Grace MicroFiber™
Synthetic Fibre For Concrete

Description
Grace MicroFiber™ is a synthetic fibre 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 fibre. 600 grams of Grace MicroFiber contains approximately 135 million individual fibres. Engineered specifically for use in concrete, it is alkali resistant, non-absorptive and completely non-corrosive. Grace MicroFiber provides secondary reinforcement and 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 C 1116 Standard Specification for Fibre-Reinforced Concrete and Shotcrete, Type III Synthetic Fibre-Reinforced Concrete or Shotcrete. Grace MicroFiber is 19 mm in length.

Applications
Grace MicroFiber may be used in any application where decreased cracking and improved durability are desired. Grace MicroFiber is especially well suited for use in applications where extended finishing operations are required. Specifically applications include but are not limited to, slabs on grade, elevated slabs, pavements, overlays, sloped walls, pools, shotcrete, stucco, precast and prestressed concrete products. As secondary reinforcement for crack protection and control, Grace MicroFiber is a superior alternative to, and can eliminate the need for welded wire fabric. Grace MicroFiber is not recommended to increase joint spacing or as a substitute for any reinforcement required by the Model Building Codes and Standards.

Advantages
Grace MicroFiber uniformly distributes multi-dimensionally throughout the concrete mixture. The extremely high number of fibres in the fresh concrete matrix provides a high degree of secondary reinforcement. This reinforcement reduces the formation of all types of early cracking, protecting the concrete when its tensile strength is lowest. This cracking caused by plastic shrinkage, settlement, 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.

Technically advanced production techniques make Grace MicroFiber a highly durable fibre that is virtually invisible in fresh and hardened concrete. This minimises fibre-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	160°C
Ignition Point	590°C
Alkali, Acid and Salt Resistance	High

Mixing Requirements and 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 300 to 1,800 g/m^3 of concrete. Typically 600 g/m^3 of Grace MicroFiber provides excellent results. Higher addition rates may be used when special properties are required.

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

Grace MicroFiber is available in convenient Concrete-Ready™ Bags which are added, unopened, to the truck drum or central mixer. The specially designed cellulose fibre bags disintegrate and disperse the fibres throughout the mix. Grace MicroFiber is available in 600 g Concrete-Ready Bags.

Health and Safety

See Grace MicroFiber Material Safety Data Sheet or consult Grace Construction Products.

References

American Concrete Institute (ACI):
ACI 544.1 R "State of the Art Report of Fibre Reinforced Concrete"

ACI 302 "Guide for Concrete Floor and Slab Construction"

American Society of Testing and Materials (ASTM):
ASTM C 1116 "Standard Specification for Fibre-Reinforced Concrete and Shotcrete"

ASTM C 94 "Standard Specification for Ready-Mixed Concrete"

www.graceconstruction.com

Australia: Adelaide (61-8) 8261 8622, Brisbane (61-7) 3277 7244, Melbourne (61-3) 9359 2121, Perth (61-8) 9353 3433, Sydney (61-2) 9743 8811
Hong Kong (852) 2675 7898 Indonesia (62-21) 893 4260 Japan (81-3) 5405 2991 Korea (82-32) 814 2051
China Mainland: Beijing (86-10) 6786 3488, Guangzhou (86-20) 3833 0775, Shanghai (86-21) 5467 4678
Malaysia (60-3) 9074 6133 New Zealand: Auckland (64-9) 579 1320, Christchurch (64-3) 327 2173, Wellington (64-4) 238 2048 Philippines (63-49) 5497373 Singapore (65) 6265 3033 Taiwan (886-3) 461 5462
Thailand (66-2) 709 4470 Vietnam: Ho Chi Minh City (84-8) 7106 168

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