Deutsches Institut für Bautechnik

Approval body for construction products and types of construction

Bautechnisches Prüfamt

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European Technical Assessment

ETA-18/1152 of 16 June 2020

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General Part

Technical Assessment Body issuing the European Technical Assessment:	Deutsches Institut für Bautechnik
Trade name of the construction product	Sika Unitherm Concrete W
Product family to which the construction product belongs	Intumescent products for fire sealing and fire stopping purposes
Manufacturer	Sika Deutschland GmbH Kornwestheimer Straße 103-107 70439 Stuttgart DEUTSCHLAND
Manufacturing plant	Sika Deutschland GmbH Rieter Tal 71665 Vaihingen/Enz
This European Technical Assessment contains	7 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, Edition May 2015

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Specific Part

1 Technical description of the product

Object of this European technical assessment (ETA) is the intumescent construction product "Sika Unitherm Concrete W" and its variants with the top-coats "Sika Unitherm Top W", "Sika Unitherm Top S" and "Sikagard- 675 W".

In case of fire exposed to high temperatures the applied intumescent product expands and generates foam. This foam restricts the passage and propagation of heat, smoke, flames or any combination of them. During the reaction in case of fire no relevant expansion pressure occurs.

The construction product "Sika Unitherm Concrete W" is a white, solventless, water-based coating for mineral substrates. Applied on the substrate it forms tight, elastic layers.

The product essentially consists of intumescent substances and binder.

Subsequently a top-coat can be applied. The suitability of the top-coats "Sika Unitherm Top W", "Sika Unitherm Top S" and "Sikagard-675 W" concerning reaction to fire was proofed by testing in accordance with EAD 350005-00-1104 (assessment for all colours incl. Black and Red). It is assumed that the chemical reaction decelerates or wanes slightly when a topcoat is applied (depending on the applied quantity).

Under final use conditions the product may contribute to the resistance to fire of the coated fire-resistant construction elements, kits, assemblies or special constructions.

The technical characteristics used for the fire sealing and fire stopping effect of the construction product "Sika Unitherm Concrete W" and the variants with top-coat are given in Annex 1.

The intumescent construction product "Sika Unitherm Concrete W" is applied directly on the mineral substrate of a density of at least 650 kg/m^3 or of a reaction to fire class A2-s1,d0 acc. to EN 3501-1 or better – preferably by spray application. The application by brush or roller is possible too. The nominal thickness (dry film) is between 0,5 mm and 1,85 mm depending on the application method, the quality of the substrate and the kind of treated construction element. The maximal applied quantity is 3,50 kg/m^2.

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

The construction product "Sika Unitherm Concrete W" is assessed on the basis of EAD 350005-00-1104[1] as an intumescent product for fire sealing and fire stopping purposes without specific final use (IU 1).

The product "Sika Unitherm Concrete W" is intended to be used as essential component on or in and between construction elements, assemblies and special assemblies which meet requirements concerning the safety in case of fire.

In case of fire, the product delays the heat transfer through fire resistant construction elements assemblies and special constructions by expanding under the impact of high temperatures.

The performance given in Section 3 is only valid if the intumescent construction product "Sika Unitherm Concrete W" is used considering the remarks and the boundary conditions of clause 3.3.

The test and assessment methods on which this ETA is based lead to the assumption of a working life of the intumescent construction product "Sika Unitherm Concrete W" of at least 10 years.

[1] Official Journal of the EU N° C 378/02 of 13/11/2015

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

3.1 Safety in case of fire (BWR 2)

3.1.1 Reaction to fire

Essential characteristic	**Performance acc. to EN 13501-1**[2]
Reaction to fire "Sika Unitherm Concrete W" (applied quantity ≤ 3,5 kg/m²), without top-coat on mineral substrates of a density ≥ 650 kg/m³	**class B-s1,d0**
Reaction to fire "Sika Unitherm Concrete W" with the top-coat added "Sika Unitherm Top S" (applied quantity ≤ 180 g/m²) on mineral substrates of a density ≥ 650 kg/m³	**class C-s1,d0**
Reaction to fire "Sika Unitherm Concrete W" with the top-coat added "Sika Unitherm Top W" (applied quantity ≤ 160 g/m²) on mineral substrates of a density ≥ 650 kg/m³	**class C-s1,d0**
Reaction to fire "Sika Unitherm Concrete W" with the top-coat added "Sikagard-675 W" (applied quantity ≤ 250 g/m²) on mineral substrates of a density ≥ 650 kg/m³	**classe B-s1,d0**

The listed classification of reaction to fire of the assessed product "Sika Unitherm Concrete W" with or without a specified top-coat is only valid for mineral substrates of reaction to fire class A2-s1,d0 or better in accordance with EN 13501-1[2] (also see EN 13238[3]), and only for the maximum top-coat quantity as specified.

3.1.2 Resistance to fire

The performance "Resistance to fire" shall be demonstrated separately for every intended final use and shall be classified when requested.

[2] EN 13501-1:2019-05 Fire classification of construction products and building elements, Part 1 and A1:2009 Classification using test data from reaction to fire tests

[3] EN 13238:2010-06 Reaction to fire tests for building products; Conditioning procedure and general rules for selection of substrates

3.2 Hygiene, health and the environment (BWR 3)

Essential characteristic	Performance
Content of dangerous substances	No dangerous substances[4] Use categories: IA1 and S/W2
Release of dangerous substances in accordance with EN 16516[5] for "Sika® Unitherm® Concrete W" with topcoat "Sika Unitherm Top W" (tested for a applied quantity of 150 g/m²)	Test results after 28 days: TVOC < 0,19 mg/m³ (limit value ≤ 1 mg/m³) TSVOC < 5 µg/m³ (limit value ≤ 0,1 mg/m³)

The detailed chemical composition of the intumescent construction product "Sika® Unitherm® Concrete W" was assessed at DIBt and is deposited here.

The manufacturer`s safty datasheet for the product, version 3.0 of 29/01/2019 shall be considered.

3.3 General aspects

The evidence of durability is part of testing the basic works requirements and the achievement of the performance assessed. The durability is only presumed, if the provisions for the intended use are considered.

The testing and the assessment of the relevant fire protective performance were carried out for environmental conditions of type Z_1 – product intended for frost-protected indoor use at changing or permanent relative humidity and temporary condensation (re-drying condensation) without any rain or UV-radiation – in accordance with EAD 350005-00-1104, clause 1.2.2.

Result:

The intumescent construction product "Sika Unitherm Concrete W" without top-coat may be used under use conditions of type Z_1 (frost-protected indoor use with changing relative humidity) and under use conditions of type Z_2 (dry, frost-protected indoor use) without having to fear essential changes in the relevant fire sealing and fire stopping properties and the resulting performance.

In order to demonstrate the suitability of the product for outdoor-use, the applied product "Sika Unitherm Concrete W" was subsequently covered with the top-coats described in section 1 and afterwards tested and assessed concerning the fire protective performance for climatic use conditions of type X – product intended for out-door use at free weathering (rain, UV, frost) – in accordance with EAD 350005-00-1104, clause 1.2.2.

Result:

The intumescent construction product "Sika Unitherm Concrete W" with the top-coats "Sika Unitherm Top W", "Sika Unitherm Top S" or "Sikagard-675 W" may be used under use conditions of type X (out-door use), without having to fear essential changes in the relevant fire sealing and fire stopping properties and the resulting performance.

The relevant characteristics of these two-layers variants using the suitable top-coats described in section 1 are given in annex 1.

[4] 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)

[5] EN16516:2018-01 Construction products; Assessment of release of dangerous substances; Determination of emissions into indoor air

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
"Sika Unitherm Concrete W"	Component effective in the view of safety in case of fire (BWR2) used on or between massive mineral construction products, 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 AVCP system, as provided for in the applicable EAD

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

Issued in Berlin on 16 June 2020 by Deutsches Institut für Bautechnik

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beglaubigt:
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ANNEX 1

CHARACTERISTICS RELEVANT FOR THE FIRE SEALING AND FIRE STOPPING EFFECTS OF THE CONSTRUCTION PRODUCT:

"Sika Unitherm Concrete W"

characteritic	**nominal level and tolerances**	**test method[6]**
"Sika Unitherm Concrete W" without topcoat		
thickness (dry film)	0,5 mm (500 µm) up to 1,85 mm (1850 µm)	see control plan
density	1400 kg/m³ ± 100 kg/m³	
Non-volatile components	78,0 % ± 5 %	
Expansion ratio	at the nominal thickness 0,5 mm: 26,5 to 40,0 at the nominal thickness 1,5 mm: 30,5 to 60,0	
"Sika® Unitherm® Concrete W" with the topcoat "Sika Unitherm Top S"		
max applied quantity of the topcoat	180 µm	see control plan
Expansion ratio	at the nominal thickness 0,5 mm: 15,0 to 45,0	
"Sika Unitherm Concrete W" with the topcoat "Sika Unitherm Top W"		
max applied quantity of the topcoat	160 µm	see control plan
Expansion ratio	at the nominal thickness 0,5 mm: 28,0 to 45,0	
"Sika® Unitherm® Concrete W" with the topcoat "Sikagard-675 W"		
max applied quantity of the topcoat	250 µm	See control plan
Expansion ratio	at the nominal thickness 0,5 mm: 24,5 to 40,5	

The chemical reaction of foaming starts at ca 200 °C.

6 Details of the test method are deposited with DIBt