



Approval body for construction products and types of construction

#### **Bautechnisches Prüfamt**

An institution established by the Federal and Laender Governments



### European Technical Assessment

English translation prepared by DIBt - Original version in German language

#### **General Part**

Technical Assessment Body issuing the European Technical Assessment:

Trade name of the construction product

Product family to which the construction product belongs

Manufacturer

Manufacturing plant

This European Technical Assessment contains

This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of Deutsches Institut für Bautechnik

ETA-17/0840

of 4 July 2018

StoArmat Graphite

Intumescent products for fire sealing and fire stopping purposes

Sto SE & Co. KGaA Ehrenbachstraße 1 79780 Stühlingen DEUTSCHLAND

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6 pages including 1 annex which forms an integral part of this assessment

EAD 350005-00-1104, edition May 2015

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#### European Technical Assessment ETA-17/0840 English translation prepared by DIBt

Page 2 of 6 | 4 July 2018

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Page 3 of 6 | 4 July 2018

European Technical Assessment ETA-17/0840 English translation prepared by DIBt

#### Specific Part

#### 1 Technical description of the product

Object of this European Technical Assessment (ETA) is the "StoArmat Graphite".

In case of fire, exposed to high temperatures, these intumescent products expand and generate 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 intumescent product "StoArmat Graphite" is a putty of grey colour, essentially consisting of intumescent substances, mineral filler and binder.

The construction product is delivered in containers e.g. in pails of a capacity of 25 kg.

The intumescent construction product "StoArmat Graphite" may be reinforced shortly after the application with a glass fibre lining<sup>1</sup> of "Sto-Glasfasergewebe" or "Sto-Glasfasergewebe F" (mass per unit area ca. 165 g/m<sup>2</sup>) or it may be finished with the top-coat "StoColor Solical" (thickness of the dry layer ca. 150  $\mu$ m to 200  $\mu$ m)<sup>2</sup> or other classified top-coats (at least class A2 concerning reaction to fire; similar thickness of the dry layer).

The technical characteristics relevant for fire sealing and fire stopping effects of the construction product "StoArmat Graphite" and the both described modifications are given in Annex 1.

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

The construction product "StoArmat Graphite" is assessed on the basis of EAD 350005-00-1104<sup>3</sup> as intumescent product for fire sealing and fire stopping purposes without a defined final use (IU 1).

The construction product is intended to be used as essential components in, between or on the surface of construction products, construction elements, kits and special assemblies 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 intumescent construction product "StoArmat Graphite" is intended for surface applications. However EAD N° 35402-00-1106 shall be applied for the use of the product for fire protective coatings on steel elements

The performance given in Section 3 is only valid if the construction product "StoArmat Graphite" is used in accordance with the instructions and the conditions stated in section 3.3.

The tests and assessment methods on which this European Technical Assessment is based, lead to the assumption of working life of the intumescent construction products "StoArmat Graphite" in final use of at least 10 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.

Auftragsmengen beim DIBt hinterlegt

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#### **European Technical Assessment**

#### ETA-17/0840

#### Page 4 of 6 | 4 July 2018

English translation prepared by DIBt

#### 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

Essential characteristic	Leistung
Reaction to fire	Klasse B-s1,d0 nach DIN EN 13501-1 <sup>4</sup>

#### 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.

#### 3.2 Hygiene, health and the environment (BWR 3)

Essential characteristic	Performance
Content of dangerous substances	No dangerous substances⁵

The detailed chemical composition of the intumescent construction product "StoArmat Graphite" 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 shall be complied with to ensure the durability of the performance for the intended use.

The testing and the assessment of the fire stopping and fire sealing product performance were carried out for environmental conditions of type X – product intended for use at conditions exposed to weathering (rain, UV, frost) - out-door use - in accordance with EOTA Technical Report 024 (EOTA TR 024)<sup>6</sup>, section 4.2.3.

Result:

The intumescent construction product "StoArmat Graphite" can 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. This assessment includes the in-door use under use conditions of type  $Y_1$ ,  $Y_2$ ,  $Z_1$  and  $Z_2$ .

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

In accordance with EAD N° 350005-00-1104, edition May 2015, 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.

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

- <sup>4</sup> EN 13501-1 Klassifizierung von Bauprodukten und Bauarten zu ihrem Brandverhalten; Teil 1 und A1:2009 Klassifizierung mit den Ergebnissen aus den Prüfungen zum Brandverhalten von Bauprodukten
  <sup>5</sup> 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)
- EOTA TR 024
  Characterisation, Aspects of Durability and Factory Production Control for Reactive Materials, Components and products; amended version July 2009



### European Technical Assessment ETA-17/0840

#### Page 5 of 6 | 4 July 2018

English translation prepared by DIBt

Product	Intended use	characteristic	System
"StoArmat Graphite"	Components effective in view of safety in case of fire (BWR 2) used in construction products, construction elements, kits and specific 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 for Assessment and Verification of Consistency of Performance are laid down in the confidential part of the control plan deposited with Deutsches Institut für Bautechnik.

Issued in Berlin on 4 July 2018 by Deutsches Institut für Bautechnik

Prof. Gunter Hoppe Head of Department *beglaubigt:* Dr.-Ing. Dierke English translation prepared by DIBt



### ANNEX 1

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

#### "StoArmat Graphite" and the modifications tested

Characteristic	Test method⁵	Range of determined values and tolerances*		
"StoArmat Graphite"				
Expansion ratio	EOTA TR 024, cl. 3.1.11 Method 1 at 500 °C for 30 minutes; tested for specimen of a thickness of ca 3,8 mm	4,0 to 6,5		
Expansion pressure	TR 024, cl. 3.1.12 Method 4 at 300 C	0,25 N/mm <sup>2</sup> to 0,45 N/mm <sup>2</sup>		
"StoArmat Graphite" with glass fibre inlay "Sto-Glasfasergewebe"				
Expansion ratio	TR 024, cl. 3.1.11 Method 1 at 500 °C for 30 minutes; tested for specimen of a thickness of ca 3,7 mm	4,0 to 6,5		
Expansion pressure	TR 024, cl. 3.1.12 Method 4 at 300 C	0,25 N/mm <sup>2</sup> to 0,45 N/mm <sup>2</sup>		
"StoArmat Graphite" with the top-coat "StoColor Solical"				
Expansion ratio	TR 024, cl. 3.1.11 Method 1 at 500 °C for 30 minutes; tested for specimen of a thickness of ca 3,6 mm	5,0 to 7,0		
Expansion pressure	TR 024, cl. 3.1.12 Method 4 at 300 C	0,35 N/mm <sup>2</sup> to 0,55 N/mm <sup>2</sup>		

The chemical reaction in case of fire starts at ca. 200 °C.

5