

STRUX[®] M323 Synthetic Fiber Blend

Synthetic Macro and Micro Fiber blend for reinforcement of concrete

Product Description

STRUX[®]M323 is a blended synthetic fiber complying with ASTM C1116/C1116M Type III, which can be used in ready-mixed concrete for different applications such slab-on-ground flooring, topping slabs and bridge decks. It consists of a combination of 3 lbs. (1.36kg). STRUX[®]75/32 macrofibers and 1 lb. (0.45kg). SINTA[®]M3019 microfibers. The STRUX[®]M323 Synthetic Fiber Blend has been specifically engineered to provide improved performance in both the plastic and hardened concrete state.

STRUX[®]M323 Synthetic Fiber Blend is extruded from a virgin polypropylene and polyethylene polymer blend. The geometry, blend ratio, strength and high modulus is specifically engineered to provide high post-crack control performance with excellent dispersion into the concrete matrix, reducing plastic and hardened concrete shrinkage cracking, and increasing fatigue resistance and concrete toughness. STRUX[®]M323 Synthetic Fiber Blend has been specifically engineered to be a user-friendly fiber reinforcement.

Compliance and Certification

- ASTM C1116 / C1116M, Standard Specification for Fiber-Reinforced Concrete, Type III Synthetic Fiber-Reinforced Concrete
- ASTM D7508 / D7508M, Standard Specification for Polyolefin Chopped Strands for Use in Concrete
- ANSI/SDI C-2017, Composite Steel Floor Deck Slabs (Section 2.4.B.15.a.3)

Product Advantages

- Can be used to completely or partially replace light rebar, welded wire reinforcement and steel fibers.
- Easy to mix and fast to disperse.
- Barely visible on the surface obtaining highly aesthetic concrete.
- Saves money through reduction or elimination of steel labor and materials, transportation, delivery and jobsite storage, reduced special inspections, and fewer construction days.
- Enhances safety by eliminating handling of steel fibers, welded wire reinforcement or rebar.
- Enhances jobsite safety by eliminating tripping hazards commonly associated with welded wire reinforcement and distributed steel rebar reinforcement.
- Eliminates concerns of proper positioning of steel reinforcement.
- Due to unique fiber design and uniform three dimensional dispersion, both plastic as well as drying shrinkage cracking is reduced, improving the ductility and durability of the concrete.
- Provides superior crack control due to the geometry and elastic modulus, corrosion resistant properties (non-ferric).
- Ease of pumping, passes easily through pump grates.
- May be used to provide effective crack width control.

Primary Applications

STRUX[®]M323 Synthetic Fiber Blend may be used in a variety of ready mix and precast applications including Bridge decks, residential and commercial slab-on-ground flooring, thin and conventional whitetoppings and overlays, and pavements.

Bridge Decks:

STRUX[®]M323 Synthetic Fiber Blend has been specially designed for ease of use, rapid dispersion, excellent finishability and improved pumpability in bridge decks.

Traditional light steel reinforced elements:

STRUX[®]M323 Synthetic Fiber Blend can be used as a suitable alternative to WWF or light reinforcing steel specified for temperature and shrinkage reinforcement.

Whitetoppings and overlays

STRUX[®]M323 Synthetic Fiber Blend is ideal for whitetoppings and overlays. Due to its superior performance in the field, rapid dispersion into the mixture and ease of finishability, the overall project productivity and contractor’s profitability is enhanced.

Addition rates

STRUX[®]M323 Synthetic Fiber Blend addition rates are dependent on the specific application and desired properties and will typically vary between 4 to 7.5 lbs./yd³ (1.8 to 4.5 kg/m³), Please consult your GCP Applied Technologies sales representative for proper addition rate of STRUX[®]M323 Synthetic Fiber Blend for your application. Always consult local building codes.

Guidelines for Usage and Compatibility with Other Admixtures

The utilization of STRUX[®]M323 Synthetic Fiber Blend may require the use of a mid-range water reducer or a high-range water reducer such as MIRA[®] or ADVA[®] families of admixtures to restore the required workability. In addition, slight increases in fine aggregate contents may be needed. STRUX[®]M323 Synthetic Fiber Blend may be added to concrete at any point during the batching or mixing process.

STRUX[®]M323 Synthetic Fiber Blend are compatible with all GCP admixtures. Their action in concrete is mechanical and will not affect the hydration process of the cement or compressive strength. Each liquid admixture should be added separately to the concrete mixture.

STRUX[®] M323 Synthetic Fiber Blend PHYSICAL PROPERTIES

Synthetic Macro Fiber:

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|-----------------------|---------------------|
| Specific gravity | 0.92 |
| Absorption | None |
| Modulus of elasticity | 1,389 ksi (9.5 GPa) |

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| Tensile strength | 90 ksi (620 MPa) |
| Melting point | 320°F (160°C) |
| Ignition point | 1,094°F (590°C) |
| Alkali, acid & salt resistance | High |
| Material | 100% virgin polypropylene and polyethylene blend |
| Electrical and Thermal Conductivity | Low |
| Nominal Length | 1.25 in. (32 mm) |
| Nominal Aspect Ratio (Macrofiber) | 75 |
| Nominal Equivalent Diameter (macrofiber) | 0.017 in. (0.43 mm) |
| Nominal Fiber Count | 106,400 per lb (233,600 per kg) / 30 million per lb |

Micro fibers 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. |

Finishing

STRUX®M323 Synthetic Fiber Blend reinforced concrete bridge decks can be finished with most finishing techniques. Due to its characteristics STRUX®M323 Synthetic Fiber Blend are suitable to be used in power/hand troweled concrete, colored and broom finished concrete. Impact on finishability increases with dosage rate and should be evaluated by the contractor to determine the impact on finishability with the proposed concrete mixture proportions

Packaging

STRUX®M323 Synthetic Fiber Blend is available in 4 lb. (1.8 kg) bags

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.

U.S. Patent No. 6,569,525

U.S. Patent No. 6,569,526

U.S. Patent No. 6,758,897

U.S. Patent No. 6,863,969

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Last Updated: 2024-06-21

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