



DESCRIPTION.

ARMOR FIBER PF 54, a synthetic macro fiber produced and distributed in the USA, available from American Flooring Products, is an easy-to-finish, 100% virgin copolymer/polypropylene fiber. Its long-braided monofilament is a unique blend of high-strength polymers. It is a self-fibrillating fiber that improves the mechanical properties of concrete including: toughness (energy absorption after cracking), This high strength synthetic macro fiber offers maximum long-term durability, increased impact strength, fatigue resistance and resistance to plastic shrinkage cracking, ARMOR FIBER PF 54, is non-corrosive, non-magnetic and 100% acid and alkali resistant. The exceptional bond strength of ARMOR FIBERPF 54 fibers within the concrete matrix is the result of their unique ability to partially fibrillate upon mixing. After mixing, each fiber transforms into a fiber with fibrils at the ends that act as mechanical anchors, providing a bonding capacity that optimizes the material properties of each strand and provides enhanced structural properties to the concrete.

PHYSICAL PROPERTIES AND CHARACTERISTICS OF ARMOR FIBER 54

Equivalent Diameter	0,342 ± 0,02	mm
Length	54,5 ± 0,7	mm
Aspec Ratio L/d (not twisted)	152,49	
Ultimate Deformation	21,1 ± 1,0	%
Specific gravity	0,91 ± 0,01	g/cm ³
Ultimate Tensile Strength	570 ± 11	Mpa
Elastic Modulus	5,70	Gpa
Young's Modulus	3 - 10	GPa
Melting Point	160°	C.
Material	Copolymer / polypropylene	
form	twisted - bundle / Monofilament / fibrillated	
Color	Gray	
Acid/Alkaline Resistance	Excellent	
Absorption	Nil	
Quantity of fibers / Kg.	190.000	/ Kg.
Minimum dosage to maintain a structural condition.	3,0	Kg/m ³

COMPLIANCE & CERTIFICATION

ASTM C116/C1116M-10a, standard Specification for Fiber-reinforced concrete, 'Type III Synthetic fiber- Reinforced Concrete'
ASTM D75508 / D7508M - 10 (2015), Standard Specification for Polyolfin Chopped Strands for use in concrete.
DIN EN 14889-2
ISO 9001:2015, ISO 50001; 14001
CE EN 14889-2:2006

PACKAGING

1 Kg/PE bag - 10 Kgs / plastic woven bag.

APLICACION

Slab on grade, industrial / commercial floors, pavements, metal decks, white toppings

ROLE OF MACROSYNTHETIC FIBERS AS MAIN REINFORCEMENT:

The concrete matrix without macro synthetic fiber reinforcement present brittle behavior, with low bearing capacity and low deformations when subjected to tensile stresses (flexural tensile), presenting practically no plastic deformations. The reinforcement with discontinuous and randomly distributed fibers in the concrete matrix has as its main function to control the propagation of cracks in the concrete, changing its mechanical behavior after the breakage of the matrix, considerably improving the energy absorption capacity of the concrete, that is, its toughness, transforming a material with brittle characteristics into a ductile one. This occurs because the fibers create stress transfer bridges across the cracks, preserving a certain bearing capacity of the sections.

The fiber exerts a bridging mechanism, in order to transmit stresses in the cracked concrete and provide it with the capacity to continue receiving load even in a cracked condition, without failure. In addition to this bridging mechanism, the length of the fiber has a differentiated action in the control of the micro crack and the macro crack. With respect to tensile stresses, fibers aligned in the direction of tensile stress can provide a high increase in direct tensile stress. An additional contribution in post-cracking behavior is in bending from the mechanical point of view where fibers have a greater aggregate effect than in compression and flexural tension.