Deutsches Institut für Bautechnik

Member of EOTA
www.eota.eu

Approval body for construction products and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and Laender Governments

Designated according to Article 29 of Regulation (EU) No 305/2011 and member of EOTA (European Organisation for Technical Assessment)

# European Technical Assessment

# ETA-20/0599 of 20 October 2020

English translation prepared by DIBt - Original version in German language

**General Part**

| | |
|---|---|
| Technical Assessment Body issuing the European Technical Assessment: | Deutsches Institut für Bautechnik |
| Trade name of the construction product | Basalt MiniBars |
| Product family to which the construction product belongs | Polymer macro fibres reinforced with basalt fibre for the use in concrete |
| Manufacturer | ReforceTech Ltd<br>Pamdohlen House<br>DOORADOYLE RAD, LIMERICK<br>REPUBLIK IRLAND |
| Manufacturing plant | ReforceTech AS<br>Luftveien 4<br>NO - 3440 ROYKEN<br>NORWEGEN |
| This European Technical Assessment contains | 6 pages including 1 annex which form an integral part of this assessment |
| This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of | EAD 260067-00-0301 |



Deutsches Institut für Bautechnik
Kolonnenstraße 30 B | 10829 Berlin | GERMANY | Phone: +49 30 78730-0 | Fax: +49 30 78730-320 | Email: dibt@dibt.de | www.dibt.de

The European Technical Assessment is issued by the Technical Assessment Body in its official language. Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and shall be identified as such.

Communication of this European Technical Assessment, including transmission by electronic means, shall be in full. However, partial reproduction may only be made with the written consent of the issuing Technical Assessment Body. Any partial reproduction shall be identified as such.

This European Technical Assessment may be withdrawn by the issuing Technical Assessment Body, in particular pursuant to information by the Commission in accordance with Article 25(3) of Regulation (EU) No 305/2011.

## Specific part

### 1 Technical description of the product

The polymer macro fibres reinforced with basalt fibre "Basalt MiniBars" for the use in concrete are made of a polymeric matrix coating a basalt fibre thread. The moisture content of the basalt thread with sizing is ≤ 0,50 % by mass. The basalt fibres are twisted using a sacrificial thread and saturated and coated with a vinyl ester resin. Thereby the macro fibres possess a helix structure. The fibres are manufactured from specified constituents in a production plant and produced as chopped strands in different lengths (43 and 55 mm).

### 2 Specification of the intended use in accordance with the applicable European Assessment Document

The polymer macro fibres reinforced with basalt fibre "Basalt MiniBars" are intended to be used for preparation of concrete, mortar and other cementitious mixes for structural use in construction and for the manufacturing of precast construction products for structural use. The polymer macro fibres reinforced with basalt fibre are used in concrete to reduce the formation of early age shrinkage cracks. The long-term durability of the fibres in hardened concrete is not assessed.

The verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of concrete incorporating the polymer macro fibres reinforced with basalt fibre "Basalt MiniBars" of at least 50 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

## 3 Performance of the product and references to the methods used for its assessment

**Table 1 Mechanical resistance and stability (BWR 1)**

| Essential characteristic | Performance | |
|---|---|---|
| Shape/cross section | circular, see Annex A, Fig. 1 | |
| (Equivalent) diameter | 0,72 mm | |
| Length | 43 and 55 mm | |
| Density | 2,09 g/cm³ | |
| Content of resin (coating) | 13,9 % by mass | |
| Tensile strength | ≥ 1.100 N/mm² | |
| Modulus of elasticity | ≥ 49.000 N/mm² | |
| Softening temperature (Melting point) | not determinable | |
| Point of ignition (Decomposition point) | 420 °C | |
| IR analysis of coating | See Annex A, Fig. 2 | |
| Effect on the consistency of concrete | Fibre dosage "Basalt Minibars 43": 10 kg/m³ | See Annex A, Tab. 1 |
| Effect on the strength of concrete (Residual flexural tensile strength) | | See Annex A, Tab. 2 |

## 4 Assessment and verification of constancy of performance (AVCP) system applied, with reference to its legal base

In accordance with EAD No. 260067-00-0301, the applicable European legal act is: 1999/469/EC(EU).

The system to be applied is: 1

## 5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

Issued in Berlin on 20 October 2020 by Deutsches Institut für Bautechnik

Dr.-Ing. Lars Eckfeldt
p. p. Head of Department

*beglaubigt:*
Bahlmann

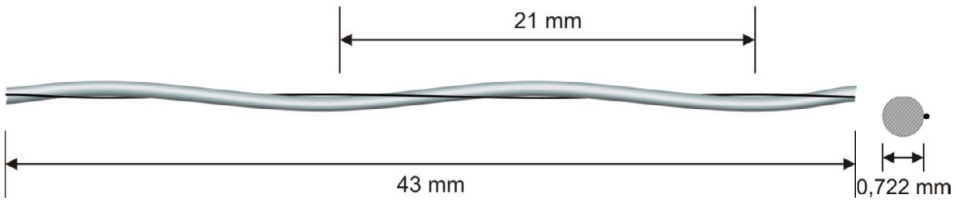


**Figure 1**: Shape (helix structure) and cross section

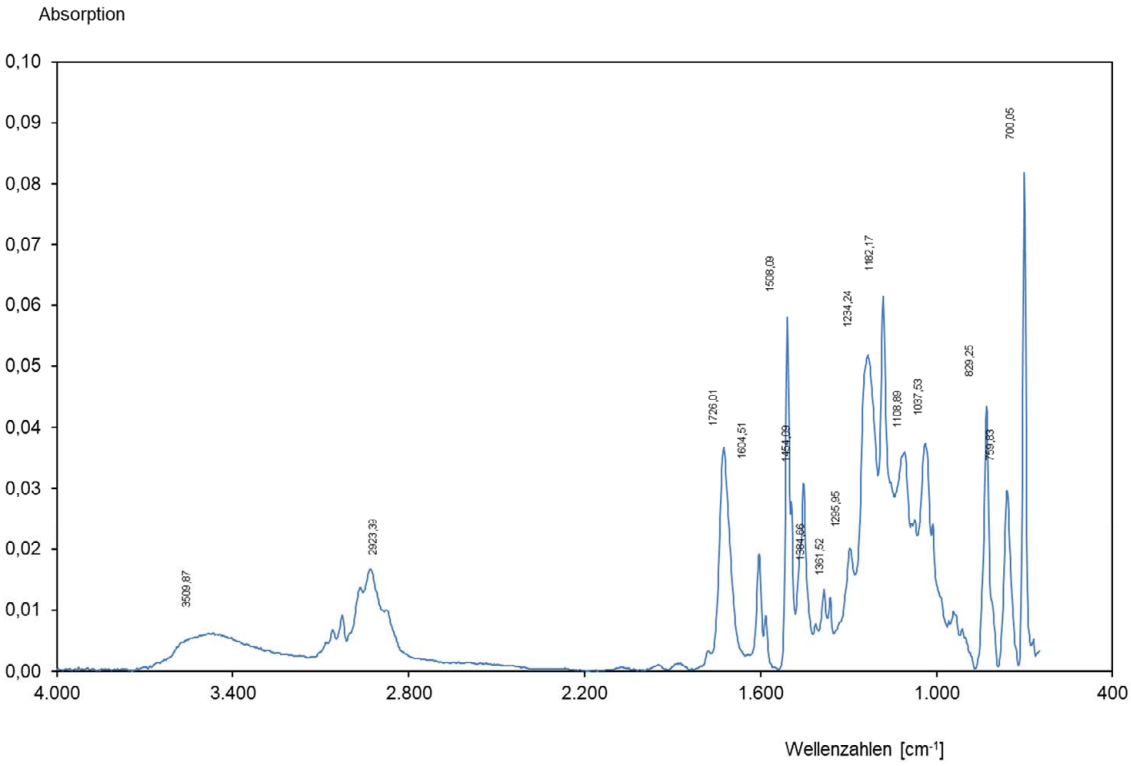


**Figure 2**: IR analysis of coating



| | |
|---|---|
| Basalt MiniBars | Annex A<br>Page 1 of 2 |
| Results of performance assessment | |

Deutsches Institut für Bautechnik DIBt

**Table 1**: Flow diameter and vebe time of fresh concrete

| Concrete | Dosage of "Basalt MiniBars 43" | Flow diameter | | Vebe time | |
|---|---|---|---|---|---|
| | | mm | | s | |
| Reference concrete | - | 295 | 293 | 6,12 | 5,76 |
| | | 290 | | 6,18 | |
| | | 295 | | 4,99 | |
| Fibre concrete | 10 kg/m³ | 295 | 295 | 8,07 | 8,66 |
| | | 295 | | 8,28 | |
| | | 295 | | 9,65 | |

**Table 2**: Residual flexural strength (fibre dosage of 10 kg/m³)

| Test specimen (beams) | $f^{f}_{ct,L}$ | $f_{R,1}$ | $f_{R,2}$ | $f_{R,3}$ | $f_{R,4}$ |
|---|---|---|---|---|---|
| | | 0,5 mm CMOD | 1,5 mm CMOD | 2,5 mm CMOD | 3,5 mm CMOD |
| | MPa | | | | |
| 1 | 3,980 | 1,911 | 1,722 | 1,477 | 1,174 |
| 2 | 4,618 | 2,760 | 3,028 | 2,456 | 1,947 |
| 3 | 4,357 | 3,610 | 3,819 | 3,159 | 2,566 |
| 4 | 4,259 | 2,638 | 2,717 | 2,287 | 1,642 |
| 5 | 4,426 | 2,894 | 3,220 | 2,900 | 2,351 |
| 6 | 4,225 | 2,959 | 3,087 | 2,533 | 2,074 |
| 7 | 4,550 | 3,263 | 3,176 | 2,518 | 1,911 |
| 8 | 4,605 | 3,386 | 3,324 | 2,892 | 2,258 |
| 9 | 4,858 | 3,363 | 3,363 | 2,732 | 2,271 |
| 10 | 4,731 | 3,588 | 3,691 | 2,776 | 2,155 |
| 11 | 4,421 | 2,393 | 2,404 | 1,987 | 1,513 |
| 12 | 4,504 | 2,172 | 2,186 | 1,923 | 1,593 |
| average | 4,461 | 2,911 | 2,978 | 2,470 | 1,955 |