

Monofire

Excellent Spalling Resistance Under Rapid Heating

Monofire ultra fine micro synthetic fibers for concrete made from 100% virgin polypropylene. Designed specifically for use in concrete for fire resistance in concrete mix at tunneling applications. Monofire is alkali resistant, non-absorptive and completely non-corrosive. Monofire fibers have special treatment by production and have great mixing and homogeneous distribution in concrete. Their use protects concrete from stresses which cause spalling during a rapid heat increase.

Applications

- Tunnel Linings
- Large Scale Residential Projects
- Refractory Applications
- Logistics Projects
- Construction Chemicals
- Repair Mortars
- Precast Applications
- Shotcrete

Usage Instructions and Mixing

Depending on the project requirements, Monofire recommended dosages vary between 1.5 kg/m³ and 2 kg/m³. Homogeneous mixture is obtained by addition of Monofire to the aggregate band at the concrete batching plant or by mixing in a high speed concrete mixer for at least 5 minutes in the field. It is recommended to use plasticizer additives at high fiber dosages.

Packaging Types

- 5 kg PE or 1 kg degradable packaging
- Custom packaging alternatives by project requirements

Anti-Static Coating

Monofire is ultra-fine and can be used in high dosages therefore, state of the art anti-static coating is applied by special production technique for superior mixing and homogenous distribution in concrete.

Technical Mechanism

When concrete is heated, desorption of moisture in the outer layer occurs. Due to rapid rise in temperature, vapor pressure rapidly rises. Insufficient tensile strength results in sudden dislodge in the form of explosive spalling of the surface layer. Monofire's below 20 micron ultra-fine filaments uniformly distribute multi-dimensionally throughout the concrete. At high temperatures, Monofire fibers start to melt and create a void matrix that water vapor can fill in. This melting facilitates the reduction in the internal stresses in the concrete that causes the explosive spalling so that the reinforcement can be protected and insulated by sufficient concrete cover. As it is below 20 micron and 6 mm in length, number of fibers is increased tremendously, over 500 million filament/kg. In general, suggested usage is 1.5 kg/m³ for 120 minutes fire resistance (RWS) for normal strength concrete where over 750 million microscopic voids are created.

Storage & Disposal

- It is recommended to store fibers within original packages, between +5°C and 30°C, protected from moisture and direct sunlight.
- Should not be stored near flammable or oxidizing materials.
- Should not be stacked unless proper precautions are taken.
- It is the responsibility of the end user to dispose the product and the package.

Typical Properties - Monofire

Composition	100% virgin polypropylene
Type	Monofilament micro synthetic fiber for passive fire resistance
Impurity	Contain No Reprocessed Olefin or No Polyamide or No Recycled Materials
Appearance	Individual Fiber
Cross Section	Round
Standard	EN 14889 Part II Type 1A, ASTM C1116 Type III, ASTM D7508, RWS
Available Lengths	Standard Length 6 mm. Other lengths are available upon request
Anti-Static Coating	Yes
Specific Density	0.91 gr / cm ³
Diameter	30-32 micron (18-20 micron is also available on request)
Color	Transparent
Number of Filaments	500 million+ / kg
Surface Area	200+ m ² /kg
Corrosion	Non-corrosive
Water Absorption	N/A
Chemical Resistance	Excellent alkali resistance
Acid effects	Stable
UV stabilize	Optimal
Cement Compatibility	Excellent
Magnetism	Non-magnetic
Melting Point	165°C
Ignition Point	> 360°C



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