Deutsches Institut für Bautechnik

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Approval body for construction products and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and Laender Governments

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European Technical Assessment ETA-19/0246 of 21 November 2019

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	Cem-FIL MiniBars
Product family to which the construction product belongs	Polymer macro fibres reinforced with alkali resistant glass fibre for the use in concrete
Manufacturer	ReforceTech Ltd Pamdohlen House DOORADOYLE RAD, LIMERICK REPUBLIK IRLAND
Manufacturing plant	ReforceTech AS Luftveien 4 NO - 3440 ROYKEN NORWAY
This European Technical Assessment contains	6 pages including 1 annex which forms 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 260024-00-0301

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Specific part

1 Technical description of the product

The polymer macro fibres reinforced with alkali resistant glass fibre "Cem-FIL MiniBars" are made of a polymeric matrix coating a glass thread containing zirconium dioxide to achieve a high alkali resistance. The zirconium dioxide content (ZrO_2) of the Alkali resistant (AR) glass is ≥ 16 % by mass. The moisture content of the AR glass thread with sizing is ≤ 0,50 % by mass. The strand-in-cement-strength (SIC strength) of the AR glass thread with sizing is ≥ 250 N/mm² (cp. EAD 260002-00-0301). The glass 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, 55, 60 mm).

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

The polymer macro fibres reinforced with alkali resistant glass fibre "Cem-FIL MiniBars" are intended to be used for preparation of concrete, mortar and other mixes for construction and for the manufacturing of precast construction products for structural use.

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 alkali resistant glass fibre "Cem-FIL 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, 55, 60 mm	
Density	2,14 g/cm³	
Content of resin (coating)	16 % by mass	
Tensile strength	≥ 900 N/mm²	
Modulus of elasticity	≥ 43.700 N/mm²	
Softening temperature (Melting point)	104 °C	
Point of ignition (Decomposition point)	410 °C	
IR analysis of coating	See Annex A, Fig. 2	
Effect on the consistency of concrete	Fibre dosage "Cem-FIL 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. 260024-00-0301, 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 21 November 2019 by Deutsches Institut für Bautechnik

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Head of Department

beglaubigt:
Bahlmann

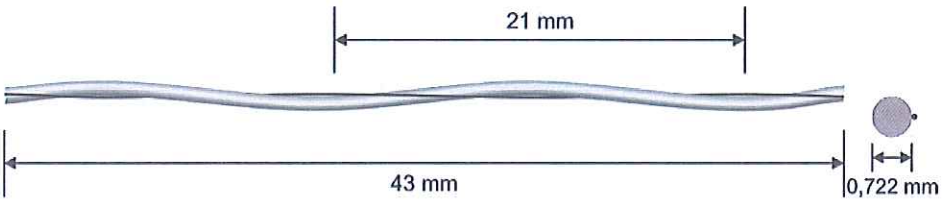

Figure 1: Shape (helix structure) and cross section

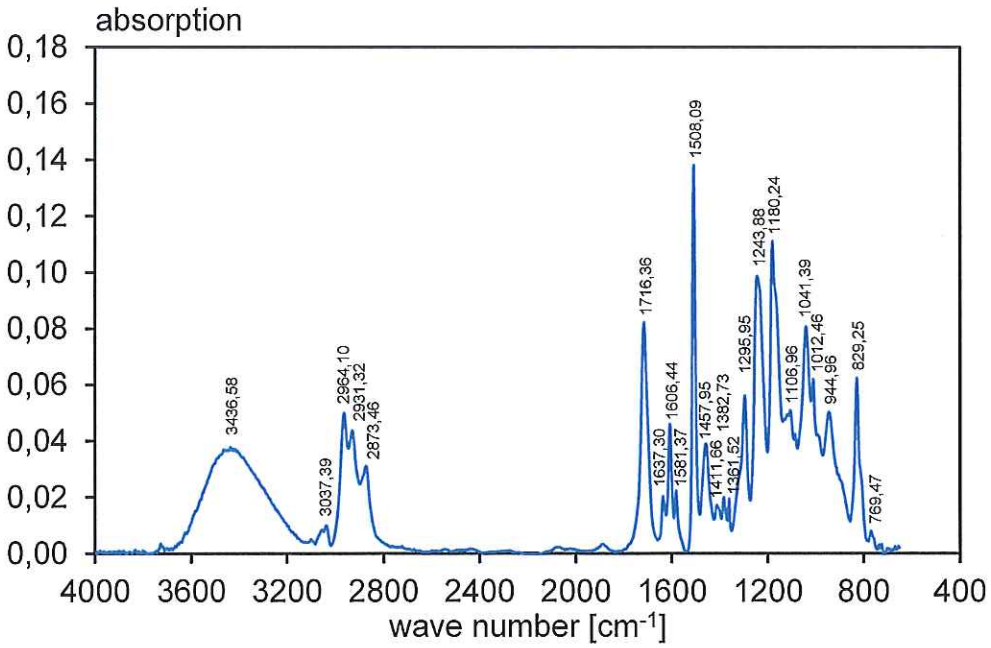

Figure 2: IR analysis of coating

Cem-FIL MiniBars	Annex A Page 1 of 2
Results of performance assessment	

Table 1: Flow diameter and vebe time of fresh concrete

Concrete	Dosage of "Cem-FIL MiniBars 43"	Flow diameter		Vebe time	
		mm		s	
Reference concrete	-	295	295	6,30	6,30
		295		6,28	
		295		6,32	
Fibre concrete	10 kg/m³	300	300	7,27	7,49
		300		8,09	
		300		7,11	

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	3,871	2,861	3,469	3,307	2,629
2	3,898	1,812	1,942	1,906	1,688
3*	0,948	2,602	2,515	2,429	2,099
4	3,788	2,358	2,634	2,696	2,582
5	3,545	1,935	1,981	2,005	1,881
6	3,614	2,589	2,975	3,071	2,951
7	3,742	1,360	1,309	1,339	1,202
8	4,031	2,119	2,222	2,278	1,915
9	4,277	2,610	2,984	3,096	2,583
10	4,072	2,010	2,121	1,974	1,867
11	3,956	2,504	2,885	3,034	2,928
12	3,781	2,256	2,572	2,605	2,388
average	3,627	2,251	2,467	2,478	2,226

*test specimen 3: unrepresentative results due to prior damage