

# MIX UK "FIBERON" 12 MM X 18 MICRON POLYPROPYLENE FIBRE Technical Data Sheet

## DESCRIPTION:

**Fiberon** is a high performance micro polypropylene fibre which complies with the requirements of ASTM C-1116 developed as a crack controlling additive for cementitious materials. It is available as a monofilament 12 mm in length for concrete and 6 mm in length for plaster and mortar. It is used to inhibit the formation of small cracks which can occur through plastic shrinkage, premature drying and early thermal changes, in order to provide utilization of the intrinsic properties of the hardened cementitious material.

**Fiberon** is based on selected raw material and manufactured under controlled conditions to give a consistent product.

**Fiberon 12 mm fibre** length is designed for concrete mixes, with aggregate size greater than 5 mm.

**Fiberon 6 mm fibre** length is designed for mortar mixes.

## USES:

Specifically designed for crack control in cementitious materials covering areas such as readymix concrete, precast concrete, conventional shotcrete refactories, screeds, rendering mortars, etc.

Principle uses of fibre concrete include: concrete slabs, pavements, driveways, imprinted concrete, kerbs, pipes, overlays, patch repair, microsilica concrete, thin section walling, water retaining structures, marine concrete, heavy industrial floors, etc.

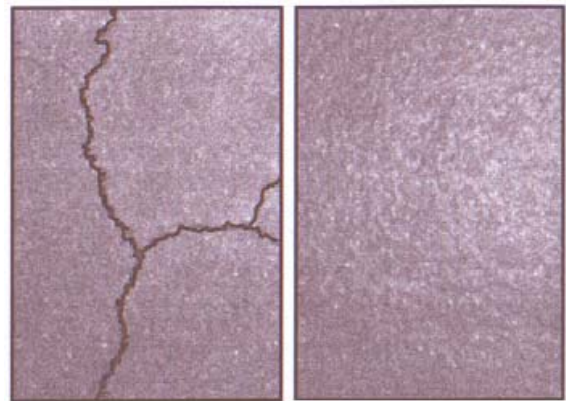
## ADVANTAGES:

- Can replace anti crack wire mesh in factory and warehouse floors.
- Inhibits intrinsic cracking in concrete.
- Disperses uniformly throughout the mix.
- Improves finishing characteristics.
- Improves concrete durability.
- Increases impact and abrasion resistance.
- Rustproof.
- Impervious to alkali attack.
- Decreases construction time and labour.
- Reduced risk of subsequent damage.

## TYPICAL PROPERTIES:

Specific Gravity: 0.91 g/cm<sup>3</sup>  
 Alkali Resistant: Nil  
 Sulphate Content: Nil  
 Air Entrainment: Air content of concrete will not be significantly increased.  
 Chloride Content: Nil  
 Constituents: Virgin Polypropylene C<sub>3</sub>H<sub>6</sub>  
 Fibre Thickness: 18 micron  
 Min. Specific Surface Area: 260 m<sup>2</sup>/Kg  
 Storage Life: Minimum 12 months from date of manufacture.  
 Youngs Modulus: 5500-7000 MPA  
 Tensile Strength: 350 MPA  
 Melting Point: 160°C

**Fiberon** can be used with all types of cement and is compatible with other admixtures.



**CONTROL SLAB WITHOUT  
 FIBERON CONCRETE FIBRE**

**CONTROL SLAB WITH  
 FIBERON CONCRETE FIBRE**

## ADDITION METHOD:

**Fiberon** is supplied ready for use in dissolvable paper bags, and in measured quantities for addition to the concrete mix whether at the batching plant or on site.

## SPECIFICATION:

Concrete shall be manufactured using crack controlling additives such as **Fiberon** or a similar approved product. The crack controlling additive shall be based on a polypropylene fibre with an individual fibre thickness of 18 micron.

## PACKAGING:

**Fiberon 12 mm and 6 mm** is available in 0.6 kg and 0.91 kg dissolving bags. All bags are packaged in cardboard boxes.

Different lengths and pack sizes are available on request.

## ADDITION RATES:

The performance of **Fiberon** is best assessed after preliminary trials in the laboratory, or on site using the actual mix constituents under consideration to determine its effect on concrete properties.

The addition of **Fiberon** to the concrete mix makes the mix more cohesive slightly reducing the slump but not concrete workability.

As a guide to trials, the following dosage levels of **Fiberon** are recommended.

Product	
Fibre Length	12 mm 6 mm
Dosage	0.60/0.91 kg/m <sup>3</sup>
Typical areas of application	Ready mix factory produced concrete



**mix·uk·limited**

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**EFFECTS OF OVERDOSING:**

Excessive overdosing of Fiberon will generally produce a reduction in workability, and an increase in the cohesiveness of the mix.

**STORAGE:**

Should be stored in dry conditions similar to cement.

**TECHNICAL ADVICE:**

The Technical Department is available to assist you in the correct use of our products and its resources are at your disposal entirely without obligation.

**SAFETY PRECAUTIONS:**

*Information contained in this data sheet is based on knowledge considered to be true and correct and is offered for the user's consideration, investigation and verification, but we do not warrant the results to be obtained. No statement, recommendation or suggestion is intended for any use which will infringe any patent or copyright.*

Mix UK Fiberon Polypropylene Fibre is marketed  
in the Gulf Region by:



GULF CONCRETING PRODUCTS  
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# MIX UK "FIBERON" 12 MM X 18 MICRON POLYPROPYLENE FIBRE

## Material Safety Data Sheet

### 1. PRODUCT IDENTIFICATION

Product Name:	Fiberon Polypropylene Fibres
Manufacturer:	MIX UK Ltd.
Formula:	$(CH_3-(CH_2)_N-CH_3)_n$
CAS Registry No:	9003-07-0
Shipping Name:	Polypropylene Staple Fibers
DOT:	Not Restricted
IATA:	Not Restricted

### 2. HAZARDS IDENTIFICATION

Material or Component:	No known hazardous ingredients.
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### 3. PHYSICAL DATA

Boiling Point:	Not Applicable
Melting Point:	165°C
Specific Gravity:	0.91
Solubility:	Not Significant

### 4. FIRE & EXPLOSION DATA

Flash Point:	375°C
Autoignition Temperature:	370°C
Extinguishing Media:	Water, CO <sub>2</sub> , Dry Chemicals, Foam-Fog
Special Fire Fighting Procedures:	None

### 5. HEALTH HAZARD INFORMATION

Routes of Exposure:	Skin Contact: Mechanical irritation only Inhalation: None known Skin Absorption: None known Eye Contact: Mechanical irritation only Ingestion: None known
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Effects of Overexposure:	Acute Overexposure: None known Chronic Overexposure: None known
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Emergency & First Aid Procedures:	Eyes: Flush with water to remove particles. Skin: Wash off with flowing water. Inhalation: Remove to fresh air if effects occur. Ingestion: No treatment required (no harm).
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### 6. REACTIVITY DATA

Conditions Contributing to Instability:	Contact with flame; temperature above 400°C
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Incompatibility:	None
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Hazardous Decomposition Products:	Thermal decomposition products above 400°C: C, CO, CO <sub>2</sub>
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Conditions Contributing to Hazardous Polymerization:

Hazardous polymerization will not occur.

#### 7. DISPOSAL, SPILL OR LEAK PROCEDURES

Aquatic Toxicity:

Nil

Waste Disposal Method:

Recycle, incinerate in approved equipment, land-fill.

Steps to be Taken if Material is Released or Spilled:

Sweep up and discard or wash down with water.

Neutralizing Chemicals:

Not applicable

#### 8. SPECIAL PROTECTION INFORMATION

Ventilation Requirements:

Local exhaust for fiber dust only

Specific Personal Protective Equipment:

Respiratory: Dust mask if fiber dust is present  
Eye: Goggles if fiber dust is present  
Gloves: Not needed  
Other Clothing & Equipment: Not needed

#### 9. SPECIAL PRECAUTIONS

Precautionary Statements: While the product may contain trace amounts of non-toxic surfactants and/or lubricants approved for textiles, no special handling has been shown to be necessary.

Other Handling & Storage:

Do not store near flame

Requirements:  
FDA:

Polypropylene per se is approved.

**TSCA:** Is this product, or all its ingredients, being certified for inclusion on the Toxic Substances Control Act Inventory of Chemical Substances? **YES**

#### 10. Other Information

Literature references are available upon application to the manufacturer.

*To the best of our knowledge, the information contained herein is accurate. However, we cannot assume any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of the suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist.*

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## MIX UK "FIBERON" POLYPROPYLENE FIBRES

### MANUFACTURE & QUALITY CONTROL

- Fiberon Polypropylene Fibres are manufactured by the extrusion of heated virgin Polypropylene Granules. The extruded material is heated, coated, stretched to improve tensile strength and then cut to the required length of 6 mm, 12mm or 20 mm. The length and denier of the Fibres can be varied to meet the requirement of the market.
- The manufacturing process includes checks on the heating temperatures, speeds of extrusion and stretch.
- The quality control procedure includes checks on the visual appearance, length, denier, coating and density of the finished product.
- The Fibres are packed in predetermined weights of 0.91 or 0.6kg in either plastic or dissolvable paper bags. The bags are then in turn packed in cardboard boxes.
- Fiberon Polypropylene Fibres are supplied by an ISO 9000 company.

## LIST OF SOME OF THE PROJECTS WHERE FIBERON POLYPROPYLENE FIBRES HAVE BEEN USED IN U.A.E. AND GULF REGION.

PROJECT	CONTRACTOR/CONSULTANT
New Shipyard	Abu Dhabi
Bus Garage Workshop – Dubai	Al Bakhit
Ruwais Housing – ADNOC	Al Jaber
Abu Dhabi Airport – Warehouses	Al Mana
Tawoon Shopping Mall Sharjah	Al Manai
Warehouse – Jebel Ali	Al Manna
Multi Story Car Parking Abu Dhabi	Al Murakhi
Food Store – Dubai	Al Shaffar Transporting & Contracting
Internet City – Dubai	Al Shaffar Contracting
Food Store Dubai	Amana Zameel Steel
Dubai Airport Duty Free	Arabtec
Ras Lafan – Doha	CCC
Equestrian Club Abu Dhabi	Civilco
Das Island – Adma Opco	Costains
Dubai Dry Dock	Emirates Precast
Precast Units West Side Marina	Emirates Stone – Emaar
Godolphin Stables – Dubai	Engineering Office – Dubai Government
Sewa Works	Essa Engineering
Warehouses Jebel Ali	Faraj Al Mazroui
Warehouse Jebel Ali	FNC
Warehouse Al Quos	FNC
Muscat Centre	G LC
Dubai Municipality Villas	Ginco
Das Island – ADMA OPCO	Granite
Ruwais Extension – ADNOC	Linde / Ready Mix Beton
Plaster Production	RMC TOPMIX
Villas Dubai	Shafar
Gulf Concrete Block	Six Construct
Um Al Nar Inlet – Sewa	Six Construct
Fujairah Port Extension	Six Construct
Port Extension Abu Dhabi	Six Construct
ADMA OPCO – Das Island	Target
Stamped Concrete	Terrazzo Sharjah
SKM Factory – Sharjah	UNEC
High Rise Building – Sharjah	UNEC
Khasab Port Expansion	W.S. Atkins/Galfar
Signature Island Villas	Al Hamad/Shustor Pecktold (SPP)
Palm Island Villas	China State Construction Co's.
Substation Palm Island	Arabian Mix
Burj Dubai	Hyder/Samsung
Dubai Waterfront	Samsung/W.S. Parsons
City Centre Dubai	W.S. Atkins
RAS Laffan Quay Walls	SIXCO/Interbeton/Qatar Oil
Sub Stations Abu Dhabi	ADWEA/White Young & Partners

**LIST OF G.C.C. CONTRACTORS / READY MIX COMPANIES  
SUPPLIED WITH FIBERON POLYPROPYLENE FIBRES.**

READY MIX BETON	ABU DHABI
NATIONAL READY MIX	ABU DHABI
TRANSULF READY MIX	ABU DHABI
AL-RAUD GENERAL CONT. CO.	ABU DHABI
BIN HAFEEZ ESTABLISHMENT	ABU DHABI
TREMIX	ABU DHABI
MODERN EST. FOR READY MIX	AL AIN
KHAN SAHEB PRECAST	DUBAI
UNIMIX	DUBAI
TREMIX	DUBAI
ARCON	DUBAI
MBT MIDDLE EAST	DUBAI
ARABIAN MIX	DUBAI
CONSTRUCTION CHEMICALS	SHARJAH
JAMIX	SHARJAH
STAR READY MIX	SHARJAH
AMANCRETE	K.S.A.
AL KOBASI	BAHRAIN
AWAL READY MIX	BAHRAIN
AL MANARATAIN READY MIX	BAHRAIN
NATIONAL CONCRETE COMPANY	BAHRAIN
COLURATION SYSTEMS	BAHRAIN
READY MIX QATAR	QATAR
SATMA LANDSCAPING	K.S.A
KENOOZ AL EBDA	K.S.A
CONSOLIDATED CONTRACTORS	SHARJAH SEWERAGE/ HALCROW
AL JABER/ FICHTNER	PIPELINE
DUBAI READYMIX	STAMPED CONCRETE/ E.N.T

## **SPECIFICATION FOR ALL STRUCTURAL CONCRETE INCORPORATING POLYPROPYLENE FIBRES**

Fibres used in fibre reinforced concrete shall be 100 percent virgin polypropylene fibres specifically manufactured for use as a concrete reinforcement such as Mix UK Fiberon or equivalent approved. Polypropylene fibres shall have a minimum tensile strength of 345 MPa and Young's Modulus from 3500 to 5000 Mpa. The length of fibres shall be 12 mm long and the thickness 18 micron. The fibres dosage of 0.91 kg/m<sup>3</sup> shall provide a minimum surface area of 200 m<sup>2</sup> per kilogram of fibre.

Polypropylene Fibres such as Mix UK Fiberon shall be as supplied by Gulf Concreting Products (GCP) • P.O. Box 43010 Abu Dhabi, UAE • Tel. No. 02 6273998 • Fax No. 02 6273994.



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The benefits of using Fiberon Monofilament Polypropylene Fibres instead of anti crack steel mesh for concrete floors and in particular for stamped concrete, warehouse floors and drive over areas.

#### FIBERON POLYPROPYLENE FIBRES

- The concrete will have greater integrity and will contain less plastic shrinkage cracks than concrete with steel mesh.
- **COST EFFECTIVE** – although superior in quality the cost of using Fiberon Polypropylene Fibres is typically only 50% of the cost of using anti-crack steel mesh.
- Non corrosive
- Typically, because of the absence of steel mesh, the concrete truck can drive directly to the place of pouring, eliminating pumps or dumpers.
- No extra labour for handling, placing and spacing of the steel mesh.
- Increases substantially the impact resistance of the concrete.
- Reduces bleed water on the concrete surface thus ensuring earlier access to the concrete for finishing purposes.
- Tri dimensional reinforcement (no spalling).
- Increases abrasion resistance by 20%.
- Increased compressive strength in first 24 hours.

#### STEEL MESH

- Steel mesh will absorb heat and transfer it to the fresh concrete having a negative effect on its quality.
- Corrosive.
- Developed rust / dirt must be removed with difficulty from underneath mesh before concreting.
- The method of use of the fibres is simple in that they can be added with the other ingredients of the concrete mix at the batch plant. Alternatively they can also be added to the transmit mixer at site where mixing for an additional 5 minutes ensures dispersion of the fibres throughout the volume of concrete.

**NOTE:** Only use monofilament fibres. Do not use the alternative type of fibre which are bunches of connected fibres, as they cause furing to the surface of the concrete which will require additional work to burn off.

Monofilament Polypropylene Fibres can be used as an alternative to steel wire mesh for crack control purposes but are not substitute for steel reinforcement.

# WHAT IS FIBERON?

***FIBERON** is a monofilament Polypropylene Fibre that prevents plastic shrinkage cracks within concrete, mortar, stucco and plaster. It also helps to make these materials denser and stronger .*

***FIBERON** is a product that makes concrete more durable because its millions of Polypropylene Fibres are distributed throughout the concrete mix so that they connect the textures with each other. Fiberon not only prevents concrete from cracking but also significantly improves its resistance to shock, abrasion, corrosion, erosion, freezing and other harmful factors.*

## WHERE TO USE FIBERON?

*In Concrete, Mortar, Stucco, Plaster , Stamped or imprinted concrete, parking blocks, roads, bridge decks, airport runways, factory floors, warehouse floors, sprayed concrete, shotcrete, drainage structures, paved areas, marine structures and precast concrete.*

*Number of fibres per 0.91 kg bag 10 to 26 million depending on denier & length of fibre.*

*Standard addition :  $0.91 \text{ kg/m}^3$  /  $0.60 \text{ kg/m}^3$*

# HOW TO USE FIBERON?

- Dosage : Standard addition 0.91 kg or 0.6 kg per  $m^3$  of concrete / plaster.*
- Mix Design : The reinforcing function of Fiberon in concrete is not a chemical but a physical process. The number of Fibres is so light (Volumetric ratio below 0.1%) that it has little effect on mix design.*
- How to use : Add the Fiberon to the batch plant mixer during the mixing process or add directly to the transit mixer.*  
*When added to the transit mixer ensure a mixing time of 3-5 minutes at full mixing speed.*
- Placing : No additional requirements.*
- Finishing : No additional requirements.*

# PHYSICAL PROPERTIES OF FIBERON

<i>Appearance</i>	<i>: Polypropylene Fibres</i>
<i>Specific Gravity</i>	<i>: 0.91 g/cm<sup>3</sup></i>
<i>Alkali Content</i>	<i>: Nil</i>
<i>Sulphate Content</i>	<i>: Nil</i>
<i>Air Entrainment</i>	<i>: Air content of concrete will not be significantly increase.</i>
<i>Chloride content</i>	<i>: Nil</i>
<i>Constituents</i>	<i>: Virgin Polypropylene C<sub>3</sub>H<sub>6</sub></i>
<i>Fibron Length</i>	<i>: From 6mm to 25mm.</i>
<i>Fibron Thickness</i>	<i>: Various thickness from 2 to 6 denier</i>
<i>Youngs Modulus</i>	<i>: 5500 – 7000 MPA</i>
<i>Tensile Strength</i>	<i>: 350 MPA</i>
<i>Melting Point</i>	<i>: 160 °C</i>
<i>Storage Life</i>	<i>: Minimum of 24 months from date of manufacture.</i>



# QUESTIONS AND ANSWERS

*Q Why use Fiberon polypropylene Fibres?*

*A Fiberon Polypropylene Fibres are used to control plastic shrinkage cracks in concrete & mortar.*

*Q Can Fiberon Polypropylene Fibres be used to replace anti crack steel mesh?*

*A Fiberon Polypropylene Fibres serve as a secondary reinforcement in concrete. They are very effective in replacing anti crack steel mesh in concrete.*

*Q Can Fiberon Polypropylene Fibres be used to replace structural reinforcement?*

*A No.*

*Q Why use 0.91 kg of Polypropylene Fibres per m<sup>3</sup> of concrete*

*A Through trial and error it has been established that 0.91 kg is the most suitable dosage, neither decreasing the flow or the slump & still giving the most effective secondary reinforcement to the concrete.*

*Q Do Fibres affect the workability of the concrete?*

*A Fibres tend to hold the paste of concrete giving an impression of reduced workability but in fact if anything Fibres increase workability at the recommended dosage.*

**Note:** *An excessive overdose of Fibres can decrease both the slump and the workability.*

**Q** *What is the difference between Monofilament (single threads) and bunched or joined fibres (sometimes erroneously called fibrillated Fibres).*

**A** *The difference between the two types of Fibres is that the joined or bunched fibres will always stick out of the surface of the concrete leaving an unsightly mess. This mess has to be either burned off or left to wear off. Either way there will be holes left on the surface of the concrete which can act as initial conduits for harmful materials.*

*There are no technical disadvantages with the use of either type of fibre.*



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## SECTION 03240 FIBRE REINFORCING Product Guide Specification

Specifier Notes: This product guide specification is written according to the Construction Specifications Institute (CSI) Format, including MasterFormat, SectionFormat, and PageFormat, contained in the CSI Manual or Practice. The section must be carefully reviewed and edited by the Engineer to meet the requirements of the project and local building code. Coordinate this section with the concrete section.

This section covers **Mix UK Technologies Mix UK FIBERON POLYPROPYLENE FIBRES** for use as secondary reinforcement in concrete. Consult **Mix UK Technologies** for assistance in editing this section for the specific application. Delete all "Specifier Notes" when editing this section.

### PART 1 GENERAL

#### 1.1 SECTION INCLUDES

- A. Fibres for use as secondary reinforcement in concrete.

#### 1.2 RELATED SECTIONS

Specifier Notes: Edit the following list of related sections as required for the project. List other sections with work directly related to the fibres.

- A. Section 03300 – Cast-in-Place Concrete.
- B. Section 03370 – Specially Placed Concrete: Shortcrete
- C. Section 03400 – Precast Concrete

#### 1.3 REFERENCES

Specifier Notes: List standards referenced in this section, complete with designations and titles. This article does not require compliance with standards, but is merely a listing of those used.

- A. ASTM C 94 – Ready-mixed concrete
- B. ASTM C 1116 – Fibre Reinforced Concrete and Shortcrete

#### 1.4 SUBMITTALS

- A. Comply with Section 01330 – Submittal Procedures
- B. Product Data: Submit manufacturer's product data
- C. Test reports: Submit recent material test reports from testing performed by an independent laboratory indicating compliance of fibres with specified requirements.
- D. Manufacturer's Quality Assurance: Submit certification that fibres comply with ASTM C 1116, Type III and other specified requirements and are suitable for intended application.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver fibres in manufacturer's original unopened containers and packaging, with labels clearly identifying:
  - 1. Material Name
  - 2. Manufacturer
  - 3. Weight of material



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B. Storage

1. Store fibres in a clean dry area in accordance with manufacturer's instructions.
2. Keep containers sealed until ready for use.

C. Handling: Protect fibres during handling, batching, and mixing to prevent contamination.

**PART 2 PRODUCTS**

**2.1 MANUFACTURER**

A. Mix UK Ltd., St. Mary's Studios, St. Mary's Road, Bowdon Cheshire, WA14 2PL, England | Tel: 0161 333 2512

**2.2 FIBRES**

A. Fibres as secondary reinforcement in concrete: \_\_\_\_\_

**Mix UK** Fibrillated Propylene Fibres]

**Mix UK** Enhanced Multifilament Polypropylene Fibres]

**Mix UK** Monofil Polypropylene Fibres]

1. Material : 100 percent virgin material manufactured for use as secondary reinforcement in concrete. Alkali-resistant, non-corrosive, and non-absorptive.
2. Compliance: ASTM C 1116, Type III.
3. Physical Test Results : At recommended dosage rates, results from appropriate ASTM tests shall not be less than control.
4. Plastic Shrinkage Reduction : Greater than 40 percent of control.

Specifier Notes: Consult **Mix UK** Technologies for assistance in determining the required fibre length.

5. Fibre Length : In accordance with manufacturer's instructions.

Specifier Notes: Indicate the concrete to contain fibres. Edit the following as required for the project.

B. Use fibres [in all concrete] as alternative to welded wire fabric in plain concrete slabs-on-grade when used for Secondary Reinforcement] [\_\_\_\_\_].

**2.3 MIX DESIGN**

Specifier Notes: Specify Section 03300 for cast-in-place concrete, Section 03370 for shotcrete or Section 03400 for precast concrete.

- A. Concrete Mix Design : As specified in Section [03300] [03370] [03400].
- B. Concrete Materials : Evaluate concrete mix design with fibres mixed with concrete materials representative of those proposed for use.
- C. Compatibility of Materials : Verify compatibility of fibres with other materials in concrete mix.

**PART 3 EXECUTION**

**3.1 BATCHING AND MIXING**

- A. Add fibres to concrete at dosage rate in accordance with manufacturer's instructions and as determined by concrete mix design.



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- B. Batch and mix fibres in accordance with manufacturer's instructions and ASTM C 94.

Specifier Notes: Specify the method of adding the fibres to the concrete mix.

- C. Add fibres to concrete [during batching procedure at concrete batch plant] [directly into truck mixer after batching procedure].
- D. Mix concrete with fibres at mixing speed for a minimum of 5 minutes or 70 revolutions.

Specifier Notes: Specify the method of adding the fibres to the concrete mix.

- E. Measuring, Batching, Mixing and Delivering concrete : As specified in Section [03300] [03370] [03400]

### 3.2 PLACING, FINISHING, AND CURING

- A. Placing, Finishing, and Curing Concrete : As specified in Section [03300] [03370] [03400].

### 3.3 FIELD QUALITY CONTROL

- A. Inspection and Testing of concrete : As specified in Section [03300] [03370] [03400].
- B. Manufacturer's Field Services : Manufacturer's representative shall provide technical assistance as required.

**END OF SECTION**

**Mix UK Fiberon Polypropylene Fibre is marketed in the Gulf Region by:**



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