Macro vs. Micro Synthetic Fibers

Micro synthetic fibers are used to control plastic shrinkage cracks that occur prior to an initial set of concrete. Micro fibers are typically less than 1.5 inches (38 mm) long, with addition rates between 0.5 and 1.5 lb/yd^3 (0.3 to 0.9 kg/m^3).

Macro synthetic fibers are typically used to provide temperature and drying shrinkage crack control as an alternative to welded wire reinforcement (WWR). Like WWR, their purpose is not to prevent cracks, but to minimize crack width opening. They are typically greater than 1.25 inches (32 mm) long with addition rates between 3 and 15 lb/yd^3 (1.8 to 6.0 kg/m^3) depending on specific design parameters.

STRUX® Macro Fibers

Temperature & Shrinkage Control

- **STRUX® 90/40**
- **STRUX® 75/32**
- **STRUX® BT50**

SINTA® Micro Fibers

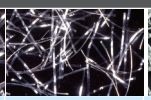
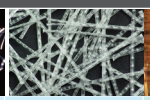
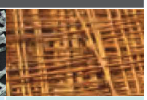
Plastic Shrinkage Control

- **SINTA® M2219**
- **SINTA® M3019**
- **SINTA® F19**
- **SINTA® F38**

Typical Applications and Benefits of Synthetic Fibers

		SINTA® M2219	SINTA® M3019	SINTA® F19	SINTA® F38	STRUX® 90/40	STRUX® 75/32	STRUX® BT50	Conventional WWR 6 x 6 - W1.4 x 1.4
FIRE RATED	UL Certification	YES (1 lb / cu. yd.)	YES (1 lb / cu. yd.)	YES (1 lb / cu. yd.)	YES (1 lb / cu. yd.)	YES (max 5 lb / cu. yd.)	YES (max 5 lb / cu. yd.)		
	Weight approx. per 100 sq. ft.	n/a	n/a	n/a	n/a	4.92 lb	4.92 lb		
SDI STANDARD	ANSI / SDI C 1.0 Standard					Min. 4 lb / cu. yd.	Min. 4 lb / cu. yd.		✓
BENEFITS: PLASTIC CONCRETE	Safe, easy handling	✓	✓	✓	✓	✓	✓	✓	✓
	Plastic shrinkage crack control	✓	✓	✓	✓	✓	✓	✓	
BENEFITS: HARDENED CONCRETE	Drying shrinkage crack control			Minimum 1.5 lb / cu. yd.	Minimum 1.5 lb / cu. yd.	✓	✓	✓	✓
	Post-crack load carrying capacity					✓	✓	✓	✓
	Non-corroding	✓	✓	✓	✓	✓	✓	✓	
OTHER BENEFITS	No chairs required	✓	✓	✓	✓	✓	✓	✓	
	Uniform dispersion	✓	✓	✓	✓	✓	✓	✓	
	Minimum concrete cover required								✓
	Pumpability	✓	✓	✓	✓	✓	✓	✓	n/a
	Saves time	✓	✓	✓	✓	✓	✓	✓	
	Easy to finish	✓	✓	✓	✓	✓	✓	✓	✓

Typical Applications and Benefits of Synthetic Fibers (continued)

		Micro Fibers				Macro Fibers			Welded Wire Reinforcement
		Plastic Shrinkage Control				Temperature and Drying Shrinkage Control and Plastic Shrinkage Control			Temperature and Shrinkage Control
	Intended Use	SINTA® M2219	SINTA® M3019	SINTA® F19	SINTA® F38	STRUX® 90/40	STRUX® 75/32	STRUX® BT50	Conventional WWR 6 x 6 - W1.4 x 1.4
									
DETAILED DESCRIPTION	Material	Polypropylene	Polypropylene	Polypropylene	Polypropylene	Polyolefin	Polyolefin	Polyolefin	Steel
	Configuration	Monofilament	Monofilament	Fibrillated	Fibrillated	Monofilament – Tape-Style	Monofilament – Tape-Style	Monofilament – Bi-Tapered	Rolled or sheet
	Length	.75 in (19 mm)	.75 in (19 mm)	.75 in (19 mm)	1.5 in (38 mm)	1.55 in (40 mm)	1.25 in (32 mm)	2 in (50 mm)	n/a
	Elastic Modulus	500 ksi (3.45 GPa)	500 ksi (3.45 GPa)	725 ksi (5.0 GPa)	725 ksi (5.0 GPa)	1390 ksi (9.5 GPa)	1390 ksi (9.5 GPa)	1000 ksi (7.0 GPa)	29000 ksi (200 GPa)
	Tensile Strength	42 ksi (290 MPa)	42 ksi (290 MPa)	44 ksi (300 MPa)	44 ksi (300 MPa)	90 ksi (620 MPa)	90 ksi (620 MPa)	80 ksi (550 MPa)	65 ksi (450 MPa)
	Specific Gravity	0.905	0.905	0.905	0.905	0.92	0.92	0.92	7.8
	Number of fibers per pound (nominal)	70 million	30 million	20 - 30 million	10-15 million	85,000	106,000	27,000	n/a
	Typical Dosage / Placement	.5 - 1 lb / cu. yd.	.75 - 1.5 lb / cu. yd.	1 - 3 lb / cu. yd.	1 - 3 lb / cu. yd.	3 - 10 lb / cu. yd.	3 - 7.5 lb / cu. yd.	7 - 15 lb / cu. yd.	Single layer (middle to upper third)
COMPOSITE METAL DECKS	Multi-story commercial	✓	✓	✓	✓	✓	✓	✓	✓
SLABS	Residential / light commercial	✓	✓	✓	✓	✓	✓		✓
	Commercial	✓	✓	✓	✓	✓	✓	✓	✓
	Industrial / warehouses	✓	✓	✓	✓	✓	✓	✓	✓
CONCRETE PAVEMENTS	Parking garages & lots	✓	✓	✓	✓	✓	✓	✓	✓
	Highways, roadways & runways	✓	✓	✓	✓	✓	✓	✓	✓
	Overlays	✓	✓	✓	✓	✓	✓		✓
	Thin Overlays	✓	✓	✓	✓		✓		
WALLS	Exposed concrete walls & sections	✓	✓	✓	✓	✓	✓	✓	
PRECAST	Tilt-up	✓	✓	✓	✓	✓	✓	✓	✓
	Vaults	✓	✓	✓	✓	✓	✓		✓
	Tunnel linings	✓	✓	✓	✓	✓	✓	✓	✓
	Tanks & containers	✓	✓	✓	✓	✓	✓		✓
	Manholes	✓	✓	✓	✓	✓	✓		✓
SHOTCRETE		✓	✓	✓	✓	✓	✓	✓	✓

Visit us at **gcpat.com** to learn about **STRUX®** & **SINTA®** synthetic fibers.

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