

SINTA[®] M3019 Synthetic Fibers

Synthetic Micro Fiber for reinforcement of concrete (formerly Gilco Fibers™)

Product Description

SINTA[®] M3019 are synthetic micro fibers for concrete made from 100% virgin polypropylene in a monofilament form. Engineered specifically for use in concrete, they are alkali resistant, non-absorptive and completely non-corrosive. SINTA[®] M3019 protects concrete from stresses which cause cracking during the first 24 hours after placement while it is most vulnerable during the first 24 hours after placement. SINTA[®] M3019 complies with ASTM Designation C1116, Standard Specification for Fiber-Reinforced Concrete and Shotcrete, Type III Synthetic Fiber Reinforced Concrete or Shotcrete. They are available in 0.75 in (19 mm) length.

Compliance and Certification

- ASTM C1116 / C1116M, Standard Specification for Fiber-Reinforced Concrete, Type III Synthetic Fiber-Reinforced Concrete

Product Advantages

SINTA[®] M3019 uniformly distributes multi-dimensionally throughout the concrete. The fibers in the fresh concrete matrix provide reinforcement for the mixture while its tensile strength is weakest. The reinforcement reduces the formation of all types of early age cracking. This cracking caused by plastic shrinkage, settlement and other internal stresses would otherwise permanently weaken the resultant concrete. The concrete permeability is decreased, while the surface characteristics, impact and toughness properties are slightly improved. Together these effects work synergistically to produce a long-term, better quality, more durable and serviceable concrete.

- Protects concrete when tensile strength is at its lowest, reducing the formation of plastic shrinkage cracking.
- Enhances impact and toughness properties.
- Easy to mix and fast to disperse.
- Minimizes fiber-reinforced concrete finishing concerns.
- 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.

Uses

SINTA[®] M3019 may be used as an alternative to light-gage welded-wire reinforcement in applications 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.

Addition Rates

SINTA® M3019 may be added to concrete at any point during the batching or mixing process. SINTA® M3019 may be added to the aggregate during weighing or charging, or to the central mixer or transit mixer before, during, or after charging. The load must be mixed at mixing speed for 5 minutes, or 70 revolutions, after the addition of the fibers to ensure uniform distribution. The standard range of addition for SINTA® M3019 is $\frac{3}{4}$ to $1\frac{1}{2}$ lb/yd³ (450 to 900 g/m³) of concrete. Typically, 1 lb/yd³ (600 g/m³) of SINTA® M3019 provides excellent results when tested according to ASTM C1579. Higher addition rates may be used to produce concrete when special properties are required.

Compatibility with Other Admixtures

SINTA® M3019 are compatible with all GCP admixtures. Their action in concrete is purely mechanical and will not affect the hydration process. Each admixture should be added separately.

SINTA® M3019 Typical Properties

Specific gravity	0.91
Absorption	None
Modulus of elasticity	500 ksi (3.45 GPa)
Tensile Strength	15.6 ksi (108 MPa)
Melt point	320 °F (160 °C)
Ignition point	1094 °F (590 °C)
Alkali, acid and salt resistance	High
Material	100% virgin polypropylene
Nominal Length	0.75 in. (19 mm)
Nominal Fiber Count	30 million per lb.

Specifications

Fibers shall be 0.75 in. (19 mm) monofilament polypropylene fibers as supplied by GCP Applied Technologies, Cambridge, MA 02140. Required dosage rate shall be as specified by the design engineer or architect. SINTA® M3019 may be used in any application where decreased plastic shrinkage cracking and improved durability are desired. 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 and with applicable building codes. Certification of compliance shall be made available upon request. Standard ACI 302 procedures for placing, finishing and curing shall be followed when using SINTA® M3019 may be used in any application where decreased plastic shrinkage cracking and improved durability are desired.

Packaging

SINTA® M3019 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 SINTA® M3019. SINTA® M3019 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.

Safety and Handling

Read and understand the product label and Safety Data Sheet (SDS). All users should acquaint themselves with this information prior to working with the products and follow the precautionary statements. SDSs can be obtained by contacting your local GCP representative or office.

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

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