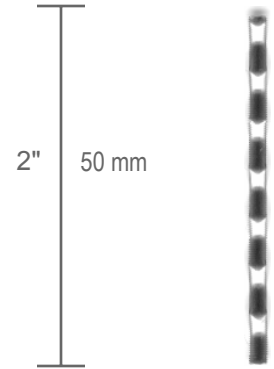


# MATRIX FLD 1050 steel fibres

## PRODUCT DATA SHEET

### TECHNICAL INFORMATION

FIBER	MATRIX – FLD 1050
ASTM Specification	ASTM A820 Type I
Material Type	Low Carbon, drawn wire
Minimum Tensile Strength	828 Mpa (120,000 psi)
Fiber Length	50.0 mm (2.0") also available in 1", & 1.5"
Average Equivalent Diameter	1 mm (0.40")
Average Aspect Ratio	50
Specific Gravity	7.85
Deformations	Full Length deformed circular segment
Appearance	Bright and clean wire
Packaging	25 kg (55lb.) paper (poly lined) bags 40 bags per pallet – 2200 lbs



### SAFETY

FRC recommends that gloves and eye protection be used when handling or adding MATRIX FLD steel fibres.

### REFERENCE DOCUMENTS

- ACI 302.1R** \* Guide for Concrete Floor and Slab Construction.
- ACI 360R-92** \* Design of Slabs on Grade.
- ACI 544-1R** \* Fiber Reinforced Concrete
- ACI 544-3R** \* Guide for Specifying, Proportioning, Mixing, Placing, and Finishing Steel Fiber Reinforced Concrete.
- ACI 506** \* Guide for Shotcrete.
- ASTM A820** \* Standard Specification for Steel Fibers for Fiber-Reinforced Concrete.
- ASTM C94** \* Standard Specification for Ready-Mixed Concrete.
- ASTM C1018** \* Standard Test Method for Flexural Toughness and First-Crack Strength of Fiber-Reinforced Concrete.
- ASTM C1116** \* Standard Specification for Fiber-Reinforced Concrete and Shotcrete.

### MIXING – PLACING – FINISHING – TESTING

- ◆ **Mixing** - MATRIX FLD fibres can be added during or after the batching of concrete. In some instances FLD can be added before the concrete is batched. Mixing should conform to ASTM C94 standard specification for ready-mixed concrete.
- ◆ **Placing** - MATRIX steel fibres can be pumped and placed using conventional equipment. Hand screeds can be used, but vibratory and laser screeds are recommended to provide added compaction and bury surface fibers
- ◆ **Finishing** - Normal finishing equipment & techniques can be used when finishing MATRIX fibers. Troweling blades should be kept at a flat angle for as long as possible to insure a fibre free surface.
- ◆ **Testing** - Sample testing on jobsite shall conform to ASTM C1072. Measuring materials, toughness, and workability shall be governed by ASTM C1116 & ASTM C1018



MATRIX FLD “Full Length Deformed Steel Fibres”

FLD Fibres are made of low carbon, cold drawn steel and have a minimum tensile strength over 120,000 psi. They contain deformations that run the full length of the fibres and give an incredible mechanical bond to the concrete matrix. FLD fibres provide a uniform distribution of reinforcement throughout the concrete that increase the tensile strength, impact resistance, shear strength, and ductility of the concrete. Below are some of the mechanical properties of MATRIX steel fibres:

MECHANICAL PROPERTIES OF MATRIX FLD FIBRES	
<u>Mechanical Property</u>	<u>Affect on Concrete</u>
◆ Direct Tension:	Can significantly enhance direct tensile strength: Range of 30 to 40% for quantities of 1% by volume and higher
◆ Flexure:	At typical quantities for slabs-on-ground (from 30 to 60 lbs) FLD fibres do not increase first crack strength of the concrete (Modulus of Rupture). However, due to the post crack behavior and the ability to maintain load support with substantial deflections, steel fibre reinforced concrete is capable of providing increased ultimate load carrying capacity as the fiber quantity increases from 0.35 to 0.6%.
◆ Shear & Torsion:	Generally increases the pure shear & torsion strength of concrete
◆ Compression:	Does not significantly increase compressive strength
◆ Abrasion Resistance:	No significant affect on the concrete abrasion resistance
◆ Thermal Conductivity:	No significant affect on concrete’s thermal conductivity
◆ Electrical Conductivity:	No significant affect at quantities less than 1% by volume
◆ Toughness:	Can increase the equivalent flexural strength of concrete by 20 – 70%; depends on fibre type and quantities
◆ Fatigue:	Can increase the fatigue strength by 30 to 70% depending on fiber type and quantity
◆ Impact Resistance:	Able to increase by 2 to 3 times depending on quantity, length, and pullout mechanism

\*More about the mechanical properties of steel fibres is discussed in our technical design manual.

**WARRANTY AND LIMITATION OF LIABILITY**

MATRIX FLD Fibres shall conform to FRC standards and specifications. FRC’s sole liability for claim shall be limited to replacement of defective or nonconforming fibres. In no event shall FRC be liable for any incidental, consequential, or special damages.

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- Complies with ASTM A 820 Type I
- Provides Uniform reinforcement
- Increases Flexural Toughness of Concrete
- Provides excellent crack control