

	<h2 style="margin: 0;">Nycon ProConM</h2> <h3 style="margin: 0;">Polypropylene Monofilament 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 uses of polypropylene fibers are as a plastic shrinkage/settlement reinforcement and as a secondary temperature/shrinkage reinforcement, both of which generate an appreciable increase in post-crack energy absorption capacity, ductility, and overall durability in concrete.

**Description**

Nycon ProConM polypropylene monofilament fibers are a three-dimensional concrete reinforcing system manufactured from 100% virgin homopolymer polypropylene. The cross-section of the fiber has a circular hair-like design. Within the concrete matrix, ProConM mechanically bonds with the mortar to optimize performance. The fibers are hydrophobic, chemically inert and non-corrosive in concrete, and non-hazardous to workers.

ProConM fibers are engineered and manufactured to perform as a concrete reinforcement at a minimum of 0.06% by volume. They comply with ASTM C-1116, Section 4.1.3, and ICC ES AC32 Sections 4.1.1 and 4.1.2, as well as with other national building codes.

<p><b>Benefits of Nycon ProConM Fibers in Concrete:</b></p> <ul style="list-style-type: none"> <li>▪ An excellent three-dimensional plastic shrinkage reinforcement system that reduces plastic settlement cracking.</li> <li>▪ Reduction in micro-macro cracking.</li> <li>▪ Enhanced impact strength, improved seismic stability, abrasion resistance, and fatigue strength.</li> <li>▪ Reduced permeability.</li> <li>▪ Less internal stresses due to expansion/contraction from temperature/moisture variations.</li> <li>▪ Improved durability and service life.</li> <li>▪ Reduced potential of catastrophic failure.</li> </ul>	<p><b>ProConM Advantages:</b></p> <ul style="list-style-type: none"> <li>▪ Accepted by national codes.</li> <li>▪ Proactive crack-fighting reinforcement vs. reactive welded-wire mesh 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></p> <p>Nycon ProConM 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>▪ Elevated decks</li> <li>▪ Decorative concrete</li> <li>▪ Bonded and unbonded overlays</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</li> <li>▪ Slope stabilization, water-diversion channels</li> </ul>

**Dosage Rate:**

The standard dosage level is 0.6% by volume, which is 1.0 pounds per cubic yard (0.6 kgs/cubic meter). At this dosage level Nycon ProConM fibers perform as plastic-shrinkage reinforcement. For certain applications, the fibers can be used at 0.75 to 1.0 pounds 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 8 pounds per cubic yard (5 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 ProConM fibers can be added to the mix before, during or after batching and mixing of conventional concrete materials. If fibers are added after these materials have been mixed, 3-4 minutes of additional mixing time is required to achieve optimum distribution of the fiber. No additional water or other mix design changes are required at normal dosage rates.

**Finishability:**

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

**Compatibility:**

Nycon ProConM fibers are compatible with all concrete admixtures and additives and require no adjustments to standard dosage levels for admixtures or additives.

**Guidelines:**

Nycon ProConM fibers should not be used to replace structural, load-bearing reinforcement, or to reduce the concrete cross-section; 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 .75, 1.0, 5.0, 9.0, and 10 pounds; standard bag weights per cubic meter are 0.45kg, 0.60kg, 0.90kg, 3.0kg, and 6.0kg. The typical dosage rate for plastic-shrinkage reinforcement is one pound per cubic yard (0.6 kg/cubic meter). Special packaging is available up to 10 pounds/bag (6.0 kg/bag). Bags are packed in cartons, shrink-wrapped, and palletized for protection during shipping.

**Standard Specification:**

Nycon ProConM 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 ProConM fibers have been tested for compliance with AC 32, Sections 4.1.1 (plastic-shrinkage reinforcement) and 4.1.2 (secondary reinforcement). ProConM 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 polypropylene monofilament fibers containing no reprocessed olefin materials, meeting the requirements of ASTM C1116, Section 4.1.3, and manufactured specifically for use as plastic-shrinkage and secondary reinforcement for concrete. The standard dosage rate shall be 1.0 pound/cubic yard (0.6kgs/cubic meter). Fibers at this dosage level are added to control cracking from plastic shrinkage/settlement, hardened concrete drying shrinkage, and thermal expansion/contraction. Additional quantifiable durability enhancements include increased impact resistance, fatigue strength, abrasion resistance, and fatigue 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 ProConM Polypropylene Monofilament Fiber Specification Data

Nycon ProConM polypropylene monofilament fibers are engineered specifically as a concrete reinforcement and are produced from 100% extruded virgin resin.

Fiber Type	Homopolymer Polypropylene Monofilament	Matrix Bonding	Good
Fiber Orientation		Thermal Conductivity	Low
Fiber Length	0.75" (19mm)	Electrical Conductivity	Low
Color	White/Clear	Water Absorption	Nil
Denier	10	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 Modulus	600 ksi (4137 MPa)	Additives/Admixtures	No Effect

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