

Technical Data Sheet (TDS) – PIONEER® HPM® PAN Fiber

Product Name: PIONEER® HPM® PAN
Product Type: Polyacrylonitrile Micro Synthetic Fiber for Concrete Reinforcement
Manufacturer: PIONEER® Fiber Technologies

SECTION 1. Product Description

PIONEER® HPM® PAN is a high-performance micro synthetic fiber made from polyacrylonitrile (PAN). Designed for fiber-reinforced concrete (FRC) and high-performance concrete (HPC), it enhances durability, controls cracking during plastic and hardened stages, and improves freeze-thaw and impact resistance.

SECTION 2: Physical Properties

Property	Value
Material	Polyacrylonitrile (PAN)
Fiber Form	Monofilament Micro Synthetic
Specific Gravity	1.14 g/cm ³
Diameter	0.013 mm
Nominal Length	6, 12, 18 mm
Tensile Strength	500–900 MPa
Modulus of Elasticity	7–10 GPa
Chemical Resistance	Excellent
Color	Light Yellow / White

SECTION 3: Standards Compliance

ASTM C1116 – Standard Specification for Fiber-Reinforced Concrete
EN 14889-2:2006 – Synthetic Fibres for Concrete – Part 2: Class II Fibres

SECTION 4: Key Features & Benefits

- High tensile strength and stiffness for crack resistance
- Improves concrete ductility and toughness
- Controls plastic shrinkage and drying shrinkage cracking
- Smooth surface finishing – no fiber exposure
- Uniform dispersion – no fiber balling
- Excellent chemical and freeze-thaw resistance

SECTION 5: Applications

- Industrial and commercial concrete flooring
- Precast concrete elements and panels
- Slabs, pavements, bridge decks, and tunnels
- Waterproof concrete: basements, tanks, and pools
- Marine and infrastructure projects
- Shotcrete for tunneling and underground works

SECTION 6: Dosage & Mixing

Dosage Recommendation	Typical Range
Fiber Dosage	0.6–1.8 kg/m³ (typically 1.0 kg/m³)
Fiber Length Use Case	6–12 mm for mortars, 12–18 mm for

Mixing Method:
Add fibers with dry aggregates before water addition. Extend mixing time by 1–2 minutes for uniform distribution.

SECTION 7: Packaging & Storage

- Packaging:
- Bulk Bags (500–1000 kg)
 - Small Packs (0.6–1 kg, water-soluble or plastic bags)
- Storage:
- Keep in dry, ventilated area. Avoid humidity.
 - Store in original packaging until use.