MyPHor
materiales especiales

THECNICAL DATA SHEET

MULTIFILAMENT POLYPROPILENE FIBERS

MPH FIBER 31

MPH FIBER is a Polypropylene reinforcing fiber, designed to be added to mortar and concrete with a completely homogeneous dispersion and three-dimensional effect, in order to reduce cracking and to increase its durability and impact resistance.

Product description.

It is a multifilament polypropylene fiber designed to be mixed with concrete and mortar in order to increase durability and prevent cracking.

Application:

MPH Fiber 31 is added to the mortar/concrete in order to improve the following:

- Cracking resistance.
- Impact resistance.
- Flexural strength.
- Abrasion resistance.

Its use is specially recommended in:

- Floors and slabs.
- Concrete pavements.
- Shotcrete.
- Mortar.
- Rendering/monocoat mortar.
- Precast pieces.
- Coating for lining canals.

Steel welded wire mesh placed to absorb the stresses that occur during the curing and hardening of the concrete can be substituted. On the other hand, structural reinforcing steel can not be replaced by these fibers.

Characteristics / advantages.

Addition of MPH Fiber to the concrete or mortar mass provides the following advantages:

- Perfect scatter in the mass of the concrete or mortar.
- Ensures the uniform and homogeneous distribution of tensions in the body of concrete or mortar, avoiding the formation of cracks and the consequent weaknesses.
- Reduces shrinkage cracking.
- Increases waterproofing.
- Reduces the risk of breaking up the mass in fresh state.
- Improves compression and flexural strengths.

Packaging.

- 600 gr water soluble bags.

Characteristics:

- Raw material: 100% Polypropilene - Homopolymer
- Density: 0,91 gr/cm3
- Water absorption: Null
- Fluidity: 12 gr/minute. ASTM D-1238
- Colour: Natural white
- Transformation Process: Extrusion
- System: Multifilament
- Tensile strength: 300-400 MPa. ASTM D-638
- Elongation at fracture: 80 ÷ 140%
- Elongation by ASTM D-638: 11%
- Elastic Modulus: 600-1.200 MPa. ASTM D-790
- Temperature Distortion: 110º C. ASTM D-648
- Melting: 160 ÷170º C
- Decomposition temperature: 280º C. ASTM D-648
- Diameter: 31 microns (dtex = 6,87)
- Fiber length: 12, 24, 36 mm. (5, 10, 15, 20, 25, 30 mm. on request)
- Recommended dosage: 600 gr/m³ of concrete.
- Fibers quantity: 120,82 Million/kg.

Chemical Resistance:

Resistant to ultraviolet rays. Inert to cement alkalis, acids in general, sea water, waste food, livestock and vegetable oils. Rot-resistant, bacteria and fungi resistant.

Advantages of micro fiber use as secondary reinforcement vs steel welded wire mesh.

	FIBER	MESH
Reduces the formation of shrinkage cracks	YES	*NO*
Reduces cracking	YES	*NO*
anti-shock strengthening	YES	*NO*
Breaking reinforcement	YES	*NO*
Abrasion reinforcement	YES	*NO*
Reduce permeability	YES	*NO*
Oxidation protection	YES	*NO*
Rust protection	YES	*NO*
Correct sitting	YES	*NO*
Safety and ease up work	YES	*NO*

Testing results:

Below is a table summarizing the compressive and flexural results obtained at 10 and 28 days of age, trials were carried out by different laboratories "AIDICO" with a concrete of the following characteristics: HA25 B20 IIa.

AGE: 10 days			
Dosage		**Flexural**	**Compression**
mm.	**grs./m³ concrete**	**Toughness KN mm.**	**Toughness KN mm.**
Without fibers		3,07	27,08
12	600	3,73	39,26
12	1.200	4,09	51,15
24	600	4,26	34,89
24	1.200	4,67	48,36

AGE: 28 days			
Dosage		**Flexural**	**Compression**
mm.	**grs./m³ concrete**	**Toughness KN mm.**	**Toughness KN mm.**
Without fibers		4,01	34,57
12	600	5,07	41,26
12	1.200	5,22	45,71
24	600	5,18	39,68
24	1.200	5,35	41,65

Findings of trials:

Standardized tests that have been carried out on different samples, were performed to verify the effect caused by the addition of polypropylene fibers FIBER MPH type, on concrete reinforcement, being this effect measured primarily through the toughness.

Concrete toughness obtained from tests in compression and flexural in different samples, it is the stored energy until fracture or until a certain level of deformation, being this absorption capacity higher in test tubes with fiber reinforced polypropylene.

Compression toughness according to UNE 83-508-90 corresponds to the area under the curve until a deflection limit of 1,125 mm. This limit strain is reached in all values obtained at 28 days in the test tubes fiber-reinforced, demonstrating a very tenacious behaviour, well above the concrete without fiber.

System information:

Recommended dosage:
One 600 gr. bag per cubic meter of concrete/mortar.

Application Instructions:

Is added at the concrete plant or on site, adding the bag closed directly to the mixer truck at any time of mixing or at the end of it, but never directly on the water before adding the other components. After adding Fiber MPH just re-mix for at least 5 minutes. After this time, the bag disintegrates upon contact with alkaline environment of the concrete.

Preferably used in mortars and concretes with maximum aggregate size of 20 mm and a minimum strength of 17.5 MPa.

Application notes/Limitations:

Workability is not reduced, although visual observation looks like. The measure of the concrete consistency using the Abrams cone is not representative, since this method is insensitive to this type of concrete. It is recommended to measure the consistency by the inverted cone method UNE 83-503-99.

- It does not replace the main and secondary reinforcements from the calculation.
- Does not prevent the cracks from a bad design.
- Does not replace conventional curing labours of concrete or mortar.
- Drying shrinkage is not eliminated.
- It is compatible with other additives and admixtures.
- For further information please contact our Technical Department.

Note: All technical data in this Product Data Sheet are based on laboratory testing. Actual data may vary due to circumstances beyond our control.