

# STRUX<sup>®</sup> 90/40

Synthetic macro fiber reinforcement ASTM C1116/C1116M

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## Product Description

STRUX<sup>®</sup>90/40 synthetic macro fiber reinforcement is a unique form of high strength, high modulus synthetic macro reinforcement that is evenly distributed throughout the concrete matrix. STRUX 90/40 adds toughness, impact and fatigue resistance to concrete. Unlike traditional microfiber reinforcement, STRUX 90/40 is specifically engineered to provide high, post-crack control performance. Reinforced concrete with STRUX 90/40 has been shown to reliably achieve residual flexural strength values in excess of 150 psi (1.0 MPa) at dosages that can easily be batched and finished. It consists of synthetic macro fibers 1.55 in. (40 mm) in length with an aspect ratio of 90 that have specifically been designed to replace welded wire fabric, steel fibers and light rebar reinforcement in slab-on-ground flooring, thin-walled precast applications and composite steel floor deck assemblies. STRUX 90/40 is a user-friendly fiber reinforcement which is easier and safer to use, compared to these other types of reinforcement.

## Product Advantages

- Savings from lower labor costs and fewer construction days
- Enhances safety by eliminating handling of steel fibers, welded wire fabrics or light rebar
- Eliminates concerns of proper positioning of reinforcement
- Provides superior crack control due to the geometry and elastic modulus
- Corrosion Resistant (non-ferric)
- Controls plastic and long term drying shrinkage cracks

## Uses

### Slab-on-Ground

STRUX<sup>®</sup>90/40 is specially designed for ease of use, rapid dispersion, good finishability and improved pumpability in slab-on-ground flooring and many precast applications. STRUX 90/40 may be used in commercial, industrial, and residential floors, as well as other flat work and form work applications. The addition rate of STRUX 90/40 can be easily calculated using GCP's SDS Software, using several factors such as compressive strength of concrete, modulus of sub-grade reaction, thickness of concrete and applied loads. Please consult your GCP Applied Technologies sales representative for proper addition rate of STRUX 90/40 for your application. Always consult local building codes (refer to Engineering Bulletin 1).

## Composite Steel Floor Deck for Normal and Lightweight Concrete

STRUX 90/40 can be used as a suitable alternative to WWF or light reinforcing steel specified for temperature and shrinkage reinforcement for composite steel floor decks assemblies. STRUX 90/40 complies with American National Standards Institute/ Steel Deck Institute (ANSI/SDI C-1.0) design code provision for minimum reinforcing at the minimum addition rate of 4 lbs/yd<sup>3</sup> (2.4 kg/m<sup>3</sup>). STRUX 90/40 is UL (U.S.) and ULC (Canada) classified with fire ratings up to 2 hours for D700, F700, D800, F800, D900 and F900 except 909 at a maximum addition rate of 5 lbs/yd<sup>3</sup> (3.0 kg/m<sup>3</sup>).

### Addition Rates

STRUX 90/40 addition rates are dependent on the specific application and desired properties and will typically vary between 3 to 8 lbs/yd<sup>3</sup> (1.8 to 4.8 kg/m<sup>3</sup>) but could go higher.

### Mix Design

The utilization of Strux 90/40 may require the use of a mid-range water reducer or a superplasticizer such as MIRA or ADVA to restore the required workability. In addition, slight increases in fine aggregate contents may be needed.

STRUX 90/40 may be added to concrete at any point during the batching or mixing process. After fiber addition, the concrete must be mixed at the minimum of 70 revolutions to ensure adequate dispersion.

Please contact your GCP Applied Technologies representative with any questions. For more detailed instructions refer to Technical Bulletin TB-1200.

### Compatibility with Other Admixtures and Batch Sequencing

STRUX 90/40 is 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 mix.

STRUX 90/40 PROPERTIES	
Specific gravity	0.92
Absorption	None
Modulus of elasticity	1,378 ksi (9.5 GPa)
Tensile strength	90 ksi (620 MPa)
Melting point	320°F (160°C)
Ignition point	1,094°F (590°C)
Alkali, acid & salt resistance	High

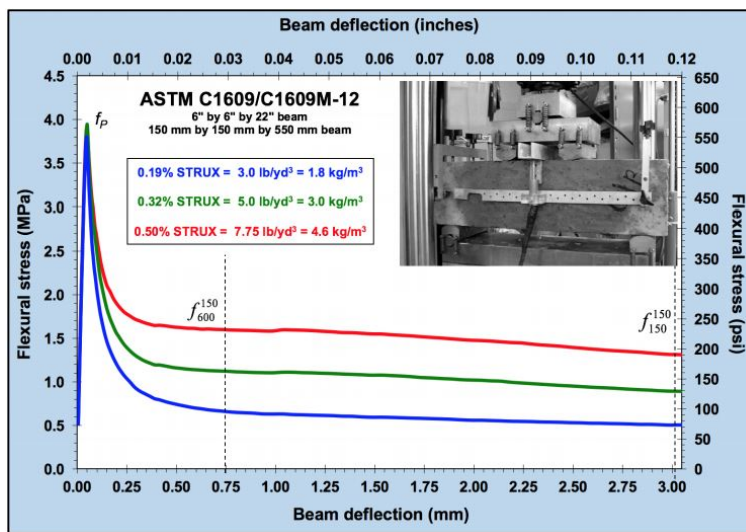
### Packaging

STRUX 90/40 is available in 1.0 lb or 5.0 lb (0.5 kg or 2.3 kg) CONCRETE-READY™ bags.

**Note:** The results shown represent the behavior of STRUX 90/40 fibers in concrete with an average cylinder compressive strength of 4,000 psi (28 MPa).

The residual flexural strength depends primarily on the type of fibers and the dosage rates at which they are added to the concrete.

Furthermore, GCP Applied Technologies Inc. has found that fiber performance also depends on the strength of the concrete. GCP Applied Technologies Inc. has performed extensive laboratory testing to cover the compressive strength range of practical interest i.e. concrete strength 2,500 to 6,500 psi (17 to 45 MPa).



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