



# Certificates



**Cable bandages**

**PYROWRAP® Wet FSB**

European Technical Assessment No. ETA-18/0430 issued 06-29-2018

# Fire protection systems for the highest level of safety



Be it in a residential building or an industrial complex – OBO has the appropriate solution for fireproof electrical installations. Our tested and certified fire protection systems cover all the relevant fire protection guidelines and provide you with an electrical installation that really serves its purpose. We will be happy to provide you with more details – on our website or personally.

Approval body for construction products  
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and  
Laender Governments



## European Technical Assessment

ETA-18/0430  
of 29 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

"PYROWRAP® FSB-WA", "PYROWRAP® FSB-WB",  
"PYROWRAP® FSB-WS", "PYROWRAP® FSB-WW",  
"PYROWRAP® FSB-BS",

Product family  
to which the construction product belongs

Intumescent products for fire sealing and fire stopping  
purposes

Manufacturer

OBO Bettermann Produktion  
Deutschland GmbH & Co. KG  
Hüingser Ring 52  
58710 Menden  
DEUTSCHLAND

Manufacturing plant

S<sup>1</sup>

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

<sup>1</sup> Address known at DIBt

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## Specific Part

### 1 Technical description of the product

Object of this European Technical Assessment (ETA) are the intumescent construction products "PYROWRAP<sup>®</sup> FSB-WA", "PYROWRAP<sup>®</sup> FSB-WB", "PYROWRAP<sup>®</sup> FSB-WS", "PYROWRAP<sup>®</sup> FSB-WV" and "PYROWRAP<sup>®</sup> FSB-BS".

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 "PYROWRAP<sup>®</sup> FSB-WA" is produced as a liquid coating in the colour grades anthracite, black and red. As-delivered the product is easy to spread by brush or by sprayer.

The intumescent product "PYROWRAP<sup>®</sup> FSB-WV" is a viscos, intumescent putty.

Both products essentially consist of intumescent substances and a binder. They harden when applied on a substrate and form flexible intumescent layers which react in case of fire.

The construction products "PYROWRAP<sup>®</sup> FSB-WA" and "PYROWRAP<sup>®</sup> FSB-WV" are delivered in pails and containers of different capacity; the intumescent putty "PYROWRAP<sup>®</sup> FSB-WV" is also delivered in cartridges.

The construction products "PYROWRAP<sup>®</sup> FSB-WB", "PYROWRAP<sup>®</sup> FSB-WS" and "PYROWRAP<sup>®</sup> FSB-BS" are factory made, flexible intumescent fabrics.

The construction products "PYROWRAP<sup>®</sup> FSB-WB", "PYROWRAP<sup>®</sup> FSB-WS", and "PYROWRAP<sup>®</sup> FSB-BS" are tight and tear-proof, intumescent fabrics, which consist of a glass filament fabric<sup>2</sup> mechanically covered with the intumescent coating "PYROWRAP<sup>®</sup> FSB-WA" on at least one side.

The flexible intumescent fabric "PYROWRAP<sup>®</sup> FSB-WB" is mechanically covered with "PYROWRAP<sup>®</sup> FSB-WA" on one side and on the other side it is covered with a coating of Polyurethan<sup>3</sup> pigmented optionally in the colour grades grey, red, black or white.

The flexible intumescent fabric "PYROWRAP<sup>®</sup> FSB-WS" is a glass filament fabric mechanically covered with "PYROWRAP<sup>®</sup> FSB-WA" on one side and equipped with an acrylic self-adhesive foil on the other side, on customers request on the same side.

The flexible intumescent fabric "PYROWRAP<sup>®</sup> FSB-CR BS" a glass filament fabric<sup>2</sup> mechanically covered with "PYROWRAP<sup>®</sup> FSB-WA" on both sides.

The flexible intumescent fabrics "PYROWRAP<sup>®</sup> FSB-WB", "PYROWRAP<sup>®</sup> FSB-WS", and "PYROWRAP<sup>®</sup> FSB-BS" are produced as endless rolls, cut at factory and delivered in the preferable length of 10 m or 20 m.

The products "PYROWRAP<sup>®</sup> FSB-WB", "PYROWRAP<sup>®</sup> FSB-WS" and "PYROWRAP<sup>®</sup> FSB-BS" also may be delivered as intumescent strips, mats, cuts and stamps (bands, blocks, pads) of any dimension.

The technical characteristics relevant for fire sealing and fire stopping effects of the construction products are given in Annex 1.

<sup>2</sup> Type, manufacturer and characteristics deposited at DIBt.

<sup>3</sup> Required quantity and composition deposited at DIBt

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

The construction products "PYROWRAP<sup>®</sup> FSB-WA", "PYROWRAP<sup>®</sup> FSB-WB", "PYROWRAP<sup>®</sup> FSB-WS", "PYROWRAP<sup>®</sup> FSB-WV" and "PYROWRAP<sup>®</sup> FSB-BS" are assessed on the basis of EAD 350005-00-1104<sup>4</sup> as intumescent products for fire sealing and fire stopping purposes without a defined final use (IU 1).

These construction products are intended to be used as essential components in 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 products delay 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 products "PYROWRAP<sup>®</sup> FSB-WA", "PYROWRAP<sup>®</sup> FSB-WB", "PYROWRAP<sup>®</sup> FSB-WS", "PYROWRAP<sup>®</sup> FSB-WV" and "PYROWRAP<sup>®</sup> FSB-BS" are 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 "PYROWRAP<sup>®</sup> FSB-WA", "PYROWRAP<sup>®</sup> FSB-WB", "PYROWRAP<sup>®</sup> FSB-WS", "PYROWRAP<sup>®</sup> FSB-WV" and "PYROWRAP<sup>®</sup> FSB-BS" 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.

## 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

Product modification	Performance
"PYROWRAP <sup>®</sup> FSB-WA" for layers of a thickness of 1 mm to 2 mm on metal substrates (melting point > 1000 °C) and on classified substrates of class A1	Class B-s1,d0 in accordance with EN 13501-1 <sup>5</sup>
"PYROWRAP <sup>®</sup> FSB-WB" free standing and on mineral substrates (density ≥ 800 kg/m <sup>3</sup> ) and on classified substrates of class A1	Class C-s1,d0 in accordance with EN 13501-1 <sup>5</sup>
"PYROWRAP <sup>®</sup> FSB-WA" (layers <1 mm), "PYROWRAP <sup>®</sup> FSB-WV", "PYROWRAP <sup>®</sup> FSB-WS", "PYROWRAP <sup>®</sup> FSB-BS"	Class E in accordance with EN 13501-1 <sup>5</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.

<sup>4</sup> Official Journal of the EU N° C 378/02 of 13/11/2015

<sup>5</sup> 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



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

Essential characteristic	Performance
Content and release of dangerous substances	No dangerous substances <sup>6</sup>

The detailed chemical composition of the intumescent construction products "PYROWRAP<sup>®</sup> FSB-WA", "PYROWRAP<sup>®</sup> FSB-WV", "PYROWRAP<sup>®</sup> FSB-WB", "PYROWRAP<sup>®</sup> FSB-WS" and "PYROWRAP<sup>®</sup> FSB-BS" 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 product performance were carried out for environmental conditions of type X – product intended for use at conditions exposed to weathering (rain, UV, frost) - in accordance with EOTA Technical Report 024<sup>7</sup> (EOTA TR 024), section 4.2.3.

Result:

The intumescent construction products "PYROWRAP<sup>®</sup> FSB-WA" and "PYROWRAP<sup>®</sup> FSB-WV", "PYROWRAP<sup>®</sup> FSB-WB", "PYROWRAP<sup>®</sup> FSB-WS" and "PYROWRAP<sup>®</sup> FSB-BS" 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<sub>1</sub>, Y<sub>2</sub>, Z<sub>1</sub> and Z<sub>2</sub>.

Supplementary the product was tested under specific 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 permanent 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 specific exposures.

For the intumescent fabrics "PYROWRAP<sup>®</sup> FSB-WB" the tear strength and the elongation at rupture were determined according to EN ISO 10319<sup>8</sup>:

"PYROWRAP <sup>®</sup> FSB-WB"			
Thickness of the fabric		ca. 1,6 mm	ca. 0,6 mm
Ultimate elongation in %	longitudinal	3,6	4,2
	transverse	4,4	4,5
Ultimate tensile strength in kN/m	longitudinal	56,0	60,7
	transverse	34,5	41,4

<sup>6</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)

<sup>7</sup> EOTA TR 024 Characterisation, Aspects of Durability and Factory Production Control for Reactive Materials, Components and products; amended version July 2009

<sup>8</sup> EN ISO 10319:2008 Geosynthetics; Wide-width tensile test

**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) 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:

Product	Intended use	characteristic	System
"PYROWRAP® FSB-WA", "PYROWRAP® FSB-WB", "PYROWRAP® FSB-WS", "PYROWRAP® FSB-WV", "PYROWRAP® FSB-BS"	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 29 June 2018 by Deutsches Institut für Bautechnik

Prof. Gunter Hoppe  
Head of Department

*beglaubigt:*  
Dr.-Ing. Dierke



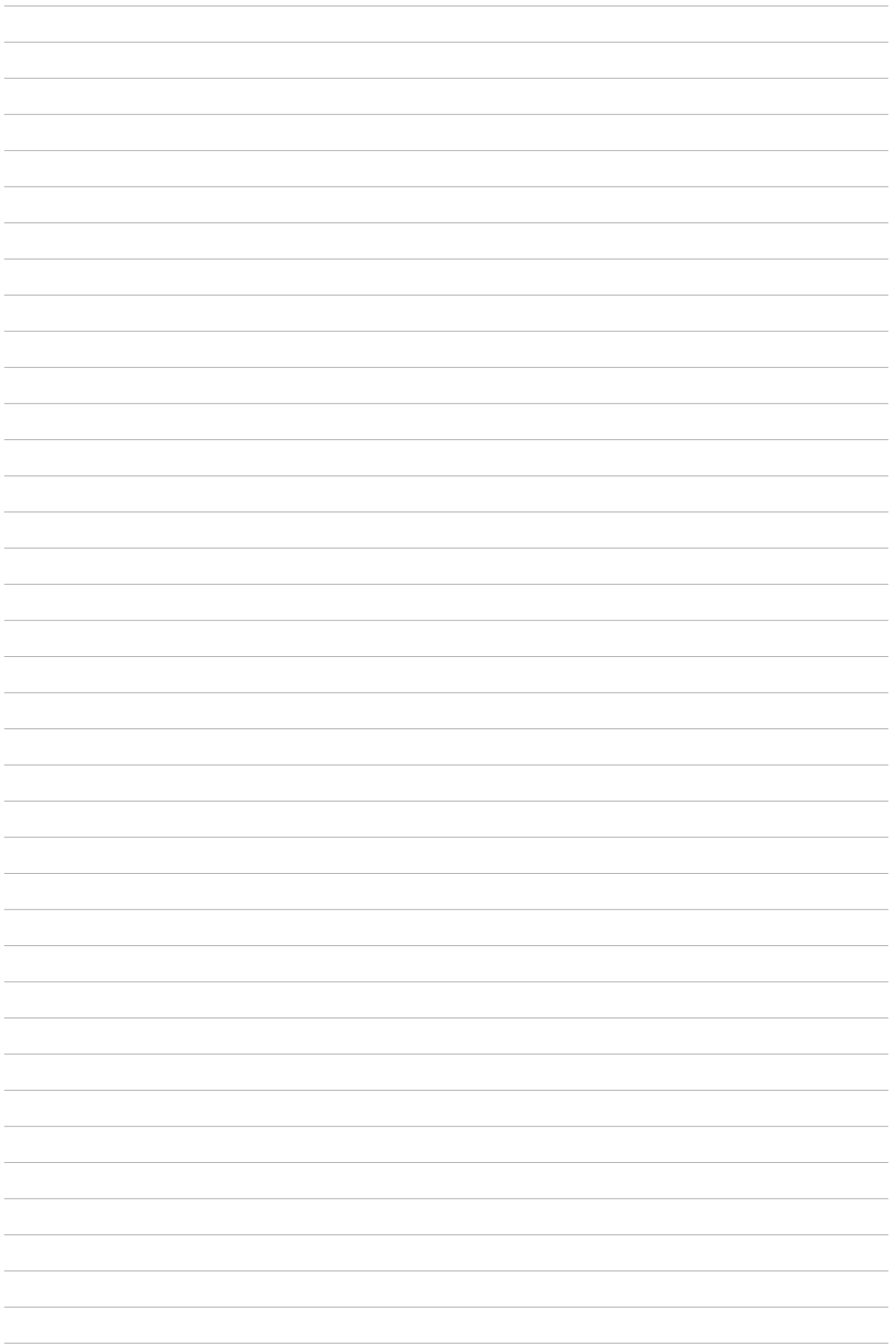
## ANNEX 1

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

"PYROWRAP® FSB-WA", "PYROWRAP® FSB-WV", "PYROWRAP® FSB-WB",  
"PYROWRAP® FSB-WS" AND "PYROWRAP® FSB-BS"

Characteristic	Test method <sup>9</sup>	Range of determined values and tolerances*
"PYROWRAP® FSB-WA" (Coating), "PYROWRAP® FSB-WV" (Putty)		
Density	EOTA TR 024 <sup>7</sup> , cl. 3.1.4	coating: 1200 kg/m <sup>3</sup> ± 10 % putty: 1300 kg/m <sup>3</sup> ± 10 %
Expansion ratio	EOTA TR 024 <sup>7</sup> , cl. 3.1.11, method 1 with a top-load	Thickness of the specimen: ca. 2 mm 15 to 26,5
Expansion pressure	EOTA TR 024 <sup>7</sup> , cl. 3.1.12, method 4	Thickness of the specimen: ca. 2 mm 1,00 N/mm <sup>2</sup> to 1,90 N/mm <sup>2</sup>
<b>Fire protective fabrics</b>		
"PYROWRAP® FSB-WB"		
Expansion ratio	TR 024 <sup>7</sup> , cl. 3.1.11 method 1 with a top-load	Thickness of the specimen: 2 mm 15,5 to 22,0
Expansion pressure	TR 024 <sup>7</sup> , cl. 3.1.12 method 4	Thickness of the specimen: 2 mm 1,00 N/mm <sup>2</sup> to 1,65 N/mm <sup>2</sup>
"PYROWRAP® FSB-WS"		
Expansion ratio	TR 024 <sup>7</sup> , cl. 3.1.11, method 1 with a top-load	Thickness of the specimen: 1,6 mm 15,5 to 22,0
Expansion pressure	TR 024 <sup>7</sup> , cl. 3.1.12, method 4	1,00 N/mm <sup>2</sup> to 1,65 N/mm <sup>2</sup>
"PYROWRAP® FSB-BS"		
Expansion ratio	TR 024 <sup>7</sup> , cl. 3.1.11, method 1 with a top-load	Thickness of the specimen: 1,4 mm 16,5 to 24,0
Expansion pressure	TR 024 <sup>7</sup> , cl. 3.1.12, method 4	1,50 N/mm <sup>2</sup> to 2,00 N/mm <sup>2</sup>

<sup>9</sup> Details of the test method are deposited with DIBt







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