

HPM® PAN

High-strength Monofilament Micro Synthetic Fiber

Product Description

PIONEER® HPM® PAN Synthetic Fibers are made from 100% pure polyacrylonitrile, designed specifically as a monofilament fiber for concrete reinforcement. In concrete, Compared to polypropylene fibers, PIONEER® HPM® PAN offers higher elastic modulus and tensile strength. When used in concrete, it not only prevents plastic shrinkage cracking but also effectively controls cracks during the hardening phase, achieving comprehensive crack resistance. Additionally, PIONEER® HPM® PAN enhances the concrete's toughness and tensile strength, significantly improving its durability.

Uses

PIONEER® HPM® PAN is suitable for various concrete applications to control plastic shrinkage and settlement cracking and can be used as an alternative to light-gauge welded-wire reinforcement (6x6 W1.4xW1.4). Typical applications include:

- Slabs on ground
- Residential applications: sidewalks, driveways, decks, curbs
- Stamped / Stained / Polished finishes
- Precast elements
- Overlays / Toppings
- Stucco
- Shotcrete

- Roads / Pavements / Bridge decks
- Self compacting concrete

Product Advantages

PIONEER® HPM®PAN offers an effective early-stage crack control solution for concrete, providing reinforcement when concrete tensile strength is at its lowest, thereby enhancing the overall performance and producing more durable concrete.

- Easy to mix and quickly disperses
- Lower dosage rates for equivalent performance
- Reduces plastic shrinkage cracking
- Reduces plastic settlement cracking
- Improves impact, shatter and abrasion resistance
- Enhance the toughness and durability of concrete.
- Promotes uniform bleed and reduces bleed water
- Inhibits and control the formation of intrinsic cracking in the concrete
- Increases cohesion and reduces segregation
- Reinforces against abrasion
- Helps reduce cracking due to freeze / thaw
- Provides cost-effective control of plastic shrinkage
- Provides overall higher quality of concrete.

Compliance and Certification

- Complies with ASTM C1116/ C1116M, Type III fiber reinforced concrete and therefore ASTM D7508.
- Complies with European Standard EN 14889-2:2006 Fibres for Concrete Part 2: Class Ia and carries the CE marking.

- UL/ULc Classification: For use as an alternate or in addition to the welded wire fabric used in floor-Ceiling D700, D800, D900, G229, G243, G256, & G514 Series Designs.

Physical Properties

- Specific Gravity: 1.14
- Material: 100% virgin homopolymer polyacrylonitrile
- Fiber Type: Monofilament micro synthetic fiber
- Diameter: 0.0008 in. (0.02 mm)
- Nominal Length: 0.25, 0.5, 0.75 in. (6, 12, 19 mm)
- Tensile Strength: 73—132 ksi (500—900 MPa)
- Modulus of Elasticity: 1000—1450 ksi (7—10 GPa)
- Melt Point: 445 oF (220oC)
- Alkali, Acid, and Salt Resistance: High
- Colour: Light yellow/White

Addition Rates

The standard addition rate for PIONEER® HPM® PAN is 0.75 to 3.0 lb/yd³ (450 to 1800 g/m³) of concrete. Typically, 1.5 lbs/yd³ (900 g/m³) of PIONEER® HPM® PP yields excellent results. Higher addition rates can be applied when special concrete properties are required.

Length

The standard lengths for PIONEER® HPM® PAN fibers are 0.25, 0.5, and 0.75 inches (6, 12, and 19 mm). Custom lengths can be selected based on project requirements—please contact a PIONEER® sales representative for custom length options.

Packaging

PIONEER[®]HPM[®] PAN are available in a variety of packaging options, For custom packaging, please reach out to a PIONEER[®] sales representative.