

Approval body for construction products  
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and  
Laender Governments



## European Technical Assessment

**ETA-15/0556**  
**of 4 March 2016**

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

Kit composed of "BC Brandschutz-Farbe", "BC  
Brandschutz-Spachtel" and if relevant "BC Brandschutz-  
Bandage" or "BC-Brandschutz-Bandage-E"

Product family  
to which the construction product belongs

Intumescent products for use in penetration seals

Manufacturer

Brandchemie GmbH  
Auf der Trift 8  
63329 Egelsbach  
DEUTSCHLAND

Manufacturing plant

Brandchemie GmbH  
Auf der Trift 8  
63329 Egelsbach  
DEUTSCHLAND

This European Technical Assessment  
contains

12 pages including 7 annexes which form an integral part  
of this assessment

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

Guideline for European technical approval of "Fire  
Stopping and Fire Sealing Products", ETAG 026 Part 2:  
"Penetration Seals",  
used as European Assessment Document (EAD)  
according to Article 66 Paragraph 3 of Regulation (EU)  
No 305/2011.

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## Specific part

### 1 Technical description of the products

The kit is composed of the construction products "BC-Brandschutz-Farbe" and "BC-Brandschutz-Spachtel". Optionally, a fire protection wrap ("BC-Brandschutz-Bandage" or "BC-Brandschutz-Bandage-E") may be part of the kit.

The construction product 'BC-Brandschutz-Farbe' is a halogen-free paint and coating material available in the colours white and grey and mainly supplied in buckets. The paint and coating material essentially consists of a binder and intumescent substances.

The construction product 'BC-Brandschutz-Spachtel' is a halogen-free, white, intumescent putty mainly supplied in cartridges and buckets. The intumescent putty is essentially composed of a binder and intumescent substances.

The fire resistance of 'BC-Brandschutz-Farbe' and 'BC-Brandschutz-Spachtel' is based on the formation of a foam upon exposure to the high temperatures occurring in a fire. The foam seals joints, gaps and other openings and forms an insulating coating on surfaces to prevent the passage of heat, flames and/or smoke through fire-resistant components.

The construction product 'BC-Brandschutz-Bandage' is a factory-made fire protection fabric composed of a glass filament fabric<sup>1</sup> with a weight of approx. 200 g/m<sup>2</sup> and coated on both sides with 'BC-Brandschutz-Farbe viskos' (halogen-containing) as an active layer<sup>2</sup>. One side (inner side) is grey and the other side (outer side) is white.

The construction product 'BC-Brandschutz-Bandage-E' is a factory-made fire protection fabric composed of a woven glass fabric in plain weave<sup>1</sup> with a weight of approx. 220 g/m<sup>2</sup> and coated on one side with 'BC-Brandschutz-Farbe viskos' (halogen-containing) as an active layer<sup>2</sup>.

A detailed technical description and fire safety-related performance criteria for the construction products are given in Annex 1.

NOTE:

The characteristics listed are suitable both for identifying the construction products as well as for performing the manufacturer's factory production control.

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

The kit is intended for use in mixed penetration seals.

Mixed penetration seals are used to seal off openings in fire-resistant walls penetrated by cables and/or pipes and serve to preserve the walls' fire resistance in the areas of the penetrations.

Within the scope of this ETA, the fire resistance was verified for mixed penetration seals consisting of the components given in Table 1.

The penetration seal consisted mainly of mineral fibre boards to close the opening, a coating made of intumescent materials and additional wraps, where applicable.

<sup>1</sup> Type, manufacturer and characteristics deposited with DIBt  
<sup>2</sup> Wet application amounts deposited with DIBt

Table 1 – Components of the verified penetration seals

Product type	Trade name
Intumescent building materials	BC-Brandschutz-Farbe, BC-Brandschutz-Spachtel
Fabric with building material that forms an insulating layer	BC-Brandschutz-Bandage, BC-Brandschutz-Bandage-E
Mineral fibre boards	ROCKWOOL RPI 15
Mineral fibre mats	KLIMAROCK
Mineral wool insulation	Protect BSW Brandschutzwolle
Pipe collar	AWM II
Pipe collar	ROKU EC Endless Collar

More detailed information and data on the verified penetration seals are given in Annexes 2 to 7. The performance characteristics given in section 3 apply exclusively to these penetration seals (e.g. with respect to the design and arrangement of the components of the penetration seals as well as the type and position of the services).

The test and assessment methods upon which this European Technical Assessment is based lead to the assumption of a working life of the construction products in accordance with section 1 of at least 10 years. The specified working life cannot be interpreted as a guarantee given by the manufacturer, but should be regarded only as a means for choosing the right product in relation to the expected economically reasonable working life of the works.

### 3 Product performance and methods used for assessment

#### 3.1 Intended use: use in penetration seals

<b>Product type:</b> kit, composed of the products given in section 1		
<b>BWR</b>	<b>Essential characteristic</b>	<b>Performance</b>
2	Reaction to fire (all components)	Class E in accordance with EN 13501-1
	Fire resistance of a penetration seal (with two layers of mineral fibre boards; see Annexes 1 to 7 for details) that incorporates the components of the kit <sup>3,4</sup>	Class EI 90 in accordance with EN 13501-2
3	Release of dangerous substances	No dangerous substances <sup>5</sup>

#### 3.2 General aspects

The verification of durability shall be part of testing the essential characteristics. In end-use applications, the construction products described in section 1 may be used in accordance with the provisions applying to use category Z<sub>2</sub> (frost-free indoor use without additional moisture exposure; RH (relative humidity) ≤ 85 %) without significant changes in the characteristics relevant for fire protection to be expected.

<sup>3</sup> The fire resistance depends on the arrangement/installation of the penetration seal and the other components forming the penetration seal. Details on the penetration seals for which the fire resistance indicated was verified are given in Annexes 2 to 6.

<sup>4</sup> Technical provisions of the Member States relating to the design of service systems and the admissibility of service penetrations shall remain unaffected.

<sup>5</sup> In accordance with the manufacturer's indications and the chemical composition deposited with DIBt.

The construction products described in Section 1 shall not be coated with additional layers of paint which could prevent their expansion.

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

In accordance with the European Technical Approval Guideline "Fire Stopping and Fire Sealing Products", ETAG 026, Part 2: "Penetration Seals", January 2008, which is used as European Assessment Document (EAD), the following legal base shall apply: 1999/454/EC.

The system to be applied is: system 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 AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

Issued in Berlin on 4 March 2016 Deutsches Institut für Bautechnik.

Prof. Gunter Hoppe  
Head of Department

*beglaubigt:*  
Bisemeier

**Kit, composed of the construction products "BC-Brandschutz-Farbe" und "BC-Brandschutz-Spachtel" and optionally "BC-Brandschutz-Bandage" oder "BC-Brandschutz-Bandage-E", used to seal openings in fire-resistant walls penetrated by cables and/ or pipes.**

**Properties and performance criteria of the construction product "BC-Brandschutz-Farbe"**

	Characteristic/performance criterion	Characteristic value	Test procedure <sup>1</sup>
1	Density (Dispersion)	1310 kg/m <sup>3</sup> ± 50 kg/m <sup>3</sup>	EN ISO 2811-1
2	Non-volatile components	71,0 % ± 5 %	EN ISO 3251 at 105 °C over 3 hours
3	Mass loss during heating	55,0 % ± 5 %	EN ISO 3451-1 at 400 °C over 30 minutes
4	Expansion ratio	78 to 125	EOTA TR 024, 2009 edition at 400 °C over 30 minutes without load
5	Reaction to fire	Class E	EN ISO 11925-2:2011

**Properties and performance criteria of the construction product "BC-Brandschutz-Spachtel"**

	Characteristic/performance criterion	Characteristic value	Test procedure <sup>1</sup>
1	Density	1275 kg/m <sup>3</sup> ± 100 kg/m <sup>3</sup>	EN ISO 2811-1
2	Non-volatile components	73,0 % ± 5 %	EN ISO 3251 at 105 °C over 3 hours
3	Mass loss during heating	53,0 % ± 5 %	EN ISO 3451-1 at 400 °C over 30 minutes
4	Expansion ratio	15 to 50	EOTA TR 024, 2009 edition at 400 °C over 30 minutes without load
5	Reaction to fire	Class E	EN ISO 11925-2:2011

**Properties and performance criteria of the construction product "BC-Brandschutz-Bandage" (A) und "BC-Brandschutz-Bandage-E" (B)**

	Characteristic/performance criterion	Characteristic value		Test procedure <sup>1</sup>
		A	B	
1	Mass per area	1500 kg/m <sup>2</sup> ± 10 %	1550 kg/m <sup>2</sup> ± 10 %	EOTA TR 024, 2009 edition
2	Tissue thickness	1,0 mm ± 0,2 mm	1,0 mm to 1,3 mm	EOTA TR 024, 2009 edition
3	Mass loss during heating	53,0 ± 5 %		EN ISO 3451-1 at 400 °C over 30 minutes
4	Expansion ratio	58,0 to 94,0		EOTA TR 024, 2009 edition at 400 °C over 30 minutes without load
5	Reaction to fire	Class E		EN ISO 11925-2:2011

<sup>1</sup> Details on the test procedures are deposited at DIBt

Bausatz aus "BC Brandschutz-Farbe", "BC Brandschutz-Spachtel" und ggf. "BC Brandschutz-Bandage" oder "BC-Brandschutz-Bandage-E"

Description of the construction products, properties and performances

Annex 1

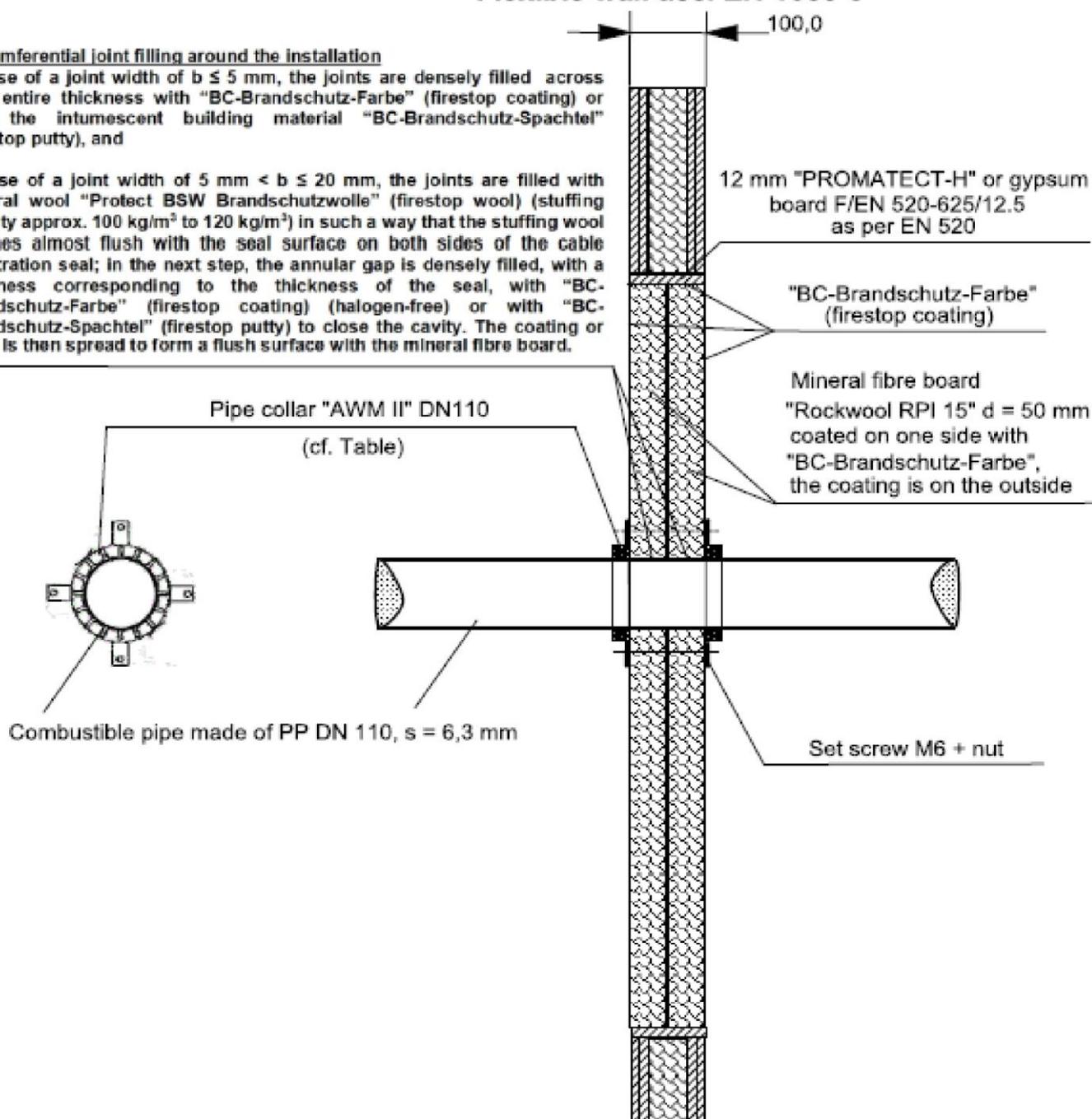
English translation prepared by DIBt

### Flexible wall acc. EN 1366-3

**Circumferential joint filling around the installation**

In case of a joint width of  $b \leq 5$  mm, the joints are densely filled across their entire thickness with "BC-Brandschutz-Farbe" (firestop coating) or with the intumescent building material "BC-Brandschutz-Spachtel" (firestop putty), and

in case of a joint width of  $5 \text{ mm} < b \leq 20$  mm, the joints are filled with mineral wool "Protect BSW Brandschutzwolle" (firestop wool) (stuffing density approx.  $100 \text{ kg/m}^3$  to  $120 \text{ kg/m}^3$ ) in such a way that the stuffing wool finishes almost flush with the seal surface on both sides of the cable penetration seal; in the next step, the annular gap is densely filled, with a thickness corresponding to the thickness of the seal, with "BC-Brandschutz-Farbe" (firestop coating) (halogen-free) or with "BC-Brandschutz-Spachtel" (firestop putty) to close the cavity. The coating or putty is then spread to form a flush surface with the mineral fibre board.



Pipe collar									
ROKU Typ AWM II	Inside-Ø	Outside-Ø	Collar width	sheet steel thickness	höhe	Layer height ROKU-Strip	Thickness of firestop lining	Number of fastening points	Fastening hole Ø
110/112	114	199	20,9	1,1	29,8	26,4	19,2 ± 1,5	4	9,0
All dimensions in [mm]									

Kit composed of "BC Brandschutz-Farbe", "BC Brandschutz-Spachtel" and if relevant "BC Brandschutz-Bandage" or "BC-Brandschutz-Bandage-E"

Example for a penetration seal of fire resistance class EI 90-U/U, for combustible pipes

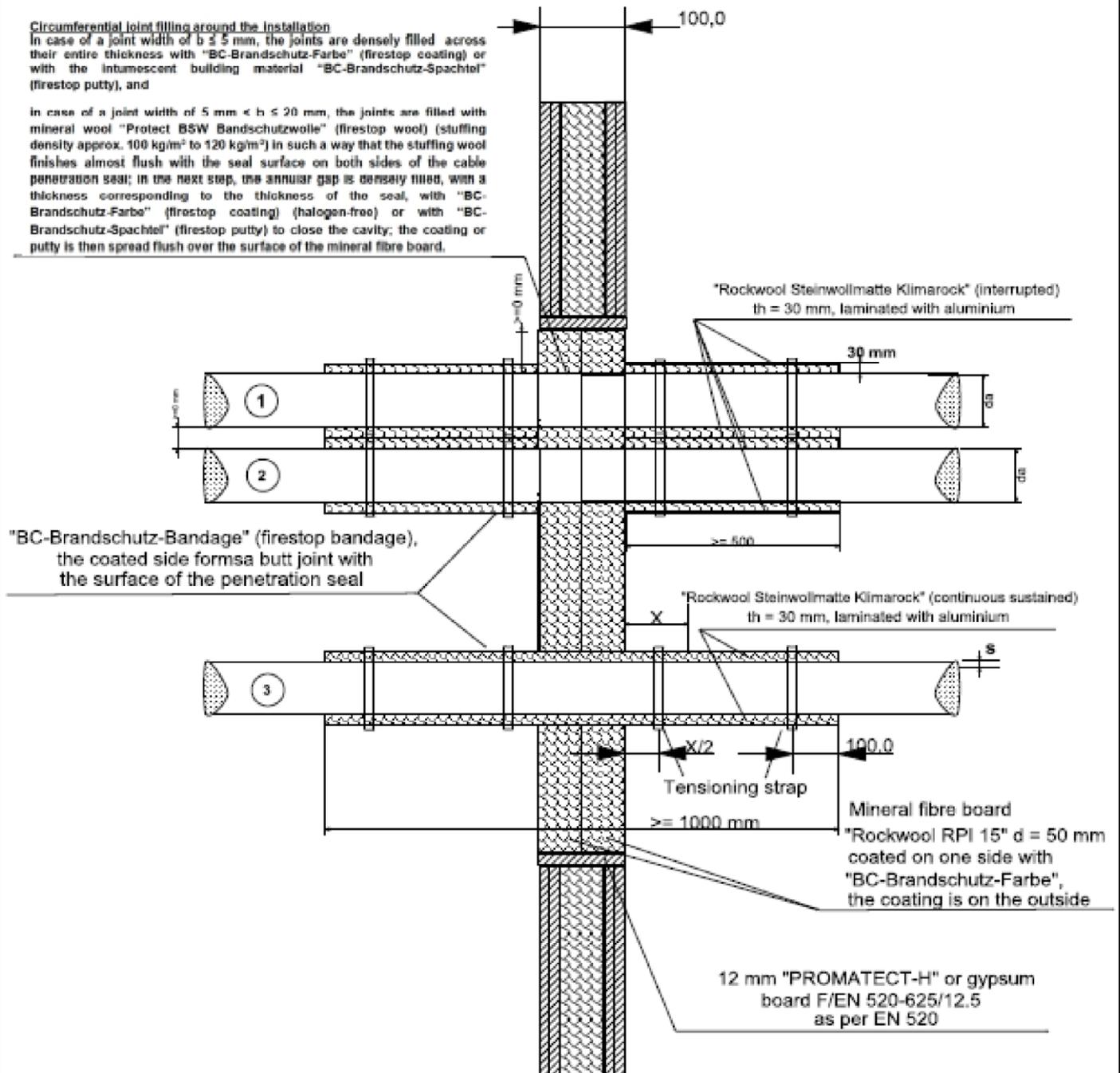
Annex 2

### Flexible wall acc. EN 1366-3

**Circumferential joint filling around the installation**

In case of a joint width of  $b \leq 5$  mm, the joints are densely filled across their entire thickness with "BC-Brandschutz-Farbe" (firestop coating) or with the intumescent building material "BC-Brandschutz-Spachtel" (firestop putty), and

in case of a joint width of  $5 \text{ mm} < b \leq 20$  mm, the joints are filled with mineral wool "Protect BSW Bandschutzwolle" (firestop wool) (stuffing density approx.  $100 \text{ kg/m}^3$  to  $120 \text{ kg/m}^3$ ) in such a way that the stuffing wool finishes almost flush with the seal surface on both sides of the cable penetration seal; in the next step, the annular gap is densely filled, with a thickness corresponding to the thickness of the seal, with "BC-Brandschutz-Farbe" (firestop coating) (halogen-free) or with "BC-Brandschutz-Spachtel" (firestop putty) to close the cavity; the coating or putty is then spread flush over the surface of the mineral fibre board.



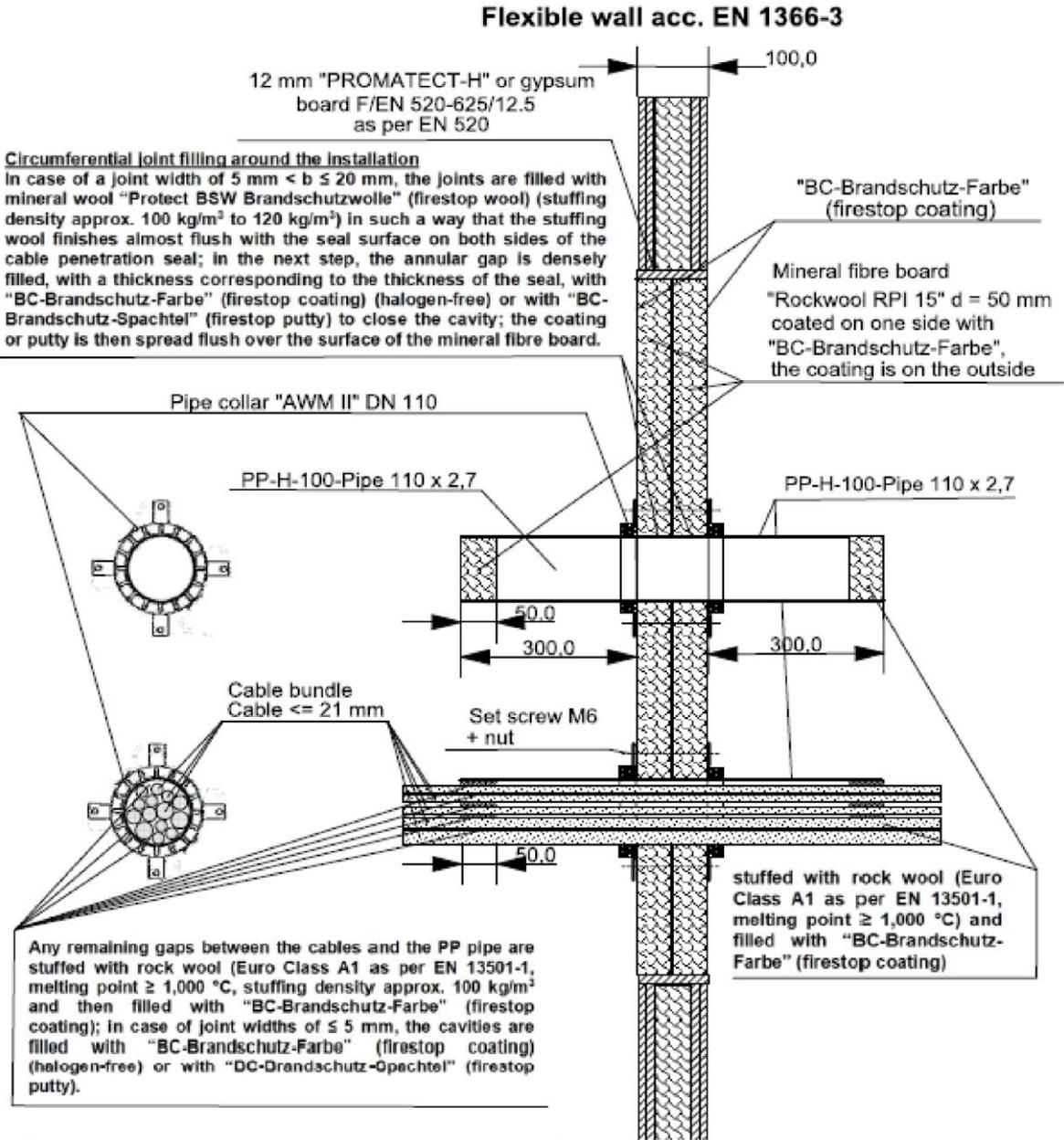
Nr.	Pipe	da (mm)	s (mm)	Bandage length X (mm)
1	Copper	88,9	2,0	200
2	Steel	42,4	2,0	
3	Steel	168,3	3,6	

Kit composed of "BC Brandschutz-Farbe", "BC Brandschutz-Spachtel" and if relevant "BC Brandschutz-Bandage" or "BC-Brandschutz-Bandage-E"

Example for a penetration seal of fire resistance class EI 90-C/U, for non-combustible pipes

Annex 3

English translation prepared by DIBt



Pipe collar									
ROKU Typ AWM II	Inside-Ø	Outside-Ø	Collar width	sheet steel thickness	höhe	Layer height RÖKU-Strip	Thickness of firestop lining	Number of fastening points	Fastening hole Ø
110/112	114	155	20,5	1,1	26,0	25,4	19,2 ± 1,5	4	9,0

All dimensions in [mm]

Cable bundle consisting of						
Quantity [pieces]	Cable [I]	Group [I]	Designation of cable and insulation material [I]	Cable typ [I]	Diameter [mm]	
3	A1	1	Cu cable	PVC sheath	NYJ-J 5 x 1,5 RE	13
3	A2			Synthetic rubber sheath	H07RN-F 5G1,5	12
3	A3			PE sheath	NZXH-J 5 x 1,5 RE	11
3	B			PVC sheath	NYJ-J 1 x 95 RM	19
1	E	2	Cu cable	PVC sheath	NYJ-J 1 x 185 RM	25
13	F	4	Cu cable	PVC sheath	20 x 2 x 0,6 mm²	15

Kit composed of "BC Brandschutz-Farbe", "BC Brandschutz-Spachtel" and if relevant "BC Brandschutz-Bandage" or "BC-Brandschutz-Bandage-E"

Example for a penetration seal of fire resistance class EI 90 with a cable bundle and a PP-H-pipe

Annex 4

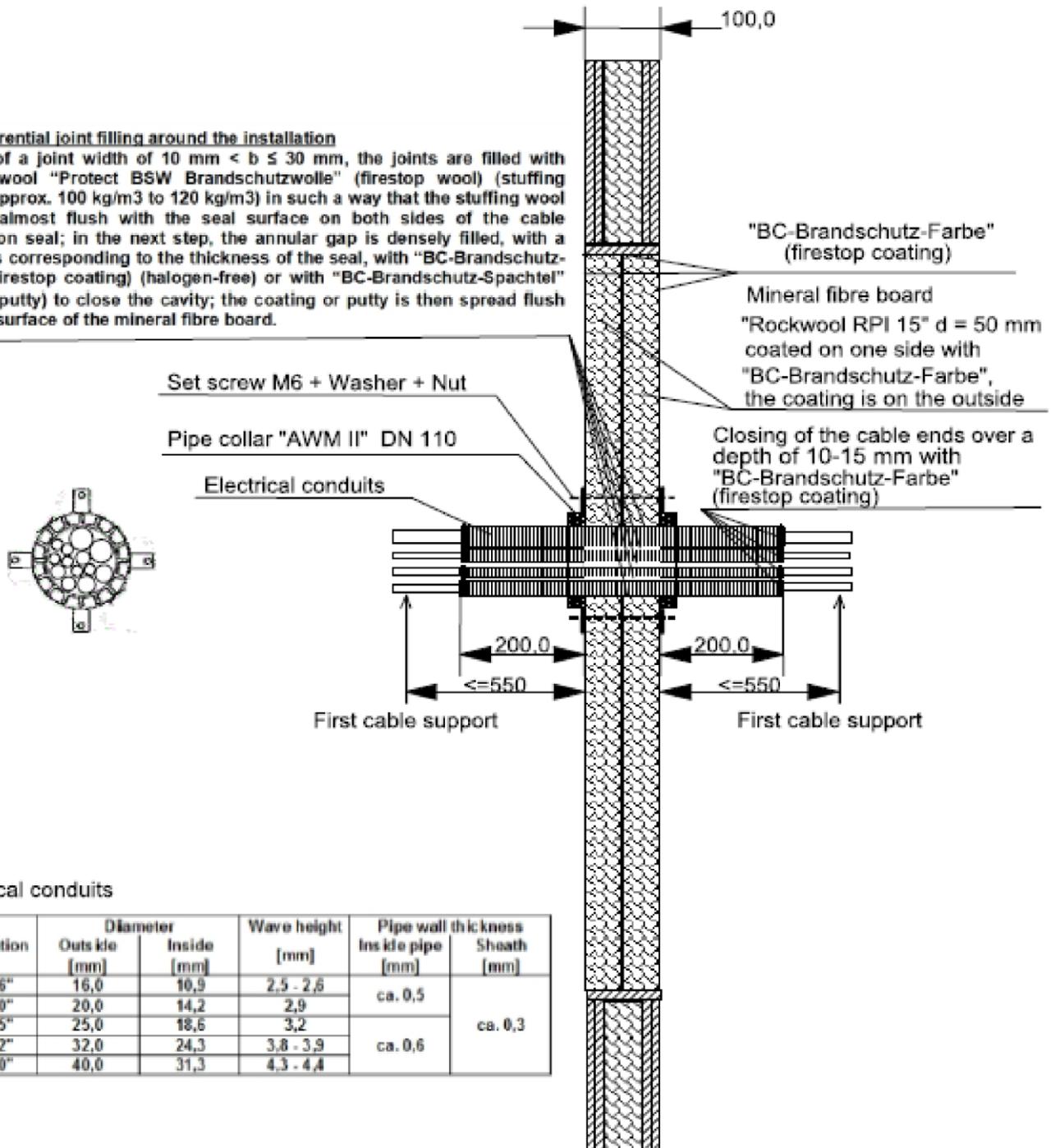
electronic copy of the eta by dibt: eta-15/0556

English translation prepared by DIBt

### Flexible wall acc. EN 1366-3

#### Circumferential joint filling around the installation

In case of a joint width of  $10 \text{ mm} < b \leq 30 \text{ mm}$ , the joints are filled with mineral wool "Protect BSW Brandschutzwolle" (firestop wool) (stuffing density approx.  $100 \text{ kg/m}^3$  to  $120 \text{ kg/m}^3$ ) in such a way that the stuffing wool finishes almost flush with the seal surface on both sides of the cable penetration seal; in the next step, the annular gap is densely filled, with a thickness corresponding to the thickness of the seal, with "BC-Brandschutz-Farbe" (firestop coating) (halogen-free) or with "BC-Brandschutz-Spachtel" (firestop putty) to close the cavity; the coating or putty is then spread flush over the surface of the mineral fibre board.



#### Electrical conduits

Designation	Diameter		Wave height [mm]	Pipe wall thickness	
	Outside [mm]	Inside [mm]		Inside pipe [mm]	Sheath [mm]
"DN 16"	16,0	10,9	2,5 - 2,6	ca. 0,5	ca. 0,3
"DN 20"	20,0	14,2	2,9		
"DN 25"	25,0	18,6	3,2	ca. 0,6	
"DN 32"	32,0	24,3	3,8 - 3,9		
"DN 40"	40,0	31,3	4,3 - 4,4		

Pipe collar									
ROKJ Typ AWM II	Inside-Ø	Outside-Ø	Collar width	sheet steel thickness	höhe	Layer height ROKJ-Strip	Thickness of firestop lining	Number of fastening points	Fastening hole Ø
110/112	114	100	20,0	1,1	20,0	20,4	19,2 ± 1,0	4	9,0
All dimensions in [mm]									

Kit composed of "BC Brandschutz-Farbe", "BC Brandschutz-Spachtel" and if relevant "BC Brandschutz-Bandage" or "BC-Brandschutz-Bandage-E"

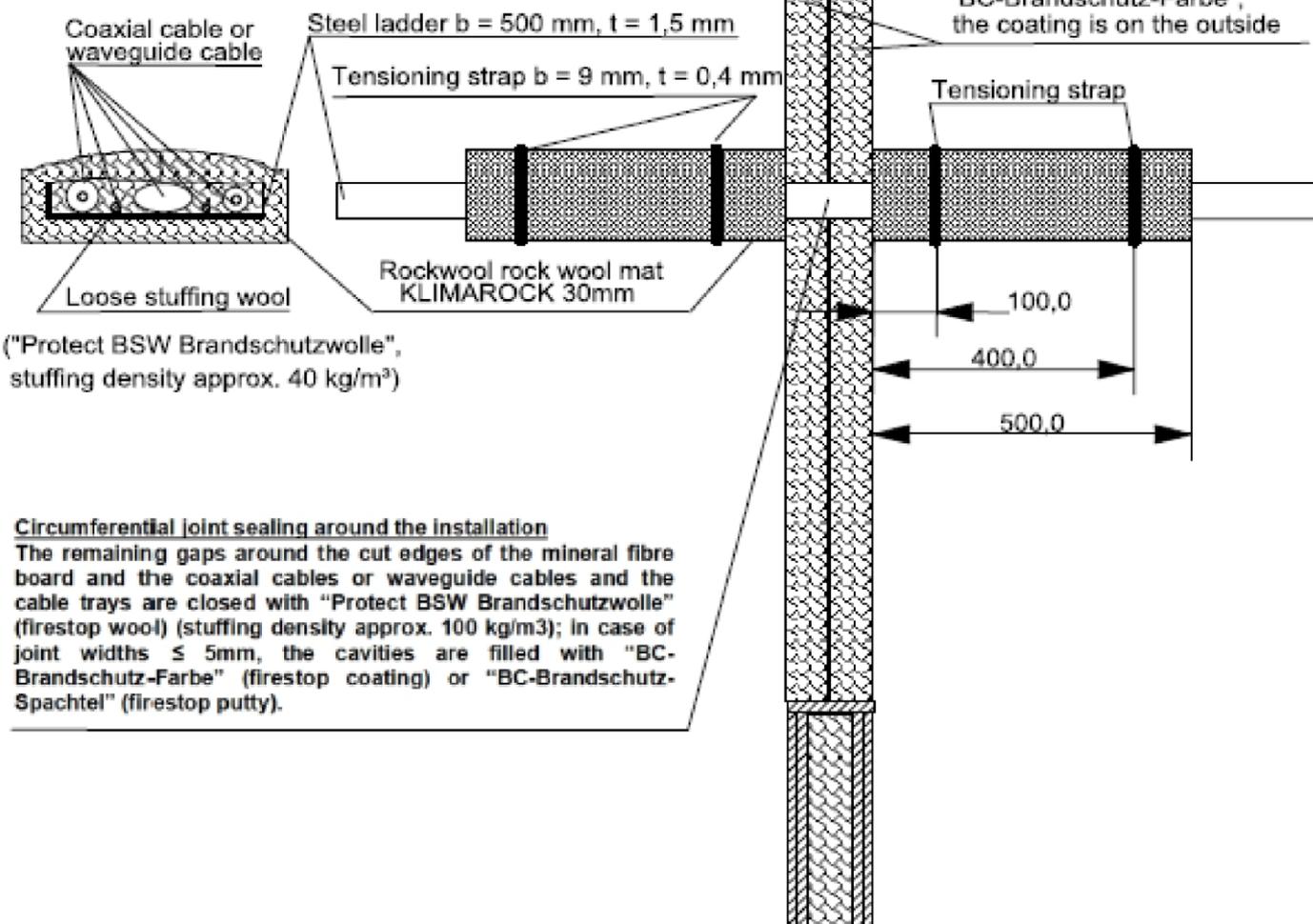
Example for a penetration seal of fire resistance class EI 90 using conduits

Annex 5

English translation prepared by DIBt

### Flexible wall acc. EN 1366-3

Designation	Outside diameter of external conductor [mm]	Outside diameter of internal conductor [mm]
3/8" HELIFLEX® Air-Dielectric Coaxial Cable	14,3	10,9
1.1/8" HELIFLEX® Air-Dielectric Coaxial Cable	36,4	12,0
1.5/8" HELIFLEX® Air-Dielectric Coaxial Cable	50,4	18,6
"FLEXWELL" Standard Elliptical Waveguide E304"	12 x 8	-
"FLEXWELL" Standard Elliptical Waveguide E30"	84 x 48	-

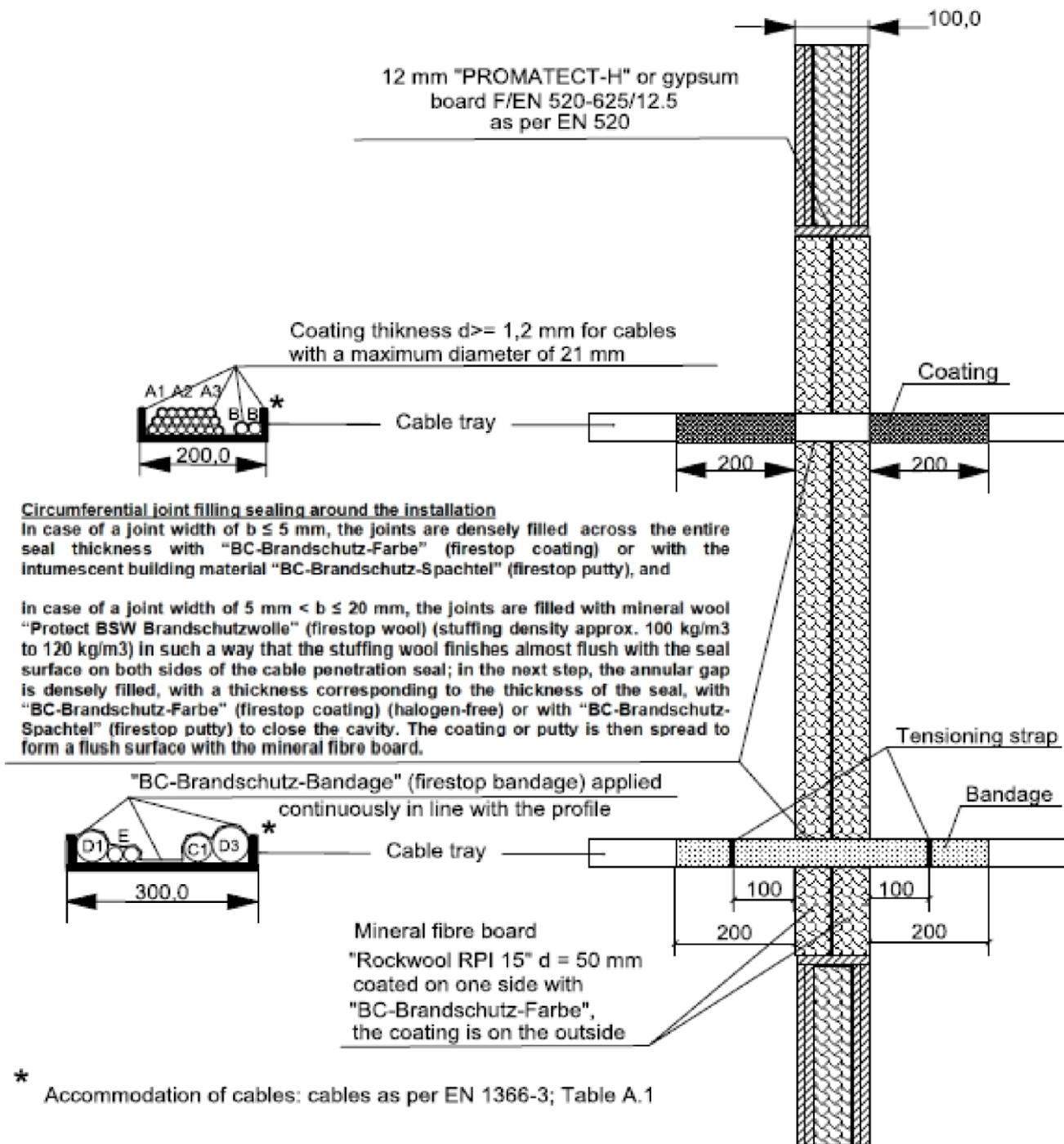


Kit composed of "BC Brandschutz-Farbe", "BC Brandschutz-Spachtel" and if relevant "BC Brandschutz-Bandage" or "BC-Brandschutz-Bandage-E"

Example for a penetration seal of fire resistance class EI 90 for coaxial- or waveguide cables

Annex 6

### Flexible wall acc. EN 1366-3



Kit composed of "BC Brandschutz-Farbe", "BC Brandschutz-Spachtel" and if relevant "BC Brandschutz-Bandage" or "BC-Brandschutz-Bandage-E"

Example for a penetration seal of fire resistance class EI 90 with cable trays

Annex 7