces the formation of plastic shrinkage cracking that may otherwise permanently weaken the resulting concrete. The concrete permeability is decreased, while the surface characteristics, impact and toughness properties are improved. Together these effects work synergistically to produce a long-term better quality, more durable and serviceable concrete.

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

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 Fibers may be added to concrete at any point during the batching or mixing process. Grace Fibers may be added to the aggregate during weighing or charging, or to the central mixer or truck before, during, or after charging. The load must be mixed at high speed for 5 minutes, or 70 revolutions, after the addition of the Grace Fibers to ensure uniform distribution. The standard range of addition for Grace Fibers is ¾ to 3 lbs/yd^3 (450 to 1800 g/m^3) of concrete. Typically, 1½ lbs/yd^3 (900 g/m^3) of Grace Fibers provides excellent results. Higher addition rates may be used to produce concrete when special properties are required.

Compatibility with Other Admixtures

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

Packaging & Handling

Grace Fibers are available in convenient Concrete-Ready™ Bags which are added, unopened, to the truck drum or central mixer. The specially designed cellulose fiber bag disintegrates and disperses its contents of Grace Fibers, throughout the mix.

Specifications

Fibers shall be ¾ in. (19 mm) collated, fibrillated polypropylene fibers as supplied by Grace Construction Products, Cambridge, MA 02140. Required dosage rate shall be as specified by the design engineer or architect. Grace Fibers shall be used in strict accordance with the supplier's recommendations and within time as specified in ASTM C94. The fibers shall comply with ASTM Designation C1116 Type III 4.1.3 and with applicable building codes. Certification of compliance shall be made available on request. Standard ACI 302 procedures for placing, finishing and curing shall be followed when using Grace Fibers.

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

Fire Classifications—
Underwriters Laboratories (UL) on Series D700 and D800 metal deck assemblies

American Concrete Institute (ACI)—
ACI 544 *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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