

STRUX[®] 85/50

Synthetic Macro Fibre Reinforcement

Product Description

STRUX[®]85/50 Fiber Reinforcement is a unique form of high strength, high modulus synthetic reinforcement that is distributed throughout the concrete matrix. It consists of synthetic fibers 50 mm (2 in.) in length with an aspect ratio of 85 that have specifically been designed to ensure ease of use and rapid dispersion in concrete.

STRUX[®]85/50 Fiber Reinforcement is used in concrete to improve the material properties including toughness (post crack energy absorption), impact and fatigue resistance.

Advantages

When added to shotcrete and concrete, the primary benefit of STRUX[®]85/50 is a significant improvement in flexural toughness as outlined in Table 1.

- STRUX[®] 85/50 has been designed to provide:
- Tight crack control
- Good dispersion and pumpability
- Ductility
- Durability
- No corrosion issue
- Quick, easy and safe application
- An efficient and cost effective reinforcement alternative
- Safety
- Energy Absorption
- Stain free concrete Surfaces

Uses

STRUX[®]85/50 may be used in a variety of ready mix, precast and shotcrete applications including: slabs on grade, bridge decks, overlays, whitetopping, pipes, vaults, septic tanks, tunnel linings, slope stabilization, and swimming pools.

Mix Design and Mixing Requirements

The utilization of fibers generally requires the use of a superplasticizer such as ADVA[®] to restore the required workability to fiber reinforced concrete.

STRUX[®]85/50 may be added to concrete at any point during the batching or mixing process. STRUX[®]85/50 should be added at a maximum rate of one bag every 30 seconds. After fiber addition the concrete should be mixed at the recommended mixing speed for a minimum of 70 revolutions to ensure adequate fiber dispersion.

Addition Rates

STRUX®85/50 addition rates are dependent on the specific application and desired properties and will typically vary between 3.0 to 9.0 kg/m³ (5.0 to 15.0 lb/yd³).

Compatibility with Other Admixtures

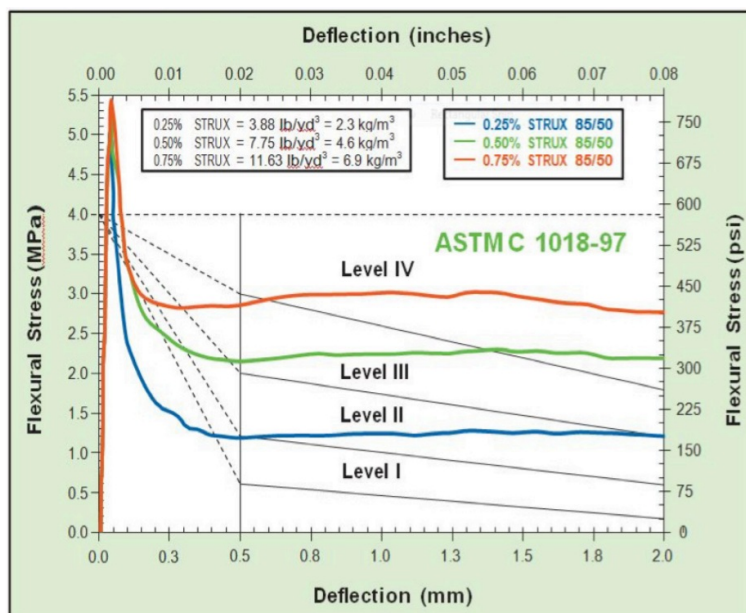
STRUX®85/50 is compatible with all GRACE admixtures. Their action in concrete is mechanical and will not affect the hydration process of the cement and therefore will not effect the compressive strength. Each liquid admixture should be added separately to the concrete mix.

Table 1

Typical Flexural Strength and Toughness results that can be expected from a 28 MPa (4000 psi), air entrained, concrete at 28 days

STRUX 85/50 Dosage Rate	Defl. @ 1 in. crack (mm)	Specimen Cross Section		Max. Load (kN)	Flexural Strength (MPa)	ASTM C 1018-97 Toughness Indices					ASTM C 1018-97 Residual Strength Factors					JSCE* (MPa)
		Base (mm)	Height (mm)			I ₅	I ₁₀	I ₂₀	I ₃₀	I ₆₀	R _{5,10}	R _{10,20}	R _{20,30}	R _{30,60}	R _{10,60}	
Control	0.038	102.1	102.0	19.20	5.50	2.88	3.94	4.89	5.30	5.73	21.3	9.5	4.1	1.4	4.3	0.35
0.25%	0.037	101.8	103.5	18.60	5.19	3.15	4.76	7.12	9.17	15.37	32.1	23.6	20.5	20.7	21.4	1.44
0.50%	0.038	102.0	103.8	19.30	5.37	3.51	5.63	9.24	12.60	23.07	42.4	36.1	33.6	34.9	34.7	2.42
0.75%	0.039	102.1	103.7	20.20	5.60	3.49	5.72	10.00	14.36	27.93	44.5	42.8	43.6	45.2	44.2	3.07

STRUX 85/50 Dosage Rate	Defl. @ 1 in. crack (mil)	Specimen Cross Section		Max. Load (lbf)	Flexural Strength (psi)	ASTM C 1018-97 Toughness Indices					ASTM C 1018-97 Residual Strength Factors					JSCE* (psi)
		Base (in.)	Height (in.)			I ₅	I ₁₀	I ₂₀	I ₃₀	I ₆₀	R _{5,10}	R _{10,20}	R _{20,30}	R _{30,60}	R _{10,60}	
Control	1.50	3.98	3.98	4316	798	2.88	3.94	4.89	5.30	5.73	21.3	9.5	4.1	1.4	4.3	51
0.25%	1.46	3.97	4.04	4181	753	3.15	4.76	7.12	9.17	15.37	32.1	23.6	20.5	20.7	21.4	209
0.50%	1.50	3.98	4.05	4339	779	3.51	5.63	9.24	12.60	23.07	42.4	36.1	33.6	34.9	34.7	351
0.75%	1.54	3.98	4.04	4541	812	3.49	5.72	10.00	14.36	27.93	44.5	42.8	43.6	45.2	44.2	445



* Japanese Society for Civil Engineering

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The Technical Service Department of Grace Construction Products is available to assist you in the correct and best use of our products. These resources and advice are at your disposal entirely without obligation. Please contact:

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