

## 'STRUCTURAL' SYNTHETIC FIBERS FOR CONCRETE REINFORCEMENT



**TUF-STRAND SF** structural fibers are a patented synthetic macro-fiber successfully used to replace steel fibers, welded wire mesh and conventional reinforcing bars in a wide variety of applications. TUF-STRAND SF fibers comply with ASTM C1116, Standard Specification for Fiber Reinforced Concrete and Shotcrete, and are specifically designed to provide equivalent tensile and bending moment resistance to conventional reinforcement requirements.

Concrete reinforced with TUF-STRAND SF will have three-dimensional reinforcing with enhanced flexural toughness, impact and abrasion resistance and will also help mitigate the formation of plastic shrinkage cracking in concrete

### PRIMARY APPLICATIONS

- Thin walled pre-cast (septic tanks, vaults, walls, etc.)
- Shotcrete for tunnel linings, pool construction and slope stabilization
- Pavements and white-toppings
- Slab on Grade construction (distribution centers, warehouses, etc.)
- Elevated decking

### FEATURES & BENEFITS:

- Equivalent strengths to WWM and rebar provided by engineering calculations
- Provides three-dimensional reinforcement against micro and macro-cracking
- Reduces equipment wear, fiber rebound and increases build-up thickness compared to steel fibers for shotcrete applications
- Increases overall durability, fatigue resistance and flexural toughness
- Reduction of in-place cost versus wire mesh for temperature / shrinkage crack control
- Easily added to concrete mixture at any time prior to placement
- Mildew, acid and alkali resistant, will not absorb water
- Tested in accordance with ASTM C 1399, C 1550 and C 1609



SLABS ON GRADE



SHOTCRETE



PRE-CAST



PAVEMENTS





## DIRECTIONS FOR USE

TUF-STRAND SF fibers can be added to the concrete mixture at any time prior to placement of the concrete. It is generally recommended to add any fiber material at the ready-mix concrete plant during batching. Fibers must be mixed with concrete for a minimum of three (3) to five (5) minutes at maximum mixing speed to ensure complete dispersion and uniformity.

When adding 3-5 lbs/yd (2-3 kg/m<sup>3</sup>), a slump loss of 2" (50 mm) can be expected for a typical ready-mix concrete design. For dosages of 6-12 lbs (4-7 kg/m<sup>3</sup>), a slump loss of 3-5 in (75-125 mm) can be expected. The use of water reducers and/or superplasticizers, such as Eucon 37, 1037 or Plastol 5000 will be necessary to maintain desired workability. Add other admixtures independently from fiber addition

## PUT TO THE TEST

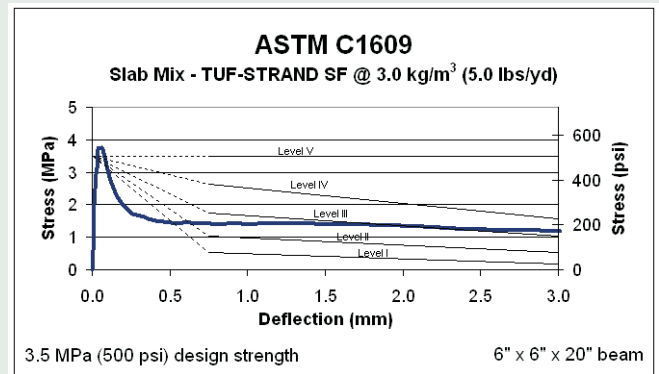
TUF-STRAND SF fibers have been tested by accredited facilities to determine their performance in a wide variety of concrete applications including slabs on grade, precast concrete and shotcrete.

## FIBER DOSAGE INFORMATION

Dosage rates will vary depending upon the reinforcing requirements and can range from 3.0 lbs/yd (1.8 kg/m<sup>3</sup>) to 20 lbs/yd (12 kg/m<sup>3</sup>). Calculations will be provided to meet the specific engineering requirements of the job. Slabs on Grade incorporating welded wire mesh generally require as little as 3 to 5 lbs/yd (1.8 to 3 kg/m<sup>3</sup>) to provide the same temperature and shrinkage reinforcing steel requirements. TUF-STRAND SF fibers comply with applicable portions of the International Code Council (ICC) Acceptance Criteria AC308 for synthetic fibers and are also accepted as an alternate as described in ACI 308 (Design of Slabs on Ground) and for elevated construction by the Steel Deck Institute.

### Physical Properties

Monofilament polypropylene / polyethylene blend	
Specific Gravity	0.92
Fiber Length	2"
Tensile Strength	87-94 ksi (600-650 MPa)
Modulus of Elasticity	725 ksi (5.0 GPa)
Aspect Ratio	74



P <sub>150,0.75</sub>	f <sub>150,0.75</sub>	P <sub>150,3.0</sub>	f <sub>150,3.0</sub>	T <sub>150,3.0</sub>	JSCE	R <sub>e3</sub> (%)
10.5 kN	1.4 MPa	9.0 kN	1.2 MPa	35 J	1.41 MPa	34.8
2360 lbs	200 psi	2020 lbs	175 psi	310 in lb	205 psi	

single test analysis - individual results may vary

The Euclid Chemical Company, founded in 1910, is today a worldwide supplier of quality products and services for the concrete and masonry industry. Marketed under the EUCCO name, we offer a full line of admixtures, repair and maintenance products based on the latest technologies. We provide complete specification assistance and laboratory support as well as on-site service for guidance on proper product usage. EUCCO materials are warehoused in over 200 locations in the USA and are available world-wide through international affiliates.

Contact your Euclid Chemical Representative or call 800-321-7628 for more detailed technical specifications and engineering data.