

STRUX® 90/40

Synthetic Macro Fiber

DESCRIPTION

STRUX® 90/40 fiber is a synthetic macro fiber complying with ASTM C1116/C1116M Type III, which are a unique form of high strength, high modulus synthetic reinforcement that is evenly distributed throughout the concrete matrix. The macro fibers add toughness, impact, and fatigue resistance to concrete and improve residual strength and durability. Unlike traditional microfiber reinforcement, STRUX® 90/40 macro fibers are specifically engineered to provide post-crack control performance.

Reinforced concrete with STRUX® 90/40 macro fibers has been shown to reliably achieve residual flexural strength values in excess of 1 MPa (150 psi) at dosages that can easily be batched and finished. STRUX® 90/40 macro fibers are 40 mm (1.55 in.) in length with an aspect ratio of 90 and have specifically been designed to replace welded wire reinforcement, steel fibers and light rebar reinforcement.

STRUX® 90/40 macro fibers are a user-friendly fiber reinforcement, which are easier and safer to use, compared to these other types of reinforcement.

STRUX® 90/40 macro fibers may be used in a variety of ready mix, precast and shotcrete applications including slab-on-ground flooring, overlays, pavements, bridge decks, composite steel floor deck assemblies, mass concrete, thin-walled precast elements (septic tanks, vaults, walls, etc.), tunnel linings, pool construction and slope stabilization.

ADVANTAGES

- Can be used to completely or partially replace light rebar, welded wire reinforcement and steel fibers.
- Saves money through reduction or elimination of steel labor and material movement and storage costs, and fewer construction days.
- Enhances jobsite safety by eliminating handling of steel fibers, welded wire reinforcement and rebar.
- Enhances jobsite safety by eliminating tripping hazards commonly associated with welded wire reinforcement and rebar.
- Eliminates concerns of proper positioning of reinforcement.
- Provides superior crack control due to the geometry, elastic modulus, and corrosion resistant properties (non-ferric). Due to unique fiber design and uniform three dimensional dispersion, both plastic and drying shrinkage cracking is reduced, improving the ductility and durability of the concrete.
- Ease of pumping, passes easily through pump grates.
- May be used to provide effective crack width control.
- Reduces shotcrete rebound and improves cohesion.

FIELDS OF APPLICATION

- Ready Mix Concrete
- Precast and shotcrete applications
- Slab-on-ground flooring, overlays, pavements, bridge decks, composite steel floor deck assemblies, mass concrete, thin-walled precast elements (septic tanks, vaults, walls, etc.), tunnel linings, pool construction and slope stabilization.

Method of Use

Dosage

- STRUX® 90/40 macro-fiber addition rates are dependent on the specific application and desired properties, and will typically vary

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between 1.8 to 4.8 kg/m³ (3 to 8 lb./yd³) . Please consult your sales representative for proper addition rate of STRUX® 90/40 macro fibers for your application. Always consult local building codes.

- **Slab-on-Ground** using the STRUX App available for both Android and Apple OS.
- The addition rate of STRUX® 90/40 macro fibers as an alternative to specified steel reinforcement for temperature and shrinkage can be easily calculated using the STRUX® App available for both Android and Apple OS. Refer to the Uses section of this document for Code Compliance and UL/ULC Classification requirements.

Additional Usage Recommendations

- **Slab-on-Ground** STRUX® 90/40 macro fibers are specially designed for ease of use, rapid dispersion, good finishability and improved pumpability in slab-on-ground flooring and pavements. They may be used in commercial, industrial and residential floors, as well as other flat work and formwork applications.
- **Traditional light steel reinforced elements:** STRUX® 90/40 macro fibers can be used as a suitable alternative to welded wire reinforcement or light reinforcing steel specified for temperature and shrinkage reinforcement.
- **Precast and Prestressed concrete:** STRUX® 90/40 macro fibers can be used as a replacement for secondary reinforcements of normal and lightweight precast concrete elements and structures. (e.g. staircases, cellars, manholes, pits, septic tanks, vaults, walls etc.)
- **Composite Steel Floor Deck for Normal and Lightweight Concrete** STRUX® 90/40 macro fibers can be used as a suitable alternative to welded wire reinforcement or light reinforcing steel specified for temperature and shrinkage reinforcement for composite steel floor deck assemblies. STRUX® 90/40 macro fibers comply with American National Standards Institute/ Steel Deck Institute (ANSI/SDI C-1.0) design code provisions for minimum reinforcing at the minimum addition rate of 2.4 kg/m³ (4 lb./yd³). STRUX® 90/40 macro fibers are UL (U.S.) and ULC (Canada) classified with fire ratings up to two hours for D700, F700, D800, F800, D900 and F900 series except for 909, at a maximum addition rate of 3 kg/m³ (5 lb./yd³). To view UL and ULC Classification go online to www.ul.com, file #R13667.

Complimentary Products

- The utilization of STRUX® 90/40 macro fibers generally requires the use of a mid or high range plasticizer solution such as: MIRA®, ADVA®, Optima®, Quad®, or Enviromix®, to restore the required workability to macro fiber reinforced concrete. In addition, slight increases in fine aggregate contents may be needed.
- STRUX® 90/40 macro fibers may be added to concrete at any point during the batching or mixing process. After the macro-fiber addition, the concrete must be mixed at a minimum of 70 revolutions to ensure adequate dispersion. For more detailed instructions, refer to Technical Bulletin TB-1200.
- STRUX® 90/40 macro fibers are compatible with all 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 mix.

Process Component

- STRUX® 90/40 macro fiber-reinforced concrete floors can be finished with most finishing techniques. Due to its characteristics, STRUX® 90/40 macro fibers is suitable to be used in power/hand troweled concrete, colored and broom finished concrete.

CHARACTERISTICS

| | |
|-------------------|---------------------------------------|
| Product Nature | Mix of polypropylene and polyethylene |
| Apparent density | 0,920 |
| Fiber length | 40 mm |
| Ignition Point | 590 °C |
| Nominal diameter | 508 µm |
| Tensile strength | 620 MPa |
| Elasticity module | 10 GPa |

PRECAUTIONS

- 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.

SAFETY

Prior to any use, please read carefully the Safety data Sheet.

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TECHNICAL DATA SHEET

STRUX® 90/40
Synthetic Macro Fiber

Chryso
Concrete
Solutions

06/10/2025

| | |
|---------------------|--------|
| Melting Point | 160 °C |
| Chemical resistance | High |

PACKAGING

- 1.4 kg bag
- 1,8kg Bag (4 lb)
- 2.3 kg bag