

MINIBARS™

ENABLING PRE-REINFORCED™ CONCRETE

Innovative solutions in concrete with Basalt FRP Composite Macrofiber

Light! Flexible! Strong!



ReforceTech™
Fiber Reinforcement Technology



Enabling innovation in concrete. Light! Ductile! Strong! Environmentally Friendly

Key MiniBar™ Properties

Fiber Reinforced Polymer (FRP) Composite MiniBars™ possess ideal properties for Pre-Reinforced Concrete.



Density

- Basalt MiniBars are made from Basalt rocks transformed into fiber and formed into a twist shape with a specific gravity of 2.1 similar to that of concrete
- ¼ the density of steel
- Enables workable concrete
- Pump easily
- Does not float or sink

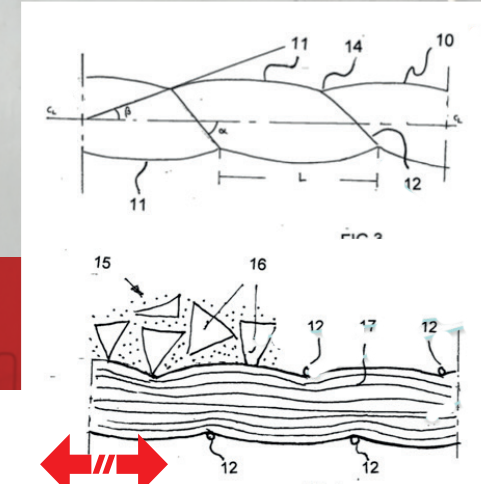
Innovative Applications with Basalt MiniBars™

Inner Walls • Precast Sandwich Panels and Façade Panels • Pavements • Floating Infrastructure • Bridge Decks • Barrier Walls • Slab on Grade • Screed • Foundations • Rafts • EPS Block Walls • Power Poles • Barrier Walls • Balconies • Agricultural Products • Sea Walls and Weights • Concrete Pipes • HPC and UHPC Structures • Pavements and Flooring



Certifications

- Basalt MiniBars are Certified by DIBt (German National Approval) for Non Structural Applications
- Tested extensively at IBAC Aachen University Germany and NTNU in Norway
- Approved by Kontrollrådet



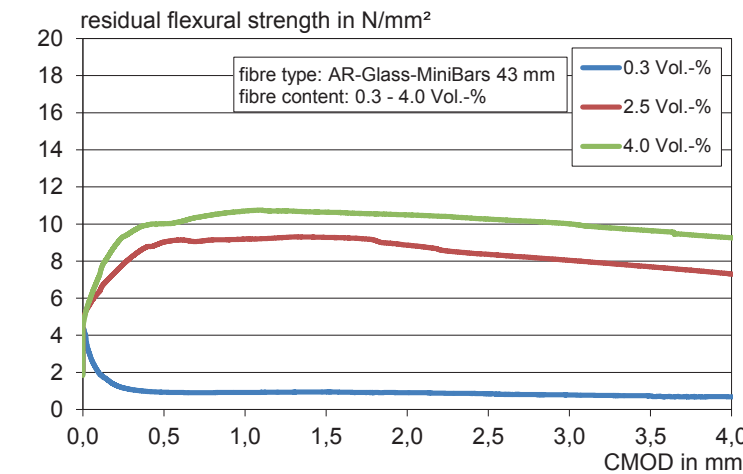
MiniBars have 4 strengthening mechanisms in concrete

- 1 Length for friction resisting pull out
 - 2 Rough Surface to increase friction
 - 3 Helix to utilize inter-fiber shear to resist pull out
 - 4 Diameter
- MiniBars™ have high tensile strength similar to that of steel
 - MiniBars™ have a elastic modulus similar to that of the concrete
 - MiniBars have a high fiber count per weight similar to synthetic fibers

Hardened Concrete Properties

MiniBars™ greatly increase concrete's tensile behaviour leading to Pre-Reinforced™ Concrete

EN14651



Typical residual flexural strength curves
Contact distributor for further data

Flexural Tensile Strength

- MiniBars™ mixed in concrete lead to a network of randomly placed fibres throughout the concrete.
- As the load is applied to the concrete the MiniBars™ act as crack control and distribute the load throughout the concrete.
- Increases the Flexural Tensile Strength of the concrete.
- Increases the Average Residual Strength of the concrete.

- Independent testing by University of Akron, Aachen University, Norwegian University of Science and Technology, University of Florida.
- Enhances:
 - Fatigue Behaviour
 - Creep Behaviour
 - Shock Resistance
 - Ductility
- Non Magnetic
- Non Conductive
- Non Corroding
- Class A1 according to Din Flammability testing

MiniBars™ Types, Dosage recommendations

MiniBar™ Properties, Certifications ISO 9001:2008



Innovations using MiniBars™

Classification is indication only



Contact your ReforceTech Sales Representative to specify the length of MB for your project

20mm	62,000MB/Kg	28,000MB/LB
30mm	41,350MB/Kg	18,710MB/LB
43mm	28,850MB/Kg	13,000MB/LB
55mm	22,500MB/Kg	10,180MB/LB

ReforceTech offers Engineering Support according to numerous standards and codes. Contact your local ReforceTech Sales Representative for assistance to set the dosage required to meet your engineering

Dosing instructions are available on our website. ReforceTech has developed dosage systems to assist in ensuring excellent dispersion. MiniBars come in boxes of 20Kg for 20mm, 15Kg for 30mm, 10Kg for 43mm and 8 Kg for 55mm. Large bags are also available

MiniBar™ Properties

Nominal Diameter	0,72 mm	0,028 in
Length	20 to 55 mm	0,8 to 2,17 in
Density	2,1g/cc	0,071 oz/in3
E Mod Min	44GPa	6380 KSI
Minimum Tensile Strength	900MPa	131 KSI

Specification for MiniBars - MasterFormat® Section 03 24 00

Generic: Use macrofibers made from Basalt FRP rods with helical winding geometry and diameters in the range of 0.45mm to 0.70mm. FRP macrofibers should be fabricated with CBF (continuous basalt fiber) and vinyl ester resin with a minimum Heat Distortion Temperature of 235F (115C) and Modulus of Elasticity of 6380 ksi (44 GPa). The length of the fibers will be from 0.80" to 2.40" (20mm to 60mm) with exact length to be determined by trial batch with guidance from the manufacturer. Dosage will be determined by trial batch using up to 63Kg/m3 or 130 lbs/cu.yd. based on the minimum ARS (average residual strength per ASTM C1399 or EN14651) and FTS (flexural tensile strength per ASTM C1609) established by the engineer-of-record.

Specific: Use RFT-MiniBars by ReforceTech AS. Length of fibers and dosage to be determined by trial batch with guidance from the manufacturer based on the application requirements for ARS (ASTM C1399 or EN14651) and FTS (ASTM C1609) established by the engineer-of-record for the project.

Warranty Statement

The information shown here inclusive of all drawings and tables is for informational purposes only. Details are subject to change; every effort has been made to ensure accuracy. The user shall ensure the appropriate guidelines and building codes are followed. ReforceTech has no control over the use of their products and assumes no responsibility for the end products or uses of our materials.

Minimum Reinforcement Applications

- Flooring Slab on Ground
- Screed
- Rafts (MiniBars give crack control in a hybrid design)
- Foundations

Pre Crack Reinforcement Applications

- Inner Walls precast and in-situ
- Façade Panels precast and in-situ
- Precast Sandwich Panels
- Edge Beams (Hybrid)
- Sea Weights
- Floating Pontoons
- Shotcrete



ReforceTechTM
Fiber Reinforcement Technology

Luftveien 4, NO- 3440 Røyken, Norway

Telephone: +4766 76 77 80

See www.ReforceTech.com for contact and
distributors information

ReforceTech Ltd

Pamdohlen House

Dooradoyle Rad, Limerick, Republic of Ireland

