Engineered. Efficient. Effective.
CONCRETE REINFORCEMENT

Introducing e3™

Over 20 billion square feet. Fifteen years. Fibermesh® fibers. The leader.

Make good concrete better. Fibermesh® fibers improve concrete, are easy to use, save you time and labor costs, and eliminate the hassles and dangers of wire mesh.

Many fibers in the market compare themselves to Fibermesh® fibers. Some even allow themselves to be sold as Fibermesh fibers. But only Fibermesh fibers from SI Concrete Systems are the real article.

No other company in the industry can give you the products and support that we do.

- **Precision, fine-tuned products**
- **Research and development dedicated to testing fibers for new performance levels**
- **Skilled representatives working to expand the number of applications**
- **Engineering support services on call**

Fibermesh fibers from SI Concrete Systems are trusted worldwide to reduce the formation of shrinkage and settlement cracks in concrete's plastic state. In the last 15 years, Fibermesh fibers have been chosen as the secondary reinforcement for over 20 billion square feet of concrete.

Choose the leader. Insist on Genuine Fibermesh fibers.

Engineered three ways — Length, thickness, mix ratio

Introducing e3™–our latest innovation. SI Concrete Systems is now offering a new family of fibers with patented e3 technology in addition to our current product line. Just as graded aggregate enhances concrete, Fibermesh® with e3 technology is a blend of fibers designed to enhance the distribution of fiber reinforcement. Each package of our e3 fibers is engineered three ways–by length, thickness and mix ratio–for optimal performance.

The result–an efficient, uniform reinforcement throughout the concrete. As with graded aggregate in the concrete mix, graded fibers help achieve optimum distribution within the concrete matrix.

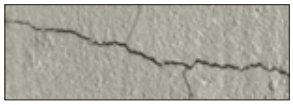
Patented e3 technology enhances the distribution of fiber reinforcement.

Our new e3 products–Stealth® e3, Fibermesh InForce™ e3, and Novomesh™ e3–provide shrinkage & settlement crack control in the concrete's plastic state, and several levels of toughness. And all provide the job site benefits that allow contractors to cut construction time while improving the quality of the concrete slabs, flatwork and other applications.

No other supplier of fiber can offer you this system of engineered fibers. And no other fibers perform like e3.

Fibermesh® fibers are the effective alternative to traditional reinforcement

Crack Control



Fibermesh® fibers are unequaled in their ability to minimize cracks as plastic concrete shrinks, settles and hardens. Because the fibers distribute throughout the mix they help keep heavier ingredients in suspension, control bleeding, and inhibit cracks as they start. In fact, when used according to manufacturer's specs, Fibermesh fibers inhibit up to 80–100% of plastic shrinkage cracking, depending on application rate.

Concrete Toughness

Test a Fibermesh reinforced slab and you'll understand how tough it is. Impact resistance and shatter resistance are all increased over plain concrete. The level of toughness increases as you move toward Novomesh e3, as measured by ASTM test C-1399.

Installation Ease and Safety

With Fibermesh fibers, the reinforcement is already in the concrete when the truck arrives. Back the truck up and place it. No extra trips to get wire, no handling of unwieldy rolls, no cuts and scrapes, no standing on the wire while trying to pull it up. No need to have inspectors come out and verify reinforcement. It's perfect for direct placement and pumping. Unlike wire mesh, Fibermesh is ready to go so you won't have to worry about meeting specs. It all adds up to time and money saved on every job.

Fibermesh® vs. Wire

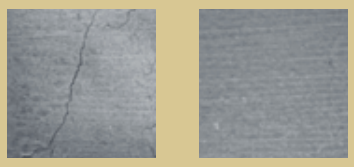
The American Concrete Institute (ACI) defines secondary concrete reinforcement as "non-structural reinforcement such as welded wire fabric, fibers, or bars to minimize crack widths that are caused by thermal expansion and contraction, or shrinkage."[1] ACI directs that wire "reinforcement should be at or above middepth of the slab on grade, never below middepth."[2] This is easier said than done.

The Fibermesh Alternative

Fibermesh fibers attack the early age cracking problem head-on by inhibiting up to 80-100% of intrinsic cracking at recommended dosage rates. They also reduce water migration, add impact & shatter resistance and provide toughness in concrete. The result is three-dimensional secondary reinforcement that is always positioned correctly, guaranteed.

1 ACI Educational Bulletin E2-00,pg. E 2-2, ©2000
2 ACI, Design of Slabs on Grade, 360R-21 Section 6.4

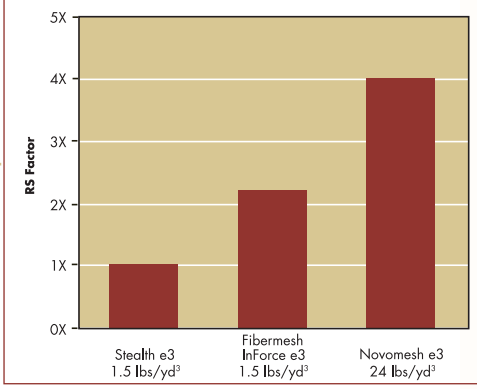
Plastic Shrinkage Crack Study



Control Fibermesh

These accelerated test photos show a comparison between the two slabs at a curing time of 24 hours. The control slab began cracking at 2.5 hours.

Relative residual strength values of Fibermesh e3 products



SHATTER CHARACTERISTICS
Performance Under Compression

	Ultimate Load Pounds (Kg)	Compression Inches (mm)	Comments
Plain Concrete	116,136 (52,679 kg)	0.087 (2.21mm) 0.100 (2.54mm) 0.320 (8.13mm)	Initial Break Initial Spalling Complete Failure
Fibermesh Concrete	117,468 (53,383 kg)	0.085 (2.16mm) 1.000 (25.4mm) 2.000 (50.80mm)	Initial Break No Spalling No Spalling

Test Data	Control	Fibermesh
Cement Factor, lbs./yd.³ (kg/m³)	494 (293 kg/m³)	494 (293 kg/m³)
Water/Cement Ratio by weight	.60	.63
Slump in in. (cm)	5.0 (12.7 cm)	4.75 (12.1 cm)
Maximum Aggregate In. (mm)	1 (25mm)	1 (25mm)
Fibermesh lbs./yd.³ (g/m³)	0	1.5 (890)

Fibermesh fibers help increase concrete toughness and resistance to cracking.

The Fibermesh® system of products

Only Fibermesh® fibers can offer you the precision engineering and depth of our product line. Our synthetic fibers are 100% polypropylene, made in the U.S.A. at an ISO 9002 certified facility.

STEALTH® e3™

Plastic Shrinkage & Plastic Settlement Crack Control

Stealth e3 is a new system of multifilament fibers of blended length and diameters in a controlled combination. This system provides millions of fibers per cubic yard. They're known for easy finishability and are virtually invisible on the surface.

Stealth® fibers are also available in basic unilengths of .125" (3.175 mm), .25" (6.35 mm), .5" (12.7 mm), and .75" (19.05 mm).

FIBERMESH INFORCE™ e3

Plastic Shrinkage & Plastic Settlement Crack Control

Concrete Toughness*

Fibermesh InForce™ is the new name of our trusted fibrillated fibers. A controlled blend of lengths and diameters, Fibermesh InForce e3 fibers are fibrillated to separate out in a network of reinforcement. They also provide easy finishability with standard finishing techniques.

Fibermesh InForce fibers are also available in basic unilengths of .125" (3.175 mm), .25" (6.35 mm), .5" (12.7 mm), .75" (19.05 mm), 1.5" (38.1 mm), 2.0" (50.8 mm), and 2.25" (57.15 mm).

NOVOMESH™ e3

Plastic Shrinkage & Plastic Settlement Crack Control

Concrete Toughness*

Steel Fiber Reinforcement

Novomesh™ e3, an engineered blend of steel and synthetic fibers, puts more steel into concrete than w2.9 x w2.9(6x6) wire mesh (6" slab). This system provides excellent hardened concrete attributes for more demanding requirements.

For more demanding applications, such as industrial floors, ask your concrete producer about our NOVOCON® steel fibers. Also visit our website at www.fibermesh.com.

* At recommended addition rates

MAKING GOOD CONCRETE BETTER.®

SI® Concrete Systems

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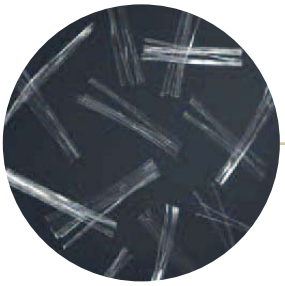
www.fibermesh.com

Active member of: aci NATIONAL READY MIXED CONCRETE ASSOCIATION

FM-400



Fibermesh®
INFORCE™

Virgin Polypropylene Fibrillated Fibers
Plastic Shrinkage & Plastic Settlement Crack Control
Concrete Toughness

Ideal Applications Include:

- **Slabs On Ground**
- **Sidewalks**
- **Driveways**
- **Garage Floors**
- **Parking Areas**
- **Ultra-Thin Whitetopping**
- **Some Composite Metal Decks**
- **Overlays/Toppings**

INFORCE™ e3™

Engineered – Network of Reinforcement

Fibermesh® InForce™ fibers are designed to separate into a network of secondary reinforcement that provides early age concrete benefits and concrete toughness (residual strength). These 100% virgin polypropylene fibrillated fibers are manufactured in an ISO-9002 certified facility. The minimum recommended addition rate for use as concrete reinforcement is 1.5 pounds of fibers per cubic yard (.9 kg per cubic meter) based on performance requirements.

Available in patented e3™ technology that's engineered three ways – for length, thickness and mix ratio – to enhance rapid distribution in fresh concrete. Also available in .125" (3.175 mm), .25" (6.35 mm), .5" (12.7 mm), .75" (19.05 mm), 1.5" (38.1 mm), 2.0" (50.8 mm) and 2.25" (57.15 mm) unilengths.

Efficient – Safe and Easy to Install

Fibermesh InForce fibers are mixed and delivered in the concrete truck when it arrives, making for easy, direct or pumpable placement that significantly reduces construction time. Plus, there's no minimum amount of concrete cover required, and fibers are always positioned in compliance with codes. In addition, Fibermesh InForce fibers provide the added safety benefits that come from not having to handle wire.

Effective – Early Age and Long-term Benefits

The American Concrete Institute classifies both fibers and wire mesh as secondary reinforcement. But there are differences. Fibermesh InForce fibers give you all these benefits: plastic shrinkage & plastic settlement crack control, lower water migration, increased impact and shatter resistance, and residual strength. Wire mesh does not. Neither method has an effect on the compressive or flexural strengths of concrete. In addition, fibers are nonmagnetic, rustproof, alkali proof, and will not corrode.

What's more, Fibermesh InForce fibers work without affecting the chemical hydration of the cement. Adding InForce fibers does not require any additional water or other mix ratio changes at normal rates. And fibers are compatible with all commonly used concrete admixtures and performance enhancing chemicals.

Specify Fibermesh® INFORCE™ Fibers for:

- The reduction of concrete cracking as a result of intrinsic stresses
- A superior method and cost effective alternative to welded wire fabric for shrinkage and temperature reinforcement
- A level of improved impact, shatter and abrasion resistance in concrete
- Support and cohesiveness in concrete on steep inclines and/or slipformed placements
- Placements where all materials must be nonmetallic
- Reduced water migration and damage from freeze/thaw
- Providing residual strength
- Areas requiring materials which are both alkali proof and chemical resistant
- Improved durability

Don't Specify Fibermesh® INFORCE™ Fibers for:

- The control of cracking as a result of external stresses
- Increasing joint spacing beyond the guidelines of ACI and PCA
- Decreasing the thickness of slabs on ground
- Replacing any moment or structural steel

Compressive Strength

There is no statistically significant difference in compressive strength between concrete with InForce™ and plain concrete.

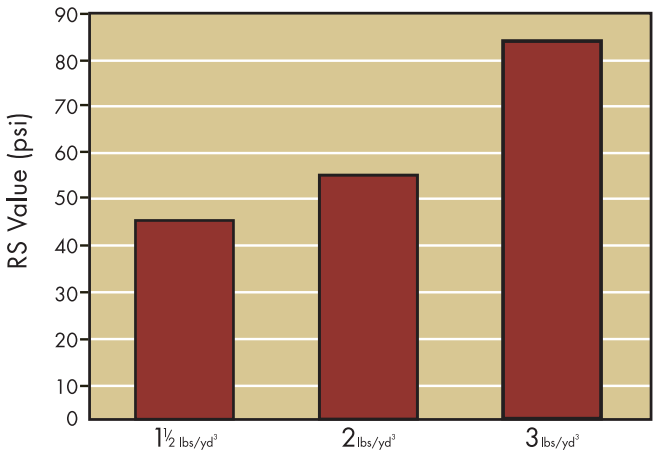
Average Compressive Strength (psi)		
	7-Day	28-Day
Plain Concrete	1400	2280
Fibermesh InForce	1490	2485

Flexural Strength

When tested per ASTM C78, there was no statistically significant difference between the flexural strength for all mixes.

Average Flexural Strength (psi)		
	7-Day	28-Day
Plain Concrete	258	358
Fibermesh InForce	288	390

Residual Strength of Fibermesh InForce e3 at 1½-, 2-, and 3- pounds per cubic yard



Compliance:

- Fibermesh® InForce™ reinforced concrete conforms to ASTM C94 standard specification for ready-mixed concrete uniformity requirements
- ASTM C-232-71 – uniform bleeding
- Measuring materials, toughness, workability and testing conform to ASTM C1116 and ASTM C1018
- ASTM C1399 - Standard Test Method for Determining Average Residual Strength of Fiber Reinforced Concrete
- UL approvals for use as an alternate or in addition to welded wire fabric used in floor-celing D700, D800 and D900 series designs.

INFORCE™

For more information, call 800-635-2308.

FM-400-IF

STEALTH®

e3™

STEALTH®

Virgin Polypropylene Fibers
Plastic Shrinkage & Plastic Settlement Crack Control

Ideal Applications Include:

Slabs On Ground

Sidewalks

Driveways

Patios

Pool Decks

Stamped and Patterned Concrete (Architectural)

Roof Tiles

Garage Floors

Stucco

Engineered – Tens of Millions of Fibers per Cubic Yard

Stealth® fibers act as an internal support system that discourages the segregation of the concrete ingredients and contributes to the development of the concrete's optimum long-term integrity. Featuring tens of millions of fibers per cubic yard of concrete, Stealth is designed to provide excellent early age concrete benefits by inhibiting plastic shrinkage and plastic settlement cracking. The result is a uniformly distributed reinforcement system that's virtually invisible on the surface. The recommended addition rate is .75 - 3 pounds per cubic yard (.45-1.80 kg per cubic meter) based on performance requirements.

Now available in patented e3™ technology that's engineered three ways – for length, thickness and mix ratio – to enhance rapid distribution in fresh concrete. Also available in .125" (3.175 mm), .25" (6.35 mm), .5" (12.7 mm), and .75" (19.05 mm) unilengths.

Efficient – Safe and Easy to Install

Stealth fibers are mixed and already in the concrete truck when it arrives. This makes for easy, direct or pumpable placement that is always in the proper position, saving significant construction time. In addition, Stealth provides added safety benefits that come from not having to handle wire.

Effective – Plastic Shrinkage & Plastic Settlement Crack Control

The American Concrete Institute classifies both fibers and wire mesh as secondary reinforcement. But there are differences. Stealth fibers inhibit shrinkage & settlement cracks in concrete's plastic state, lower water migration and add a level of improved impact and shatter resistance. Wire mesh does not. Neither method affects the compressive or flexural strengths of concrete. In addition, fibers are nonmagnetic, rustproof, alkali proof, and will not corrode.

What's more, Stealth fibers work without affecting the chemical hydration of the cement. Plus, adding Stealth fibers does not require any additional water or mix ratio changes at normal rates. And fibers are compatible with all commonly used concrete admixtures and performance enhancing chemicals.

STEALTH®

Specify STEALTH® Fibers for:

- The reduction of concrete cracking as a result of intrinsic stresses
- A level of improved impact, shatter and abrasion resistance in concrete
- Support and cohesiveness in concrete on steep inclines and/or slipformed placements
- Placements where all materials must be nonmetallic
- Reduced water migration and damage from freeze/thaw
- Areas requiring materials which are both alkali proof and chemical resistant
- All types of concrete which demonstrate a need for an architectural finish
- An alternative method to welded wire fabric as secondary reinforcement

Don't Specify STEALTH® Fibers for:

- The control of cracking as a result of external stresses
- Increasing joint spacing beyond the guidelines of ACI and PCA
- Decreasing the thickness of slabs on ground
- Replacing any moment or structural steel

Compressive Strength

There is no statistically significant difference in compressive strength between concrete with Stealth and plain concrete.

Average Compressive Strength (psi)		
	7-Day	28-Day
Plain Concrete	3570	4450
Stealth	3720	4710

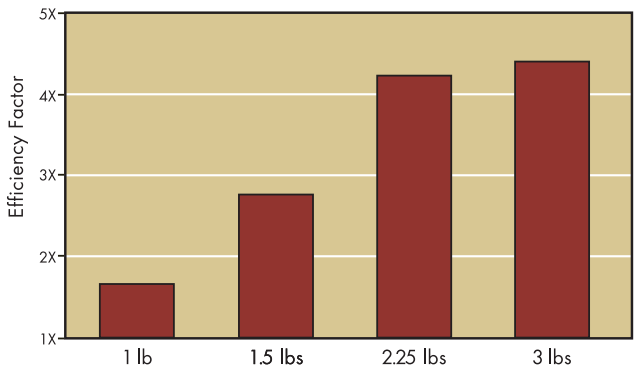
Flexural Strength

There is no statistically significant difference between the flexural strength for all mixes.

Average Flexural Strength (psi)		
	7-Day	28-Day
Plain Concrete	475	695
Stealth	525	715

More Fibers Mean Fewer Cracks

Crack Reduction Efficiency



Compared to .75 lbs/cy (1X) in a bonded mortar overlay

In actual concrete testing, it has been shown that .75 lbs/cy addition rate of Stealth fibers reduced plastic cracking caused by volume change due to drying shrinkage in excess of 90%.

Compliance:

- Stealth reinforced concrete conforms to ASTM C94 standard specification for ready-mixed concrete uniformity requirements
- ASTM C-232-71 - Uniform Bleeding
- Measuring materials, toughness, workability and testing conform to ASTM C1116 and ASTM C1018
- ASTM C1399 - Standard Test Method for Determining Average Residual Strength of Fiber Reinforced Concrete
- UL approvals for use as an alternate or in addtion to welded wire fabric used in floor-celing D700, D800 and D900 series designs.

For more information, call 800-635-2308.

FM-400-ST

Blend of Steel and Synthetic Fiber

Plastic Shrinkage & Plastic Settlement Crack Control

Hardened Concrete Benefits

NOVOMESH™ e3™

Ideal Applications Include:

Slabs on Ground

Strip Malls

Sidewalks

Driveways

Offices

Municipal Buildings

Houses of Worship

Hotels

Schools

Some Composite Metal Decks

SI® Concrete Systems, long a leader in the field, is now offering its latest advancement in fiber reinforcing. It's Novomesh e3, an innovative, engineered blend of steel and synthetic fibers designed to meet the needs of your jobs requiring a higher level of secondary reinforcement.

Tough

Novomesh puts more steel into a 6" slab of concrete than w2.9 x w2.9 (6x6) wire mesh. The result? A highly effective alternative to wire mesh when it comes to:

Plastic Shrinkage & Plastic Settlement Crack Control
Concrete Toughness
Steel Fiber Reinforcement

Easy to Install

Installing Novomesh e3, couldn't be simpler; all you have to do is back up the truck and place it. No wire, no rolls, no cuts and scrapes. And because it's already mixed in the concrete, Novomesh e3 is always in place. It all makes Novomesh e3 perfect for direct placement, pumping and all jobs where saving time means saving money.

Compatible

Novomesh e3 works well with all commonly used concrete mixtures and additives, and is ideally suited for hand or vibratory screeds, laser guided screeds and all conventional finishing equipment. No special equipment is needed for mixing, placing or finishing.

Multiple Uses

Novomesh e3 is best suited for slabs on ground that need a higher level of reinforcement, but do not call for specific load-bearing requirements.

NOVOMESH e3

e3™

Specify NOVOMESH™ e3™ for:

- The reduction of concrete plastic cracking as a result of intrinsic stresses
- A cost-effective alternative to welded wire fabric for shrinkage and temperature reinforcement
- A level of improved impact, shatter and abrasion resistance in concrete
- Support and cohesiveness in concrete on steep inclines and/or slipformed placements
- Greater residual strength
- Reduced water migration and damage from freeze/thaw

Don't Specify NOVOMESH e3 for:

- Increasing joint spacing beyond the guidelines of ACI and PCA
- Decreasing the thickness of slabs on ground
- Replacing any moment or structural steel
- Decorative, exposed aggregate or architecturally sensitive concrete

How to Spec NOVOMESH e3

Here's some standard spec language you can use to make sure that you can get all the benefits of Novomesh e3 on your projects:

Specification

Novomesh e3 will be used for temperature and shrinkage protection of the concrete. Novomesh e3 is a blend of ASTM A820 Type I steel fibers and graded polypropylene fibers of various lengths and thicknesses.

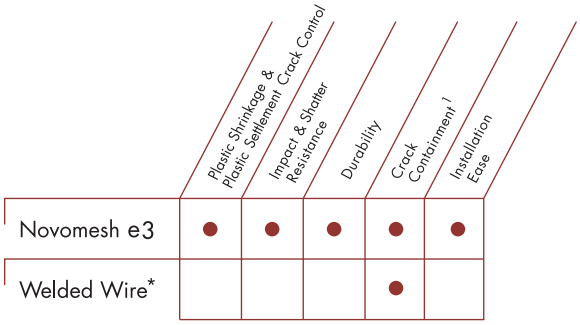
Application rate shall be a minimum of one degradable 24-pound bag per cubic yard of concrete. At the request of the engineer, one and one-half bags per cubic yard may be utilized in heavier duty sections. Fiber manufacturer must document evidence of satisfactory performance history, compliance with applicable building codes, ASTM C-1116 Type III, 4.1.3 and ASTM A820 Type I. Fibrous concrete reinforcement shall be manufactured by SI Concrete Systems, 4019 Industry Drive, Chattanooga, Tennessee, USA, 37416. Phone: 800-635-2308; Fax: 423-892-0157; email: fibermesh@sind.com.

Packaging/Application Rate

Novomesh e3 fibers are packaged in degradable 24 lb. bags. One bag equals the minimum application per cubic yard of concrete.

Novomesh™ e3™ vs. Welded Wire

Welded wire just can't match the full range of benefits you get with Novomesh e3.



1 Novomesh e3 provides 85-168 psi of residual strength
* Welded wire performance varies depending on placement

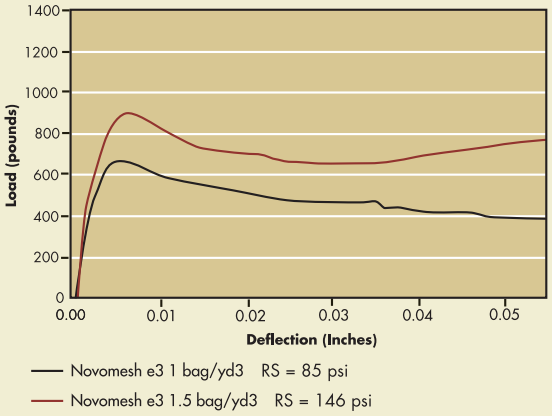
Physical Properties of Synthetic Fiber Component	
Absorption	Nil
Specific Gravity	0.91
Fiber Length	Multi-Design Gradation
Melt Point	324ºF

Physical Properties of Steel Fiber Component	
Tensile Strength	140-180 Kpsi, 966-1242 MPa
Length	1.5" (38.1 mm) ± 5%
Thickness	.025" (.635 mm) ± .05" (1.27 mm)
Width	.092" (2.34 mm) ± .009" (.23mm)
Aspect Ratio	34 ± 5
Deformations	.250" (6.35 mm) on center

Technical Data

Residual Strength (ASTM C1399)

The chart below shows the average residual strength curves with the addition of Novomesh™ e3™ fibers in the amounts of 1 and 1 1/2 bags per cubic yard of concrete.



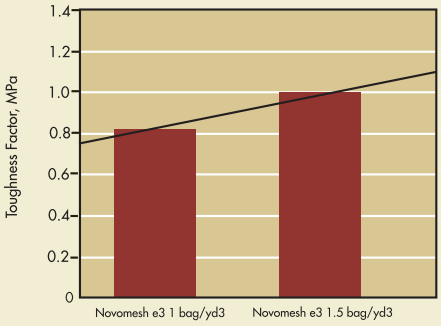
Compressive Strength

There is no statistically significant difference in compressive strength between concrete with Novomesh e3 and plain concrete.

Flexural Strength

When tested per ASTM C78, there was no statistically significant difference between the flexural strength for all mixes.

Mean Toughness Factor



Corrosion Statement

When steel fibers are added to concrete mix, each individual fiber receives a coating of cement paste. The alkaline environment provided by the concrete and its mass protects and isolates each individual fiber from one another. Metal continuity does not exist between steel fiber in a SFRC composite and, therefore, full depth corrosion of the fiber will not occur.

How to Use NOVOMESH™ e3™

Mixing

Novomesh™ e3™ accommodates all methods of concrete mixing. For transit mixed concrete, place the fibers into the mixer after the material charging operation. Then mix in accordance with the mixer manufacturer's standard recommendations and ASTM C-94. For central mixed concrete, add Novomesh e3 after the batching sequence and mix in accordance with the manufacturer's recommendations. When adding Novomesh e3 to thoroughly mixed concrete at the job site, mix for an additional 4-5 minutes at mixing speed. Prolonged mixing does not adversely affect the distribution of fibers. One bag equals the minimum application per cubic yard.

Placing

Novomesh e3 fibers are pumped and placed using conventional equipment. Hand screeds, laser screeds and vibratory screeds can be used as well.

Finishing

Conventional finishing techniques and equipment can be used when finishing Novomesh e3 fiber concrete. In some cases, an extra bull float process is advised and lowering the angle of floating blades will help to ensure a fiber-free surface. SI Concrete Systems personnel can help to determine the best solution for your job.

Get all the benefits of Novomesh e3 now. To find out more about Novomesh e3's remarkable benefits, just check out the enclosed charts. If you need more information or the location of the nearest Novomesh e3 ready mix distributor, just give SI Concrete Systems a call at 800-635-2308. Once you've checked us out, we think you'll find us tough to beat.

FM-400-NM