

# HPM® PVA

## High-Performance Monofilament Micro Synthetic Fiber

### Product Description

PIONEER® HPM®PVA is a high-performance synthetic monofilament fiber made from 100% polyvinyl alcohol (PVA) through processes of spinning, stretching, and cutting. This fiber features high strength and modulus, and when used in concrete, it effectively controls cracks during the curing phase, significantly reduces brittleness, and enhances bending toughness. As a result, it markedly improves the overall performance of the concrete, making it widely used in structural applications of high-performance and ultra-high-performance concrete.

### Uses

PIONEER® HPM® PVA is particularly well-suited for concrete applications that require both plastic and hardening stage performance, as well as for concrete projects in harsh environments, Typical applications include:

- Tunnels: Shotcrete for initial lining and secondary lining
- Paving: New paving, overlay paving, and airport paving
- Floors: Factory floors, warehouse floors, fueling stations, parking lots
- Walls: Sprayed mortar, joint fillers, etc.
- Precast Components
- High-Toughness Engineering Cementitious Composites (ECC)
- High-Performance Concrete
- Ultra-High-Performance Concrete

## Product Advantages

Unlike ordinary Micro Fibers that only control cracking during the plastic stage of concrete, PIONEER® HPM® PVA not only prevents plastic cracking but also controls cracking in hardened concrete. Additionally, it enhances the toughness of the concrete, resulting in a significant improvement in overall performance.

- Ultra-high tensile strength and elastic modulus
- Complete elimination of plastic cracks, with a 50% reduction in cracks in hardened concrete
- Enhanced toughness, with bending toughness increased by 6 times
- Impact resistance improved by 35%
- Increased fatigue resistance of the concrete
- Enhance durability of concrete.
- Produce concrete with extremely low permeability and high resistance to seepage
- Promotes uniform bleed and reduces bleed water
- Helps reduce cracking due to freeze / thaw
- Provides overall higher quality of concrete.
- Enhance the integrity and continuity of the 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 polyvinyl alcohol
- Fiber Type: Monofilament micro synthetic fiber
- Diameter:  $13\mu\text{m}\pm 2$ ,  $40\mu\text{m}\pm 2$
- Nominal Length: 0.25, 0.5 in. (6, 12mm)
- Tensile Strength: 176-220 ksi (1200-1500MPa)
- Modulus of Elasticity: 2900-5100 ksi (20-35 GPa)
- Alkali, Acid, and Salt Resistance: High
- Colour: Light yellow

## Addition Rates

The standard addition rate for PIONEER® HPM® PVA is 1.0 to 1.5 lb/yd<sup>3</sup> (600 to 900 g/m<sup>3</sup>) of concrete.

## Length

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

## Packaging

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