

	<h2 style="margin: 0;">Nycon ProConF</h2> <h3 style="margin: 0;">Collated Polypropylene Fibrillated Fibers</h3>
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Since the early 1970's, construction professionals have recognized the value of polypropylene fibers as a reinforcement alternative to conventional wire mesh in hardened concrete. The primary use of polypropylene fibers is as a secondary/temperature-shrinkage reinforcement, which generates an appreciable increase in post-crack energy absorption capacity, ductility, and overall durability in concrete.

**Description**

Nycon ProConF is a collated fibrillated polypropylene fiber that mechanically bonds with the concrete matrix. ProConF is manufactured from 100% virgin homopolymer polypropylene and contains no reprocessed olefin materials. ProConF is extruded as a flat sheet producing a rectangular cross-section to optimize the surface area. The lattice pattern of the fibers is created in the manufacturing process and consists of main fibrils connected by cross fibrils. Concrete passes through the lattice which opens in the matrix and anchors the fiber reinforcement as it hardens. The fibers are chemically inert in concrete, hydrophobic, non-corrosive, non-magnetic, and pose no hazards to workers.

Nycon ProConF fibers are engineered and manufactured to an optimum configuration for use as a concrete reinforcement at a minimum of 0.09% by volume. They comply with ICBO ES AC32 Section 4.1.1 and 4.1.2 as plastic and secondary concrete reinforcement, with ASTM C-1116, Section 4.1.3., as well as with other national building codes.

<p><b>Benefits of Nycon ProConF Fibers in Concrete:</b></p> <ul style="list-style-type: none"> <li>▪ Better crack-control reinforcement than welded-wire mesh (WWF), and without the labor.</li> <li>▪ Reduction in micro-macro cracking, plastic shrinkage, and plastic settlement cracking.</li> <li>▪ Increased resistance to impact and shattering forces, material loss from abrading forces, and water migration.</li> <li>▪ Increased toughness, residual strength, durability and service life.</li> <li>▪ Reduced risk of catastrophic failure.</li> </ul>	<p><b>ProConF Advantages:</b></p> <ul style="list-style-type: none"> <li>▪ Accepted by national codes.</li> <li>▪ Proactive crack-fighting reinforcement vs. reactive WWF reinforcement.</li> <li>▪ Non-magnetic, rustproof, alkali-resistant.</li> <li>▪ Requires no minimum amount of concrete cover.</li> <li>▪ Consistent, uniform distribution throughout the concrete matrix.</li> <li>▪ Safe and easy to use.</li> <li>▪ Compared to WWF, decreases construction time and labor, increases productivity.</li> </ul>
<p><b>Uses:</b> Nycon ProConF fibers are ideal for applications where a tough, ductile, corrosion-resistant concrete is required, as in:</p> <ul style="list-style-type: none"> <li>▪ Slabs-on-grade</li> <li>▪ Flatwork</li> <li>▪ Cast-in-place</li> <li>▪ Decorative concrete</li> <li>▪ Whitetopping</li> <li>▪ Concrete pipe</li> <li>▪ Shotcrete and gunite work</li> </ul>	<p><b>Applications:</b></p> <ul style="list-style-type: none"> <li>▪ Commercial, industrial, and residential buildings and floorings</li> <li>▪ Academic, healthcare, correctional and other institutional facilities</li> <li>▪ Highways, bridge deck overlays, tunnels, airport runways, taxiways</li> <li>▪ Wastewater treatment, sewage, nuclear power and hydroelectric plants</li> <li>▪ Parking facilities, tilt-up panels and retaining walls</li> <li>▪ Driveways, pool decks, patios, walkways</li> <li>▪ Port and marine structures, water conduits, pools, sea walls</li> <li>▪ Linings and pavements for mines and tunnels</li> <li>▪ Blast-resistant structures, seismic resistant elements</li> </ul> <p>Slope stabilization, water-diversion channels</p>

**Dosage Rate:**

The standard dosage level is 1.5 pounds per cubic yard (0.9 kgs/cubic meter). At this dosage level Nycon ProConF fibers perform as plastic-shrinkage and secondary/temperature-shrinkage reinforcement. For certain applications, the fibers can be used at 0.75 to 1.0 pound per cubic yard (0.45 to 0.6 kg/cubic meter). They can also be used at higher dosages, for example, at the rate of 3.0 pounds of fiber per cubic yard of concrete (1.8 kgs/cubic meter) for ultra-thin whitetopping (UTW, a concrete overlay placed on existing, fatigued hot-mixed asphalt pavement in high-trafficked intersections). The fibers may be used at even higher dosage rates, up to 10 pounds per cubic yard (6.25 kgs/cubic meter), in shotcrete and specific cast-in-place applications, e.g., tunnel liners and bridge decks. For specialty concrete performance and recommended fiber application rates, contact Nycon's engineering department.

**Mixing Procedures:**

Nycon ProConF fibers can be added to the mix before, during or after batching and mixing conventional concrete materials. If fibers are added after conventional materials have been mixed, approximately 3-4 minutes of additional mixing time is required to achieve optimum distribution of the fibers. No additional water or other mix design changes are required at standard dosage levels.

**Finishability:**

Any conventional finishing method can be employed with Nycon ProConF. When using a broom or tined rake, pull in one direction only.

**Compatibility:**

Nycon ProConF fibers are compatible with all concrete admixtures and additives. No adjustments to standard dosage levels for admixtures or additives are required.

**Guidelines:**

Nycon ProConF fibers should not be used to replace structural, load-bearing reinforcement, or as a means to use thinner concrete sections than specified; neither are they intended to increase joint spacing beyond those dimensions suggested by PCA and ACI industry standard guidelines.

**Packaging:**

Standard bag weights per cubic yard are 1.5, 9.0, 13.5, and 15 pounds; standard bag weights per cubic meter are 0.9kg and 4.5kg. The typical dosage rate for plastic-shrinkage reinforcement is 1.5 pounds/cubic yard (0.9 kilograms/cubic meter). Special packaging is available to accommodate mixing systems. Bags are packed in cartons, shrink-wrapped, and palletized for protection during shipping.

**Standard Specification:**

Nycon ProConF fibers meet ASTM C1116, Standard Specification for Fiber-Reinforced Concrete and Shotcrete, Paragraph 4.1.3, which is typically quoted in most specifications. International Code Council (ICC) Engineering Services (ES) has a comprehensive Acceptance Criteria (AC) 32. ICC ES AC 32 contains specific tests with performance requirements to define acceptance at four levels. Nycon's ProConF fibers have been tested for compliance with AC 32, Sections 4.1.1 (plastic-shrinkage reinforcement) and 4.1.2 (secondary reinforcement). ProConF was found to meet or exceed the AC 32 criteria for both plastic-shrinkage and secondary/temperature-shrinkage reinforcement.

**Mini-Specification:**

Use only 100% virgin collated fibrillated polypropylene (CFP) fibers containing no reprocessed olefin materials. These fibers shall be specifically manufactured to perform as concrete secondary reinforcement. Application per cubic yard shall equal a minimum of 0.9% by volume (1.5 pounds/cubic yard or 0.9kgs/cubic meter). Fibers at this dosage level are added to control cracking due to plastic concrete shrinkage/settlement, hardened concrete drying shrinkage, and thermal expansion/contraction. Additional quantifiable durability enhancements include increased impact resistance, fatigue strength, abrasion resistance and residual strength.

**Note:**

Complete CSI manu-spec format specification and a material data safety sheet are available from your Nycon representative.

**Support Services:**

Nycon engineers are available for assistance in selecting the appropriate Nycon synthetic fiber product and dosage level for specific applications and for field support.

### Nycon ProCon<sup>F</sup> Collated Polypropylene Fibrillated Fiber Specification Data

Nycon ProCon<sup>F</sup> polypropylene fibrillated fibers are engineered specifically as a concrete reinforcement and are produced from 100% extruded virgin resin.

Fiber Type	Homopolymer Polypropylene	Matrix Bonding	Excellent
Fiber Orientation	Collated Fibrils	Thermal Conductivity	Low
Fiber Length	0.75" (19mm)	Electrical Conductivity	Low
Color	White/Clear	Water Absorption	Nil
Denier	5000	Alkali Resistance	High
Ultimate Elongation	20% at 70°F (21°C)	UV Resistance	High
Melting Point	330°F (165°C)	Corrosion Resistance	High
Ignition Point	1100°F (594°C)	Polarity	Anti-magnetic
Specific Gravity	0.91	Dye-ability	Excellent
Tensile Strength	55 ksi (379 MPa)	Air Entrainment	No Effect
Youngs	600 ksi (4137 MPa)	Additives/Admix	No Effect



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