



newcrete T to prevent thermal cracking

PRODUCT PAGE



fiberfor
engineered construction solutions

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The Problem

Thermal Cracking is a result of temperature differences in multiple volume elements (e.g., foundations, barges, etc.) or high strength elements.

As the concrete sets, heat is emitted leading to a drop in temperatures between the element's core and skin.

Over time there is a cooling of the element, causing shrinkage of the element's core, thereby causing thermal cracks in the hardened, solid skin of the element.

Thermal cracking affects the element's quality, durability, impermeability to water and corrosive chemicals, as well as its surface quality.

Thermal cracking is liable to develop from slight cracks to those that cause a decrease in existent element's and their quality.

The Solution

The fibers that make up our newcrete T product are characterized by a geometric structure of diameter, length and cross-section configuration adapted to obtaining high efficiency in the process of restraining thermal cracking.

The fibers have a variety of improved mechanical properties such as strength and elongation that serve to mechanically stop the crack's progress combined with anchoring and a high drag coefficient between the fiber and the cementic matrix.

The fibers' morphology (structure) contributes to obtaining the required interaction with the concrete, converting the kinetic energy of the crack's progression to the thermal energy of the fibers' friction in the cementic mixture for the benefit of stopping the cracks' progress.

Capabilities and Benefit

The fibers' components and character enable their optimal integration into the cementic system for the benefit of obtaining significantly efficient restraint through a series of suitable mechanical and energetic properties:

- ▶ A significant reduction in thermal cracking
- ▶ Casting elements of greater size and volume
- ▶ Uniform internal curing for all parts of the element
- ▶ Extends the longevity of the element
- ▶ Increases the Element's Endurance
- ▶ Improved High Coherency of the Cementic Matrix
- ▶ Improved Impermeability of the Cementic Matrix
- ▶ Improved Matrix Strength Against Blows and Shocks

Advantages

Use of a relatively small quantity of fibers per cubic meter enables the attainment of the improved properties of workability and concrete flow thanks to nylon polymer's compatibility with the matrix.

The fibers' advantages include enhanced elongation and impact resistance that improves the mechanical properties of the fresh concrete, its quality, hardness and endurance. From here, the fibers provide maximum restraint of cracking, stopping any progression of the cracking process.

The fibers interaction with the cementic system affords an optimal mechanical and energetic reinforcement and improves the quality of the casting, its finish and prevents the penetration of corrosive materials that may harm the element.

Primary Applications

The fibers may be used in a wide variety of applications affected by thermal cracking issues.

- ▶ Multiple Volume Elements
- ▶ Barges
- ▶ Breakwater Bulkheads
- ▶ Bridges
- ▶ Prefabricated Elements
- ▶ Facades
- ▶ Rising Forms

Product Properties

Fibers have good interaction with the concrete thereby affording a better bond of the fiber in the cementic matrix and enables the transfer of load stress to the fibers, in order to obtain a more effective reinforcement of the matrix.

The fibers succeed in bridging the thermal crack's surface thanks to their strength, rigidity and improved mechanical properties.

The fibers are characterized by superior mechanical properties, toughness and high energy absorption. The nylon fibers high mechanical reinforcement capacity stops the cracks' progression by increasing the strength and toughness of the reinforced matrix.

The fibers are also characterized by improved chemical properties thanks to their water absorbency, thereby affording internal curing with the volumed concrete with significant advantages in the hydration processes of the cementic mixtures, in contrast to hydrophobic polypropylene fibers (water repellent).

Technical Specifications

Structure	Filamentary
Length	12 millimeter
Nominal Diameter	12 micron
Density	1.14 grams per cubic cm
Nominal DiTex	1.5
Tensile Strength	350 MPa
Elastic Modulus	2200 MPa
Liquefaction Temperatures	264°C
Alkali Resistance	Very High
Acidic Resistance	Very High
UV Radiation Resistance	Very High
Color	Transparent

Dosage and Quantity

Fiber Quantity per Cubic Meter

The optimal fiber quantity is one product bag containing 350 gram fiber per cubic meter concrete.

Cement Quantity per Cubic Meter

The recommended quantity is according to SII 118 or the engineer's specifications.

Service and Support

The Laboratory

The product was developed in our laboratory. The laboratories are state of the art and amongst the most advanced in the field of fibers and concrete, servicing to adapt the solution to each application and project for technical consultation purposes during any application for the benefit of meeting the specific needs of each of our customers.

Experts in the Field

The product is adapted to the specifications of each application, at both the fiber and the concrete levels.

The company's experts offer technical support services at the design level to assist and define the solution's scope and character (the quantity and type of fibers required) and during implementation and execution, through accompanying, consulting and providing expert technical support as required.

Actual Application

- ▶ Blending Fibers into the aggregate
- ▶ It is possible to add fibers during each of the concrete preparation stages
- ▶ There is no need to modify the composition of the planned concrete aggregate.
- ▶ The product bags decompose in the concrete aggregate and release the fiber content into the mixture whereby the fibers disperse uniformly across the matrix.
- ▶ Add the amount of fibers suitable to the concrete volume in the drum, according to the required dosage and mix at the maximum speed (at least 70 rotations) for at least 4 minutes.

Packaging and Storage

Storage

The shelf-life of the packaged product is approximately one year. The product must be stored in a dry and protected environment.

Delivery

The product is manufactured and packaged in the company's facilities.

The product comes packaged in decomposable paper bags or in bulk.

The quantity of fibers in the packaging can be adapted according to the customers specific needs and requirements.

The shipped product arrives in decomposable bags, packed in carton boxes.

A label containing the product's specifications is attached to each carton.

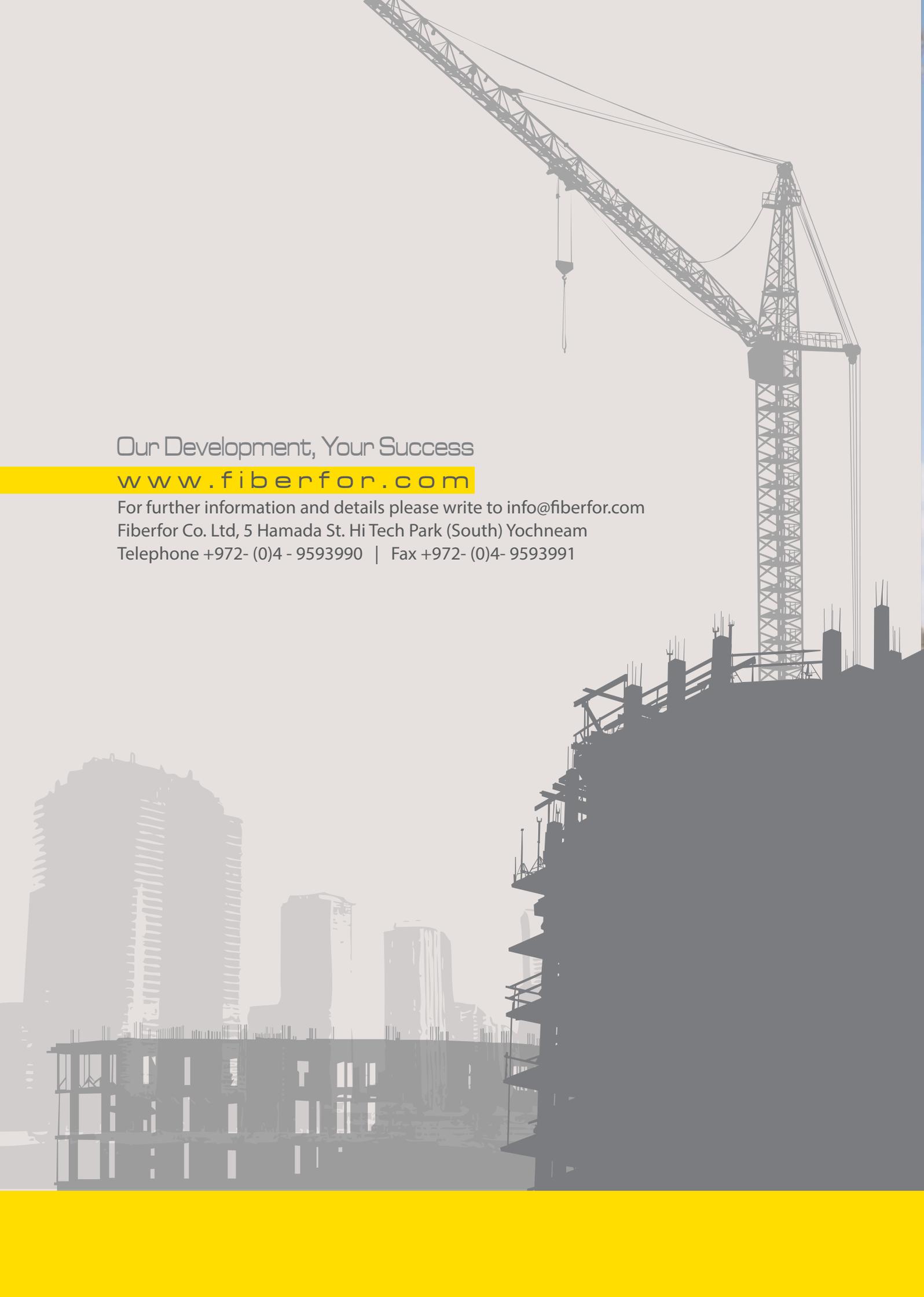
Packaging

The dimensions of the carton packaging are 46 x 34 x 39 (height, length, width) and each carton contains 50 packages of 350 grams fiber per bag.

The product comes with the following documentation:

- ▶ Bill of Lading
- ▶ Invoice
- ▶ Instructions for Use
- ▶ MSDS Safety Instructions
- ▶ Product Quality Compatibility Approval



A large construction crane is positioned in the upper right quadrant, its lattice structure extending diagonally across the frame. Below it, the dark silhouettes of several buildings under construction are visible, showing various stages of structural development. The background is a light, hazy sky. A yellow horizontal bar is located behind the website address.

Our Development, Your Success

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