

SINTA® FDS2219 Synthetic Fiber, Fluid Delivery System Data Sheet

Synthetic Fiber in a Fluid Delivery System for reinforcement of concrete (formerly Grace Microfiber™ FDS)

Product Description

SINTA® FDS2219 is a fluid delivery system that contains SINTA® M2219—a synthetic micro-monofilament polypropylene fiber for concrete plastic shrinkage control. It allows automated dispensing of fibers into concrete. An accurate and recordable dosage of fibers can be delivered in an efficient and safe manner. The product is engineered specifically for rapid and uniform dispersion of fibers in concrete during batching.

Compliance and Certification

- ASTM C1116 / C1116M, Standard Specification for Fiber-Reinforced Concrete, Type III Synthetic Fiber-Reinforced Concrete
- Meets ICC ES AC32 criteria for Plastic Shrinkage Crack Reduction

Product Advantages

SINTA® FDS2219 uniformly distributes multi-dimensionally through-out 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. 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. 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.

When tested in accordance with ICC ES AC32 criteria for plastic shrinkage crack reduction, the SINTA® M2219 fibers contained within the SINTA® FDS2219 provided a 78% reduction in plastic shrinkage cracking over a control sample when dosed at 0.5 pcy.

Technically advanced production techniques make SINTA® FDS2219 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.

- 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[®] FDS2219 fluid delivery system is used in the concrete batching plant for automated addition of fibers into concrete. The fluid delivery system is used in any application where SINTA[®] M2219 can be used as an alternative to light-gage welded-wire reinforcement to reduce cracking due to plastic shrinkage and improve durability.

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[®]FDS2219 fluid delivery system may be added to the mixer any time during the batching process.

The standard range of addition of SINTA[®] FDS2219 is 0.3 to 0.6 gal/yd³ (equivalent of 0.5 to 1.0 lbs of SINTA[®] M2219 per cubic yard) as shown in the table below. When tested in accordance with ICC ES AC32 criteria for plastic shrinkage crack reduction, the SINTA[®] M2219 fibers contained within the SINTA[®] FDS2219 provided a 78% reduction in plastic shrinkage cracking over a control sample when dosed at 0.5 pcy, corresponding to a SINTA[®] FDS dosage rate of 0.30 gpy. One gallon of SINTA[®] FDS2219 contains 0.8 gallons of water.

SINTA [®] M2219 LBS/YD ³	SINTA [®] FDS2219 GAL/YD ³
0.50	0.30
0.75	0.45
1.00	0.60
1.50	0.90

Compatibility with Other Admixtures

SINTA[®] FDS2219 is compatible with all admixtures. Its action in concrete is purely mechanical and will not affect the hydration process. Each admixture should be added separately.

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Storage

SINTA[®] FDS2219 fluid delivery system will freeze and must be kept at temperatures above 40°F (4°C). If freezing does occur, allow product to completely thaw prior to using.

Do not use mechanical agitation.

Specific gravity	0.91
Absorption	None
Modulus of elasticity	500 ksi (3.5 GPa)
Tensile Strength	42 ksi (290 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

14 million per gal.

Specifications

SINTA[®] FDS 2219 fluid delivery system does not impact the specifications approved for SINTA[®] M2219. Fibers shall be 3/4 in. (19 mm) polypropylene fibers as supplied by GCP Applied Technologies. The design engineer or architect shall specify required dosage rate. SINTA[®] FDS2219 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 and with applicable building codes. Standard ACI 302 procedures for placing, finishing and curing shall be followed when using SINTA[®] FDS2219.

Packaging & Dispensing

SINTA[®] FDS2219 fluid delivery system is available in totes and is added directly to the mixer during batching using a SINTA[®] FDS2219 Dispensing System.

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

Fire Classifications

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

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GCP Applied Technologies Inc., 2325 Lakeview Parkway, Suite 450, Alpharetta, GA 30009, USA

GCP Canada, Inc., 294 Clements Road, West, Ajax, Ontario, Canada L1S 3C6

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