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

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

European Technical Assessment ETA-17/0958 of 27 June 2018

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	Kerafix® Flextrem 100
Product family to which the construction product belongs	Intumescent products for fire sealing and fire stopping purposes
Manufacturer	Rolf Kuhn GmbH Jägersgrund 10 57339 Erndtebrück DEUTSCHLAND
Manufacturing plant	1[1]
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 350005-00-1104, May 2015

[1] Address known at DIBt

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Specific Part

1 Technical description of the product

Object of this European Technical Assessment (ETA) is the intumescent construction product "Kerafix® Flextrem 100" and the described modifications.

In case of fire, exposed to high temperatures, the intumescent product expands and generates foam. This foam seals joints and gaps, closes voids and openings. Thus, the foam restricts the passage and the spread of heat, smoke, flames or any combination of these.

The flexible intumescent construction product "Kerafix® Flextrem 100" is produced in form of mats, strips and cuts and consists essentially of intumescent substances and a binder. It is produced of nominal thicknesses between 0,5 mm and 2,0 mm with a tolerance in thickness of ± 0,1 mm and between a thickness greater 2,0 mm and 3,0 mm with a tolerance in thickness ± 0,2 mm and in any width between 5 mm and 340 mm or may be processed to blanked-out pieces or to strips at the factory.

The construction product "Kerafix® Flextrem 100" and cuts of it may be laminated on one side or may be completely wrapped with a PVC-foil or an acrylic foil.

This ETA also covers the following modifications besides the non-laminated basic variant named "Kerafix® Flextrem 100":

- laminated with PVC-foil of different colours on one side; named "Kerafix® Flextrem 100 DF",
- laminated with PE-sellotape on one side, named "Kerafix® Flextrem 100 ZPE", "
- laminated with textile tape on one side, named "Kerafix® Flextrem 100 GW",
- laminated with aluminumfoil on one side, named "Kerafix® Flextrem 100 AF",
- laminated with a glass fibre interface, named "Kerafix® Flextrem 100 GV",
- equipped with a glass fibre reinforcement web, named "Kerafix® Flextrem 100 GG",
- completely wrapped with PVC-foil or acrylic foil, named "Kerafix® Flextrem 100 E",

The product and all its modifications may be additionally finished with a self-adhesive tape[2] on one side.

The construction product is delivered in rolls or factory made strips/cuts.

The technical characteristics relevant for fire sealing and fire stopping effects of the construction product "Kerafix® Flextrem 100" are given in Annex 1.

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

The construction product "Kerafix® Flextrem 100" is assessed on the basis of EAD 350005-00-1104[3] as an intumescent product for fire sealing and fire stopping purposes without defined final intended use (IU 1).

The construction product is intended to be used as an essential component in construction products, construction elements, assemblies, kits and special constructions which need to meet requirements concerning the safety in case of fire.

In case of fire, the product delays the heat transfer through fire resistant construction products and construction elements by expanding under the impact of high temperatures and thus restricting the spread of fire.

The performance given in section 3 is only valid, if the construction product "Kerafix® Flextrem 100" in use considers the instructions and the conditions stated in section 3.3.

2 Type, manufacturer and characteristics deposited with DIBt.
3 Official Journal of the EU N° C 378/02 of 13/11/2015

The test and assessment methods on which this European Technical Assessment is based, lead to the assumption of working life of the intumescent construction product "Kerafix® Flextrem 100" of at least 10 years[4] in final use.

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 this assessment

3.1 Safety in case of fire (BWR 2)

3.1.1 Reaction to fire

Reaction to fire of product:	Performance
"Kerafix® Flextrem 100" without any lamination	Class E in accordance with EN 13501-1[5]
"Kerafix® Flextrem 100 DF", "Kerafix® Flextrem 100 ZPE", "Kerafix® Flextrem 100 GW", "Kerafix® Flextrem 100 GG", "Kerafix® Flextrem 100 GV", "Kerafix® Flexptrem 100 AF", "Kerafix® Flextrem 100 E"	

3.1.2 Resistance to fire

The performance "resistance to fire" shall be determined separately for every final use and shall be classified, if required for the construction element concerned.

3.2 Hygiene, health and the environment (BWR 3)

Essential characteristic	Performance
Content and release of dangerous substances	No dangerous substances[6]

The detailed chemical composition of the intumescent construction product "Kerafix® Flextrem 100" was assessed by DIBt and is deposited with DIBt.

3.3 General aspects

Durability testing shall be an integral part of assessing the basic works and performance requirements. The following specific provisions for use shall be complied with to ensure the durability of the performance.

The testing and the assessment of the relevant product performance were carried out for environmental conditions of type X – product intended for outdoor use at conditions exposed to weathering (rain, UV,frost) - in accordance with EOTA Technical Report 024 (EOTA TR 024)[7], section 4.2.3

4 Results (historical data) of long-term aging (10 years exposure to natural weathering) available

5 EN 13501-1 Fire classification of construction products and building elements, Part 1 Classification using test data from reaction to fire tests and A1:2009

6 In accordance with the Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 (published in the Official Journal of the EU N° L 353 of 31/12/2008, p 1)

7 EOTA TR 024 Characterisation, Aspects of Durability and Factory Production Control for Reactive Materials, Components and products; edition as amended July 2009

Result:

The intumescent construction product "Kerafix® Flextrem 100" and its modifications and cuts can be used under use conditions of type X (outdoor use) without having to fear essential changes in the relevant fire sealing and fire stopping properties and the resulting performance. This assessment includes the unrestricted in-door use under climatic use conditions of type Y_1, Y_2, Z_1 and Z_2.

Additionally the product "Kerafix® Flextrem 100" was tested under specific durability conditions according to EOTA TR 024, section 4.3

- Exposure to a constant temperature of 80 °C for 40 days,
- Exposure to solvents (tested with Butylacetat, Butanol, solvent naphtha and fuel)
- Subsequent over-painting (tested with coatings on the basis of acryl dispersion, alkyd resin, polyurethanacryl and epoxide resin,
- Exposure to permanent wetness (water immersion and constant condensation for 4 weeks),
- Exposure to intimate contact to plastics (PVC, PE).

The characteristics "expansion ratio" and "expansion pressure" did not change essentially due to these exposures.

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

In accordance with the European Assessment Document EAD No 350005-00-1104 the Decision of the commission N° 1999/454/EC of 22 June 1999 (OJ of the EU L 178 of 14 July 1999, p 42), amended by EC Decision 2001/596/EC of 8 January 2001 (OJ of the EU L 209 of 2 August 2001, p 33) is the legal basis for the determination of the AVCP system.

So system 1 applies for the assessment and verification of constancy of performance (AVCP). (See Annex V in conjunction with Article 65 (2) of the Regulation (EU) N° 305/2011) according to the following table:

Product	Intended use	characteristic	System
"Kerafix® Flextrem 100" and the modifications according to clause 1	Components effective in view of safety in case of fire (BWR 2) used in construction products, construction elements, kits and special assemblies	reaction to fire, properties relevant for the fire sealing and fire stopping effect	1

5 Technical details necessary for the implementation of the procedure for assessment and verification of constancy of performance (AVCP) system 1, as provided for in the applicable European Assessment Document

The technical details necessary for the implementation of the system for assessment and verification of constancy of performance are laid down in the control plan (confidential part of this ETA) deposited with Deutsches Institut für Bautechnik.

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ANNEX 1

CHARACTERISTICS OF THE CONSTRUCTION PRODUCT RELEVANT FOR THE FIRE SEALING AND FIRE STOPPING EFFECTS OF "Kerafix® Flextrem 100"

The following values are valid for the basic variant without any additional lamination

Characteristic	**Test method**[8]	**Range of determined values and tolerances**
Nominal thickness	TR 024, cl. 3.1.2	0,5 mm to ≤ 2,0 mm (tolerance ± 0,1 mm) > 2,0 mm to 3,0 mm (tolerance ± 0,2 mm)
Expansion ratio	TR 024, cl. 3.1.11 method 1 at 450 °C for 30 minutes without a top-load	nominal thickness 0,5 mm: 35,0 to 54,0 nominal thickness 3,0 mm: 15,0 to 32,0
Expansion pressure	TR 024, cl. 3.1.12 method 4 at 300 °C	0,65 N/mm^2 to 2,00 N/mm^2

The intumescent reaction starts at ca 200 °C.

[8] Details of test method are deposited with DIBt.