



# Royal™ Steel Fibers

## Product Data

### Product Description

Royal™ Steel Fiber reinforcement products are designed to increase concrete material performance in a variety of applications. Royal™ fibers allow high volume loading and rapid uniform dispersion. In applications requiring additional reinforcement, Royal™ fibers will not hang-up on rebar or other obstructions during concrete placement.

### Primary Use

Royal™ fibers are used as primary or secondary reinforcement in precast concrete, cast-in-place concrete, and wet mix shotcrete applications. Royal™ fibers enhance concrete material performance properties such as average residual strength, toughness, impact strength and fatigue endurance. Royal™ fibers provide three-dimensional reinforcement, assured positioning and reduced installation labor making them an attractive alternative or supplement to conventional reinforcement.

### Applications

Royal™ fibers have been designed for a variety of cast-in-place applications such as: industrial and commercial flooring and foundations, highway pavements, bridge deck overlays, driveways, sidewalks, curbs, airport runways, hydrodynamic structures and blast-resistant structures. Royal™ fibers are also ideal for other precast and shotcrete applications including restoration, stabilization and rehabilitation.

### Concrete Performance Advantages

- Higher green strength
- Higher impact strength
- Higher ductility
- Higher post-crack load carrying capacity
- Increased toughness
- Increased flexural fatigue strength
- Increased durability / crack resistance
- Plastic shrinkage crack control
- Shrinkage crack control

## Physical Properties of Royal™ Fibers

<i>Property</i>	<i>Results</i>
Specific Gravity (Bulk Relative Density)	7.8
Tensile Strength	150,000 psi (1 034 MPa)
Modulus of Elasticity	30,000,000 psi (206 700 MPa)

## Applicable Standards

Royal™ fibers meet or have been tested in concrete according to the following American Society for Testing and Materials (ASTM) Standards:

- ASTM A 820 Specification for Steel Fibers for Fiber-Reinforced Concrete (Type 1 for Cold Drawn Wire)
- ASTM C 1116 Standard Specification for Fiber-Reinforced Concrete and Shotcrete
- ASTM C 39/C 39M Test Method for Compressive Strength of Cylindrical Concrete Specimens
- ASTM C 1399 Test Method for Obtaining Average Residual Strength of Fiber-Reinforced Concrete

## Technical Data and Services

Assistance is available to help you exceed your concrete project performance requirements. Royal provides assistance in determining appropriate fiber dosage and mixture proportions. Specific test results are available upon request.

## Royal™ Fiber Types and Application Recommendations

Product #	Length	Aspect Ratio (approx.)	Package Size	Cast-in-Place	Precast Concrete	Wet Mix Shotcrete
1600	1.6 inches (41 mm)	53	50 lbs (22.7 kg) box 1800 lbs (816 kg) Gaylord	Yes	Yes	No
750	.75 inches (19 mm)	25	50 lbs (22.7 kg) box 2000 lbs (907 kg) Gaylord	Yes	Yes	Yes
500	.50 inches (13 mm)	17	50 lbs (22.7 kg) box 2200 lbs (998 kg) Gaylord	Yes	Yes	Yes

Royal™ fibers can be used in concrete and mortar mixtures, and in a variety of methods for making and placing concrete and mortar.

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