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| 03 30 00 | Cast-in-Place Concrete |
| 03 37 13 | Shotcrete |
| 03 40 00 | Precast Concrete |
| 03 70 00 | Mass Concrete |

MasterFiber® MAC Matrix

Macrosynthetic Fiber

Description

MasterFiber MAC Matrix product is a macrosynthetic fiber that is manufactured from a proprietary blend of polypropylene resins, and meets the requirements of ASTM D 7508/ D 7508 M, and ASTM C 1116/C 1116M, ASTM C 1116/C 1116M “Standard Specification for Fiber-Reinforced Concrete.”

MasterFiber MAC Matrix product also meets the requirements of CSA B66-10 “Design, material, and manufacturing requirements for prefabricated septic tanks and sewage holding tanks.”

Applications

Recommended for use in:

- Shotcrete
- Composite metal decks
- Industrial and warehouse floors
- Pavements
- Precast concrete
- Residential and commercial slabs-on-ground
- Precast concrete pipes
- Thin-wall precast
- Tunnel linings
- Wall systems
- Whitetopping/overlays

Features

MasterFiber MAC Matrix product is engineered for use as secondary reinforcement to control shrinkage and temperature cracking, and settlement cracking.

MasterFiber MAC Matrix product was created specifically to replace welded-wire reinforcement and No. 3 and No. 4 (10 mm and 13 mm) reinforcing bars that are typically used as temperature and shrinkage reinforcement.

MasterFiber MAC Matrix product has the following features:

- Excellent flexural performance
- Excellent finishability

Benefits

- Eliminates the need for welded-wire reinforcement (VWR) and small diameter bars used as secondary reinforcement, depending on the application
- Effective tight crack control
- Provides excellent control of settlement cracking
- Improves green strengths and permits earlier stripping of forms with less rejection
- Reduces construction time and overall labor and material costs
- Reduces the effects of handling and transportation stresses
- Increases flexural toughness, impact and shatter resistance

Performance Characteristics

Physical Properties

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| Specific Gravity | 0.91 |
| Melting Point | 320 °F (160 °C) |
| Ignition Point | 1094 °F (590 °C) |
| Absorption | Nil |
| Alkali Resistance | Excellent |
| Tensile Strength | 85 ksi (585 MPa) |
| Nominal Length | 2.1 in. (54 mm) |
| Nominal Aspect Ratio | 70 |
| Fiber Type | Embossed |
| Material | 100% virgin polypropylene |
| Chemical Resistance | Excellent |

Guidelines for Use

Dosage: The dosage range of MasterFiber MAC Matrix product is 3 to 12 lb/yd³ (1.8 to 7.2 kg/m³). The recommended dosage range for slab-on-ground applications is typically 3 to 5 lb/yd³ (1.8 to 3 kg/m³). For shotcrete, the typical dosage range of MasterFiber MAC Matrix product is 8 to 12 lb/yd³ (4.8 to 7.2 kg/m³).

Mixing: MasterFiber MAC Matrix product should be introduced at the beginning of the mixing cycle, but not at the same time as the cement. For slab-on-ground applications, the entire bag should be dispensed into the mixer to allow for easy handling, while leaving no waste on site. For shotcrete, the bag should be opened so that the fibers can be dispensed directly into the mixer. Three to five minutes of additional mixing will be required to disperse the fibers depending on when the product is added to the mixer. Master Builders Solutions recommends utilizing good concrete mixing practices as outlined in ASTM C 1116/C 1116M.

Engineering Specifications

MasterFiber MAC Matrix product is an option for the replacement of WWR and is an easy-to-use secondary reinforcing system that is rust proof, alkali resistant, and compliant with industry codes when mixed in accordance with ASTM C 1116/C 1116M. MasterFiber MAC Matrix product enhances safety and should be specified for use in applications for:

- Increased flexural toughness
- Reduced rebound
- Increased cohesion
- Increased impact and shatter resistance
- Extended pump life
- Replacement of WWR and other secondary reinforcement
- Improved residual strength
- Improved durability
- Use in areas requiring no metal

MasterFiber MAC Matrix product also conforms to the requirements of CSA B66-10 "Design, material, and manufacturing requirements for prefabricated septic tanks and sewage holding tanks".

Product Notes

Testing has shown that MasterFiber MAC Matrix product can be used as a partial or full replacement for primary/structural steel reinforcement in concrete pipe. The dosage of MasterFiber MAC Matrix product to meet a specified performance level in concrete pipe should be determined in accordance with industry standard procedures. In other applications, MasterFiber MAC Matrix product may also be used as a partial or full replacement for primary/structural steel reinforcement. To explore the use of MasterFiber MAC Matrix product for such purpose, contact the Engineering Department at Master Builders Solutions in Beachwood, OH.

Placement and Finishing: Master Builders Solutions recommends that the standard practices detailed in ACI 302.1R, ACI 506.1R and ACI 544.3R for placing, finishing and curing concrete be followed when using MasterFiber MAC Matrix product.

Storage and Handling

MasterFiber MAC Matrix product should be stored in a clean, dry area protected from the weather and at temperatures below 140 °F (60 °C). Avoid storing near strong oxidizers and avoid sources of ignition. Use caution when stacking to avoid unstable conditions. Store in a sprinkled warehouse.

Packaging

MasterFiber MAC Matrix product is packaged in a 5 lb (2.3 kg) degradable bag that can be added directly to the mixing system. For shotcrete, the fibers are packaged in 11 lb (5 kg) and 15.4 lb (7 kg) bags which should be opened prior to dispensing the fibers into the mixer.

Related Documents

Safety Data Sheets: MasterFiber MAC Matrix

Additional Information

For additional information on MasterFiber MAC Matrix product, contact your local sales representative

Master Builders Solutions creates technologies for the construction industry inspiring people to build better. We are active in ~40 countries and operate 35 production sites with over 1,600 employees. We develop, produce, and market high-quality chemical admixtures, as well as adjacent core technologies, to master the challenges of today and support a decarbonized future. Our people are pivotal and pair leading technologies and a strong brand heritage to surpass our customers' expectations and drive continuous value creation.

Limited Warranty Notice

Master Builders Solutions Admixtures US, LLC ("Master Builders Solutions") warrants this product to be free from manufacturing defects and to meet the technical properties on the current Technical Data Guide, if used as directed within shelf life. Satisfactory results depend not only on quality products but also upon many factors beyond our control. MASTER BUILDERS SOLUTIONS MAKES NO OTHER WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO ITS PRODUCTS. The sole and exclusive remedy of Purchaser for any claim concerning this product, including but not limited to, claims alleging breach of warranty, negligence, strict liability or otherwise, is shipment to purchaser of product equal to the amount of product that fails to meet this warranty or refund of the original purchase price of product that fails to meet this warranty, at the sole option of Master Builders Solutions. Any claims concerning this product must be received in writing within one (1) year from the date of shipment and any claims not presented within that period are waived by Purchaser. MASTER BUILDERS SOLUTIONS WILL NOT BE RESPONSIBLE FOR ANY SPECIAL, INCIDENTAL, CONSEQUENTIAL (INCLUDING LOST PROFITS) OR PUNITIVE DAMAGES OF ANY KIND.

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MasterFiber MAC Matrix fiber, as marketed by Master Builders Solutions, is classified by Underwriters Laboratories Inc. for use in the following fire rated assemblies: UL D700, D800 and D900 Series Designs. Fibers to be added to the concrete mix at a maximum rate of 5.0 lb of fiber for each cubic yard (3.0 kg/m³) of concrete.

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