



European Technical Approval ETA-12/0279

English translation prepared by DIBt - Original version in German language

Handelsbezeichnung
Trade name

"Halogenfreies Brandschutzsystem PB-165"
"Halogen-Free Fire-Resistant System PB-165"

Zulassungsinhaber
Holder of approval

Polymeric GmbH
Landsberger Allee 378
12681 Berlin
DEUTSCHLAND

Zulassungsgegenstand
und Verwendungszweck
*Generic type and use
of construction product*

Kabelabschottung
cable penetration seal

Geltungsdauer:
Validity:

vom
from
bis
to

23 August 2012
23 August 2017

Herstellwerk
Manufacturing plant

Polymeric GmbH
Landsberger Allee 378
12681 Berlin
DEUTSCHLAND

Diese Zulassung umfasst
This Approval contains

23 Seiten einschließlich 14 Anlagen
23 pages including 14 annexes

I LEGAL BASES AND GENERAL CONDITIONS

- 1 This European technical approval is issued by Deutsches Institut für Bautechnik in accordance with:
 - Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products¹, modified by Council Directive 93/68/EEC² and Regulation (EC) N° 1882/2003 of the European Parliament and of the Council³;
 - *Gesetz über das In-Verkehr-Bringen von und den freien Warenverkehr mit Bauprodukten zur Umsetzung der Richtlinie 89/106/EWG des Rates vom 21. Dezember 1988 zur Angleichung der Rechts- und Verwaltungsvorschriften der Mitgliedstaaten über Bauprodukte und anderer Rechtsakte der Europäischen Gemeinschaften (Bauproduktengesetz - BauPG) vom 28. April 1998⁴, as amended by law of 31 October 2006⁵;*
 - Common Procedural Rules for Requesting, Preparing and the Granting of European technical approvals set out in the Annex to Commission Decision 94/23/EC⁶;
 - Guideline for European technical approval of "Fire Stopping and Fire Sealing Products - Part 2: Penetration Seals", ETAG 026-02.
- 2 Deutsches Institut für Bautechnik is authorized to check whether the provisions of this European technical approval are met. Checking may take place in the manufacturing plant. Nevertheless, the responsibility for the conformity of the products to the European technical approval and for their fitness for the intended use remains with the holder of the European technical approval.
- 3 This European technical approval is not to be transferred to manufacturers or agents of manufacturers other than those indicated on page 1, or manufacturing plants other than those indicated on page 1 of this European technical approval.
- 4 This European technical approval may be withdrawn by Deutsches Institut für Bautechnik, in particular pursuant to information by the Commission according to Article 5(1) of Council Directive 89/106/EEC.
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- 6 The European technical approval is issued by the approval body in its official language. This version corresponds fully to the version circulated within EOTA. Translations into other languages have to be designated as such.

¹ Official Journal of the European Communities L 40, 11 February 1989, p. 12

² Official Journal of the European Communities L 220, 30 August 1993, p. 1

³ Official Journal of the European Union L 284, 31 October 2003, p. 25

⁴ *Bundesgesetzblatt Teil I 1998*, p. 812

⁵ *Bundesgesetzblatt Teil I 2006*, p. 2407, 2416

⁶ Official Journal of the European Communities L 17, 20 January 1994, p. 34

II SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL

1 Definition of product and intended use

1.1 Definition of the construction product

1.1.1 Description of the cable penetration seal

The cable penetration seal called "Halogen-Free Fire-Resistant System PB-165" mainly consists of a two-component-foam, if relevant of a wrapping of the cables with an intumescent material and if relevant of a frame or beading of boards (see Appendix 1). The cable penetration seal shall be constructed in accordance with Appendix 3 using the components listed in Appendix 1.

1.1.2 Description of the components of the cable penetration seal

- The two-component-foam called "Halogen-Free Fire-Resistant-Foam PB-165", produced by Polymerics GmbH,
 - the strip for the wrapping of the cables made from the mat-shaped intumescent material called "Fire Protection Liner PB-300", produced by Polymerics GmbH and
 - the boards for the construction of frames or beadings
- shall comply with the specifications given in Annex 1.

1.2 Intended use

1.2.1 General

1.2.1.1 The cable penetration seal is used to seal off openings in accordance with section 1.2.3 in fire resistant walls and floors in accordance with section 1.2.2 penetrated by installations in accordance with section 1.2.4⁷ and serves to preserve the fire resistance of the wall or floor in the area of the penetrations.

1.2.1.2 Depending on the design the cable penetration seal reaches a maximum fire resistance class of EI 60, E 90 or EI 90 (see also section 2.3).

1.2.1.3 The cable penetration seal can be used in interiors with high humidity but without temperatures below 0 °C (see section 2.5); use category Z₁ according to EOTA TR 024.

1.2.1.4 The cable penetration seal may also be used to seal openings which have not yet been used for installations. Subsequent modifications may be made to the installations (retrofitting or removal of installations) provided the provisions of this European technical approval are complied with.

1.2.2 Building elements

The cable penetration seal may be used in flexible walls (thickness $d_w \geq 100$ mm), rigid walls (thickness $d_w \geq 100$ mm) and rigid floors (thickness $d_D \geq 150$ mm) in accordance with Appendix 2, which are classified in accordance with the required fire resistance duration according to EN 13501-2 (max. EI 60 or EI 90).

⁷ The technical provisions of the Member States for the design of piping systems and the admissibility of pipe penetrations remain unaffected.

1.2.3 Component openings

1.2.3.1 The dimensions of the openings to be sealed off shall not exceed 250 mm (width) x 250 mm (height) or - for round seals - an area of 625 cm².

For installation in walls and when using a framing according to Appendix 3 these dimensions shall apply after the installation of the frame.

1.2.3.2 When determining the minimum dimensions of the component openings the specifications of section 1.2.4 (required edge distances of the installations and maximum infill rate) shall be taken into account.

1.2.3.3 The distance between the opening to be sealed off and other openings or components shall be at least 200 mm. The distance between adjacent penetration seals according to this ETA may be reduced to 100 mm.

1.2.4 Installations

The cable penetration seal may be used on cables, cable carriers (cable trays or ladders), cable bundles and small metal or plastic tubes for control lines in accordance with Appendix 2. The total permissible cross section of the installations (with regard to the respective external dimensions; including cable carriers) must not exceed 60% of the opening. The installations shall be fixed perpendicularly to the surface of the building element/penetration seal. The distances between the individual installations and between the installations and the seal edge shall comply with the specifications in Appendix 2.

1.2.5 Working life

The provisions in this European technical approval are based on an assumed working life of 10 years for the cable penetration seal "Halogen-Free Fire-Resistant System PB-165" provided the conditions laid down in sections 4 and 5 relating to manufacturing, installation, use and repair are met⁸. The information provided on the working life cannot be interpreted as a guarantee given by the manufacturer, but should be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the construction.

2 Product characteristics and methods of verification

2.1 General

2.1.1 The fitness of the cable penetration seal for the intended use was evaluated in accordance with ETAG 026 Part 2:2008-01-01.

For the evaluation of the cable penetration seal, the product characteristics "reaction to fire", "fire resistance", "release of dangerous substances" as well as "durability and serviceability" were considered.

2.1.2 The product characteristics specified in sections 2.2 to 2.5 only apply to the penetration seal and its components described in this ETA. Deutsches Institut für Bautechnik shall be immediately notified of any changes to the materials, composition, dimensions or properties of these components. Deutsches Institut für Bautechnik will then decide if a new assessment is required.

2.2 Reaction to fire

The two-component-foam "Halogen-Free Fire-Resistant-Foam PB-165" and the intumescent material "Fire Protection Liner PB-300" comply with the fire reaction classes in accordance with EN 13501-1 specified in Annex 1.

⁸ The real working life may be longer without major degradation affecting the essential requirements.

2.3 Fire resistance

The cable penetration seal was tested in accordance with prEN 1366-3:07/2007. As a maximum, the penetration seal fulfils the requirements of class EI 60, E 90 or EI 90 in accordance with EN 13501-2 depending on the design of the penetration seal.

In the annexes the maximum fire resistance class verified (under the respective installation conditions) is specified. If installed in walls or floors of the same thickness and density and with the same structure as specified there, but with a lower fire resistance class, the fire resistance class of the cable penetration seal will be reduced to the fire resistance class of the wall or floor.

2.4 Release of dangerous substances

The two-component-foam "Halogen-Free Fire-Resistant-Foam PB-165" and the intumescent material "Fire Protection Liner PB-300" do not contain any substances registered as dangerous substances in the list of the European Commission.

For assessment purposes, the chemical compositions of the materials were made available to Deutsches Institut für Bautechnik.

Note: In addition to the specific clauses relating to dangerous substances contained in this European technical approval, there may be other requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the Construction Products Directive, these requirements need also to be complied with, when and where they apply.

2.5 Durability and serviceability

The two-component-foam "Halogen-Free Fire-Resistant-Foam PB-165" and the intumescent material "Fire Protection Liner PB-300" fulfil the requirements of use category Z₁ in accordance with EOTA TR 024. That means that the materials can be exposed to the conditions in interiors with high humidity but without temperatures below 0 °C, without expecting significant changes in the fire protective characteristic values.

3 Evaluation and attestation of conformity and CE marking

3.1 System of attestation of conformity for the two-component-foam "Halogen-Free Fire-Resistant-Foam PB-165" and the intumescent material "Fire Protection Liner PB-300"

According to Decision 1999/454/EC, amended by Decision 2001/596/EC of the European Commission⁹, system 1 of the attestation of conformity applies.

This system of attestation of conformity is defined as follows:

System 1: Certification of the conformity of the product by an approved certification body on the basis of:

(a) Tasks for the manufacturer:

- (1) factory production control;
- (2) further testing of samples taken at the factory by the manufacturer in accordance with a prescribed test plan;

⁹ Official Journal of the European Communities 178/52, 14 July 1999

- (b) Tasks for the approved body:
- (3) initial type-testing of the product;
 - (4) initial inspection of the factory and of factory production control;
 - (5) continuous surveillance, assessment and approval of factory production control.

Note: Approved bodies are also referred to as "notified bodies".

3.2 Responsibilities

3.2.1 Tasks of the manufacturer

3.2.1.1 Factory production control

The manufacturer shall exercise permanent internal control of production. All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures, including records of results performed. The factory production control shall ensure that the product is in conformity with this European technical approval.

The manufacturer may only use the initial/raw/constituent materials stated in the technical documentation of this European technical approval.

The factory production control shall be in accordance with the Control plan dated 3. September 2012 relating to the European technical approval ETA-12/0279 granted on 23 August 2012, which is part of the technical documentation of this European technical approval. The control plan is laid down in the context of the factory production control system operated by the manufacturer and deposited with Deutsches Institut für Bautechnik.¹⁰

The results of factory production control shall be recorded and evaluated in accordance with the provisions of the control plan.

3.2.1.2 Other tasks of the manufacturer

The manufacturer shall provide a technical datasheet and an installation guide containing at least the following information:

Technical data sheet:

1. Field of application:

- Building elements into which the penetration seal may be installed, type and properties of the building elements, such as minimum thickness, density and – in the case of lightweight constructions – the construction requirements.
- Installations that may pass through the penetration seal, type and properties of the installations (including insulation if relevant), such as materials, diameter, thickness; necessary/permitted supports/fastenings; distances.
- Dimensions, minimum thicknesses etc. of the penetration seal
- Climatic conditions covered by the ETA: Internal use with high humidity but without temperatures below 0 °C

2. Construction of the penetration seal including the necessary components and additional products with clear indications whether they are generic or specific.

Installation instruction:

- Installation method (e.g. preparation of the supporting structure before installation of the penetration seal)
- The sequence of working steps to be followed
- Procedure in case of retrofitting

¹⁰

The control plan is a confidential part of the European technical approval and only handed over to the approved body involved in the procedure of attestation of conformity. See section 3.2.2.

The manufacturer shall, on the basis of a contract, involve a body which is approved for the tasks referred to in section 3.1 for products in accordance with ETAG 026-2, in order to undertake the actions laid down in section 3.2.2. For this purpose, the control plan referred to in sections 3.2.1.1 and 3.2.2 shall be handed over by the manufacturer to the approved body involved.

The manufacturer shall make a declaration of conformity, stating that the construction product is in conformity with the provisions of the European technical approval ETA-12/0279 issued on 23 August 2012.

3.2.2 Tasks for the approved body

The approved body shall perform the following tasks in accordance with the provisions laid down in the control plan:

- Initial type-testing of the product
- Initial inspection of factory and factory production control
- Continuous surveillance, assessment and approval of factory production control

The approved body shall record the essential points of their actions referred to above and state the results obtained and conclusions made in a written report.

The approved certification body involved by the manufacturer shall issue an EC certificate of conformity of the product stating the conformity with the provisions of this European technical approval.

In cases where the provisions of the European technical approval and its control plan are no longer fulfilled, the certification body shall withdraw the certificate of conformity and inform Deutsches Institut für Bautechnik without delay.

3.3 CE marking

The CE marking shall be affixed on the (cartridge) of the two-component-foam and on the packaging of the mat-formed intumescent material and the accompanying commercial documents. The letters "CE" shall be followed by the identification number of the approved certification body and be accompanied by the following additional information:

- the name and address of the manufacturer (legal entity responsible for the manufacture),
- the last two digits of the year in which the CE marking was affixed,
- the number of the EC certificate of conformity for the product,
- the number of the European technical approval,
- the number of the guideline for European technical approval,
- the use category,
- the designation of the product (trade name),
- declaration of any dangerous substances or "no dangerous substances",
- "see ETA-12/0279 for other relevant characteristics".

For an example of the CE marking see Appendix 4.

4 Assumptions under which the fitness of the product for the intended use was favourably assessed

4.1 General

4.1.1 It is assumed that

- the penetration seal complies with the specifications in this ETA and the installation was carried out in accordance with this ETA and also in accordance with the technical data sheet and the installation instructions by the manufacturer,
- damages to the penetration seal are repaired accordingly,
- the seal is installed only in the building elements specified in this ETA,
- only installations in accordance with the specifications in this ETA pass through the openings (Parts or service support constructions other than those in accordance with section 1.2 shall not pass through the penetration seal.),
- the installation of the penetration seal does not affect the stability of the adjacent building elements – even in the case of fire,
- the lintel or floor above the penetration seal is designed structurally and in terms of fire protection such that no additional mechanical load (other than its own weight) is imposed on the seal,
- the installations are fixed to the adjacent building elements (not to the seal) in accordance with the relevant regulations in such a manner that, in case of fire, no additional mechanical load is imposed on the seal and
- the support of the installations is maintained for the classification period required.

4.1.2 It is assumed that, in order to avoid injuries precautions are taken to prevent persons to step or fall on the penetration seal (e.g. covering with a steel grating).

4.2 Production

The European technical approval was issued for the product on the basis of agreed data/information, deposited with Deutsches Institut für Bautechnik, which identifies the product that has been assessed and judged. Changes to the product or production process, which could result in this deposited data/information being incorrect, shall be reported to Deutsches Institut für Bautechnik before the changes are introduced. Deutsches Institut für Bautechnik will decide whether or not such changes affect the approval and consequently the validity of the CE marking on the basis of the approval, and if so whether further assessment or alterations to the approval shall be necessary.

4.3 Installation

The product characteristics specified in this European technical approval only apply if the penetration seal is installed in accordance with the specifications of Appendix 3 and also with the technical data sheet and the manufacturer's installation instructions.

5 Indications to the manufacturer

5.1 Packaging, transport and storage

- 5.1.1 The manufacturer's specifications for packaging, transport and storage shall be observed.
- 5.1.2 The packaging of the two-component-foam and of the mat-shaped intumescent material shall contain the following information:
- Trade name or trademark or other symbol identifying the product
 - The date of manufacture (day, month, year or coded information)
- 5.1.3 The two-component-foam and the mat-shaped intumescent material shall be packed for delivery in such a way that usual delivery conditions are being complied with and that sufficient protection against the effects of normal handling is given.

5.2 Use, maintenance, repair

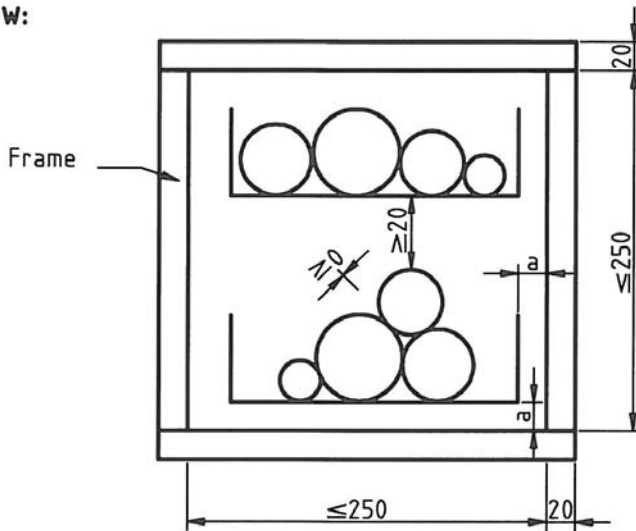
- 5.2.1 In general, no maintenance work is necessary. Repair can be made by subsequent installation of the two-component-foam and/or restoring damaged measures on the installations (for example wrapping on a cable) in accordance with Appendix 3.
- 5.2.2 If individual installations are removed or installed additionally, the remaining openings shall be sealed again in accordance with Appendix 3 and measures in accordance with Appendix 3 shall be taken for the installations added, if applicable.

Prof. Gunter Hoppe
Head of Department

beglaubigt:
Meske-Dallal

Name/Manufacturer	Description
<p>"Halogen-Free Fire-Resistant-Foam PB-165"</p> <p>Polymeric GmbH Landsberger Allee 378 12681 Berlin Deutschland</p>	<p>2-component-foam, filled into cartridges</p> <p>material: polyurethane-based two-component-foam* colour after curing: pale yellow/grey density (free foaming): 100 kg/m³ ± 15 kg/m³ Reaction to fire class according to EN 13501-1: Class E Cartridge volume: 310 ml</p>
<p>"Fire Protection Liner PB-300"</p> <p>Polymeric GmbH Landsberger Allee 378 12681 Berlin Deutschland</p>	<p>intumescent material in form of stripes or mats</p> <p>Thickness: 2,0 mm ± 0,2 mm Reaction to fire according to EN 13501-1: class E Density (delivery state): 1,20 g/cm³ ± 10 % Loss of mass on heating*: 49% - 59 % Expansion ratio*: 15,5 bis 20,5 (sample thickness approx. 1.9 mm) Expansion pressure*: 0,75 bis 1,2 N/mm²</p>
<p>boards for frames or beadings manufacturer-independent</p>	<p>The frames shall consist of at least 20 mm thick and the beadings of at least 25 mm thick cementitious or gypsum based boards with a reaction to fire class A1 or A2 according to EN 13501-1 (for example gypsum plasterboards, gypsum fibreboards or calcium-silicate-boards)</p>
<p>* The chemical composition of the material is deposited at the Deutsches Institut für Bautechnik. ** tested according to ETAG 026-2 (also see TR 024)</p>	
<p>"Halogen-Free Fire-Resistant System PB-165"</p>	
<p>APPENDIX 1 – DESCRIPTION OF THE PRODUCT Description of the components of the product</p>	<p>Annex 1</p>

View:

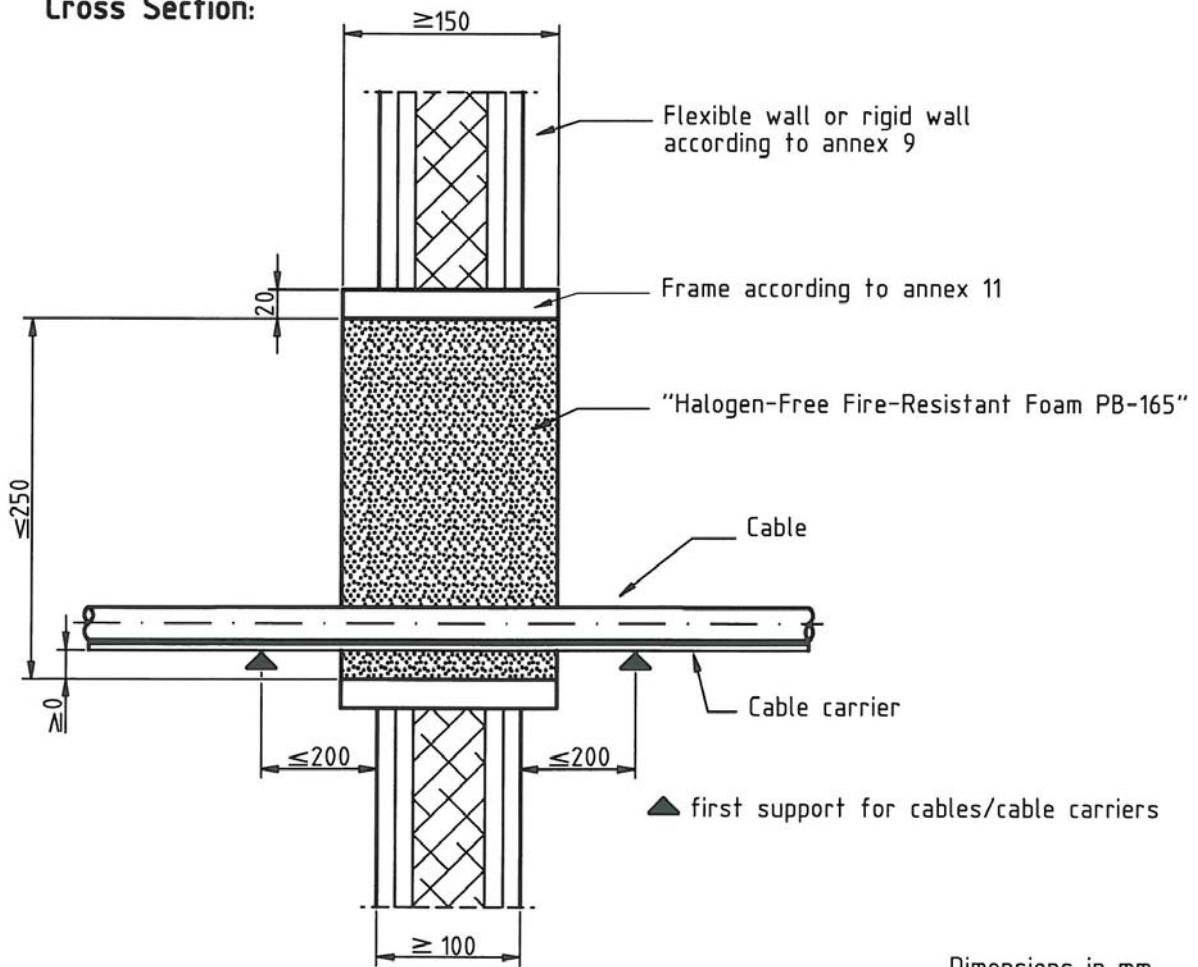


Arrangement of the cables:
either single- or multi-layer;
with optional cable carriers

Arrangement of
cable carriers or layers of cables:
one above the other; distance ≥ 20 mm

- $a \geq 0$ mm to a maximum of two sides, i.e.
- $a \geq 20$ mm in at least two sides of the
cable carrier resp.
- $a \geq 20$ mm for the annular space around
cable or cable bundle

Cross Section:



Dimensions in mm

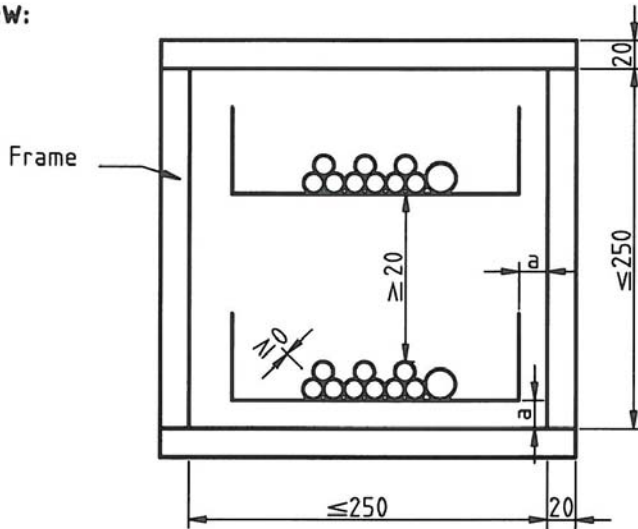
"Halogen-Free Fire-Resistant System PB-165"

APPENDIX 1 – DESCRIPTION OF THE PRODUCT

Construction of the penetration seal in walls – Fire resistance class EI 60 or E 90;
cable diameter ≤ 50 mm

Annex 2

View:

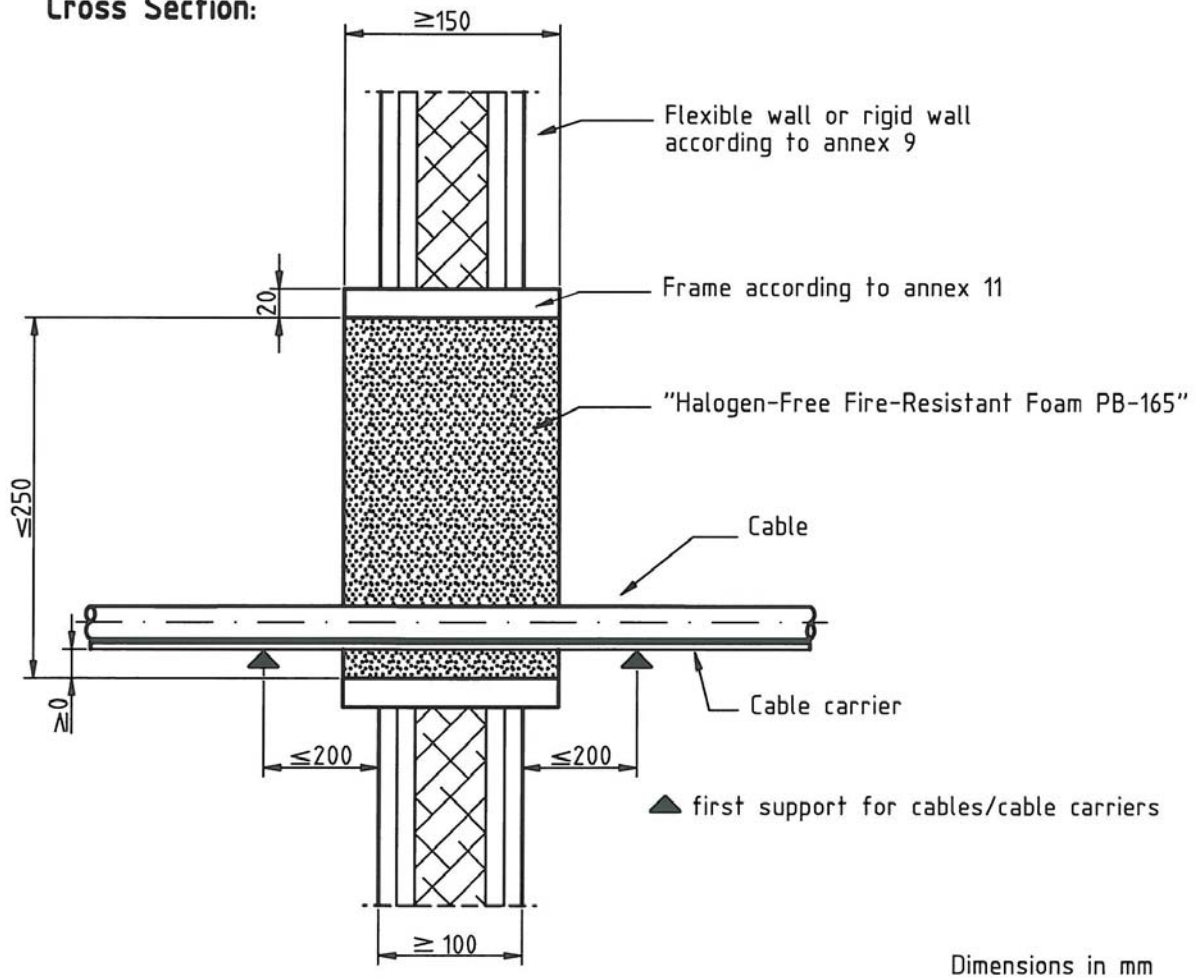


Arrangement of the cables:
either single- or multi-layer;
with optional cable carriers

Arrangement of
cable carriers or layers of cables:
one above the other; distance ≥ 20 mm

- $a \geq 0$ mm to a maximum of two sides; i.e.
- $a \geq 20$ mm in at least two sides of the cable carrier resp.
- $a \geq 20$ mm for the annular space around cable or cable bundle

Cross Section:



Dimensions in mm

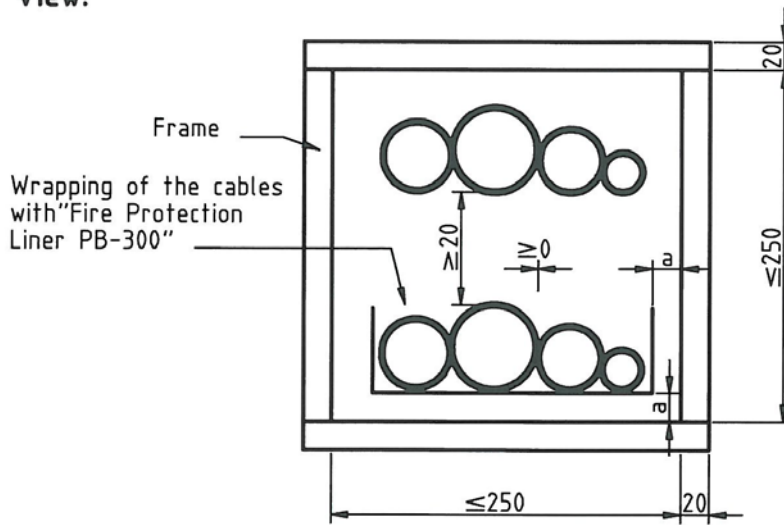
"Halogen-Free Fire-Resistant System PB-165"

APPENDIX 1 – DESCRIPTION OF THE PRODUCT

Construction of the penetration seal in walls – Fire resistance class EI 90;
cable diameter ≤ 21 mm

Annex 3

View:



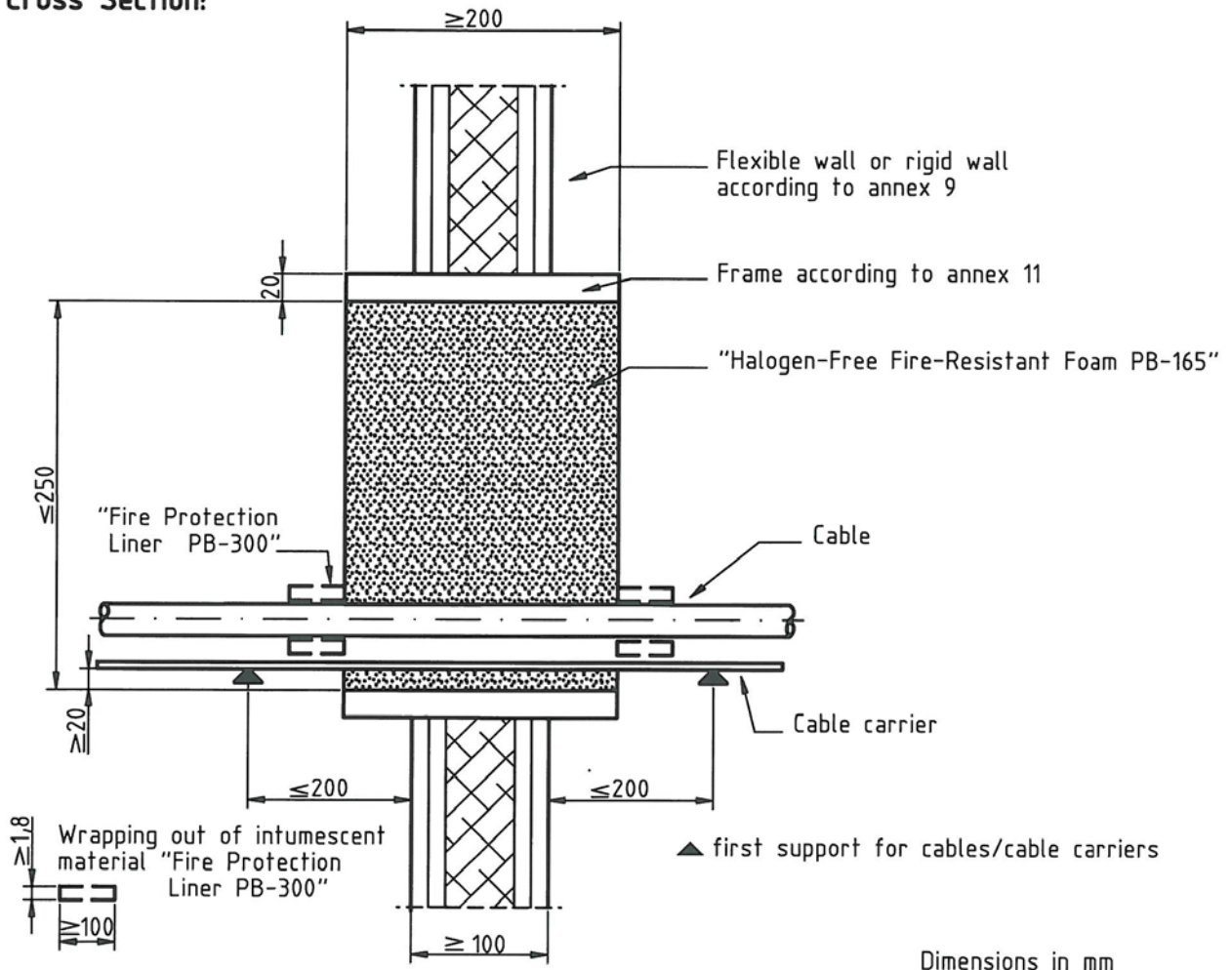
Arrangement of the cables:
single-layer;
with optional cable carriers

Arrangement of
cable carriers or layers of cables:
one above the other; distance ≥ 20 mm

$a \geq 20$ mm

Cables with a diameter ≤ 21 mm
do not require wrapping

Cross Section:



Dimensions in mm

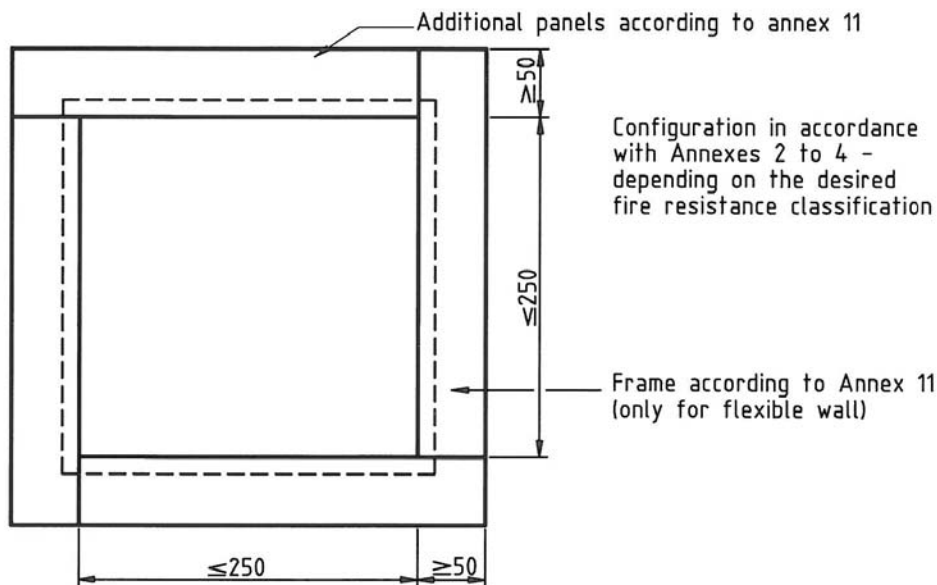
"Halogen-Free Fire-Resistant System PB-165"

APPENDIX 1 – DESCRIPTION OF THE PRODUCT

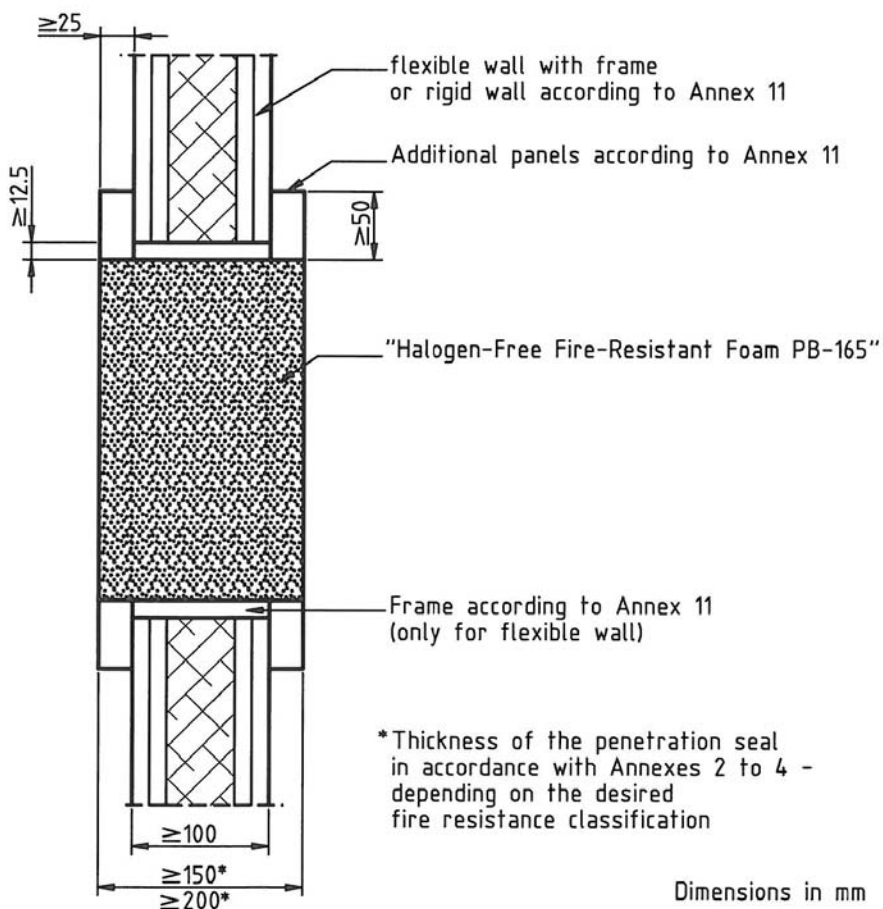
Construction of the penetration seal in walls – Fire resistance class EI 90;
cable diameter ≤ 50 mm

Annex 4

View:



Cross Section:



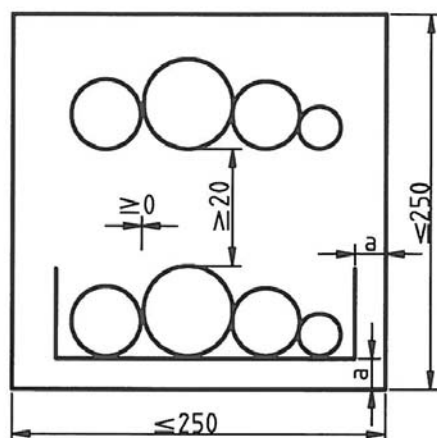
"Halogen-Free Fire-Resistant System PB-165"

APPENDIX 1 – DESCRIPTION OF THE PRODUCT

Construction of the penetration seal in walls – design variant with additional panels (beadings)

Annex 5

View:

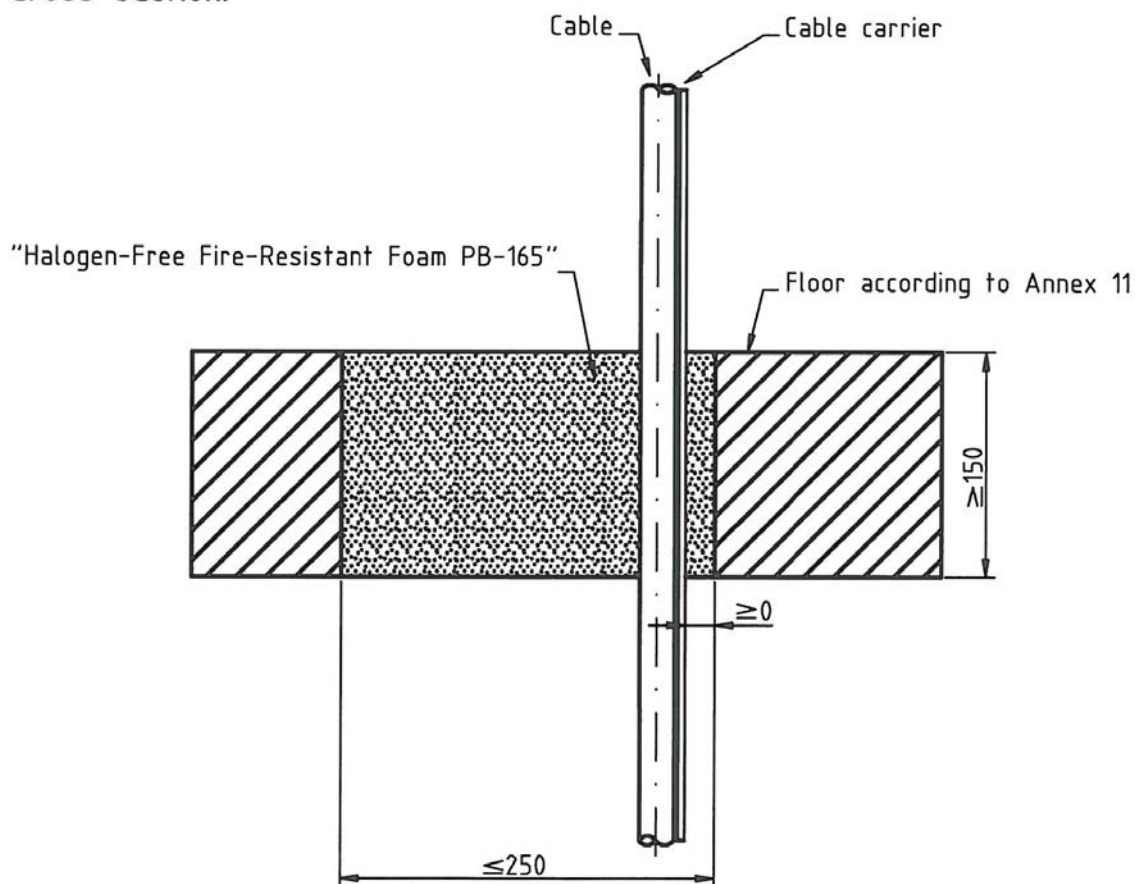


Arrangement of the cables:
single-layer;
with optional cable carriers

Arrangement of
cable carriers or layers of cables:
one above the other; distance ≥ 20 mm

$a \geq 0$ mm to a maximum of two sides; i.e.
 $a \geq 20$ mm in at least two sides of the
cable carrier resp.
 $a \geq 20$ mm for the annular space around
cable or cable bundle

Cross Section:



Dimensions in mm

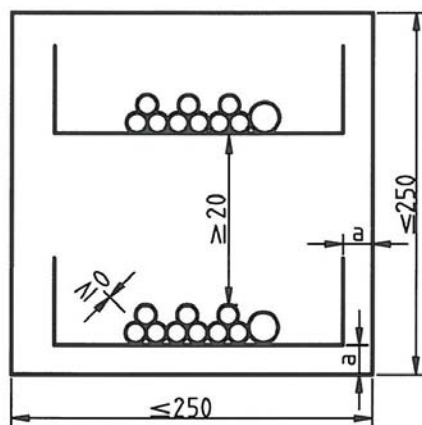
"Halogen-Free Fire-Resistant System PB-165"

APPENDIX 1 – DESCRIPTION OF THE PRODUCT

Construction of the penetration seal in floors – Fire resistance class EI 60 or E 90;
cable diameter ≤ 50 mm

Annex 6

View:

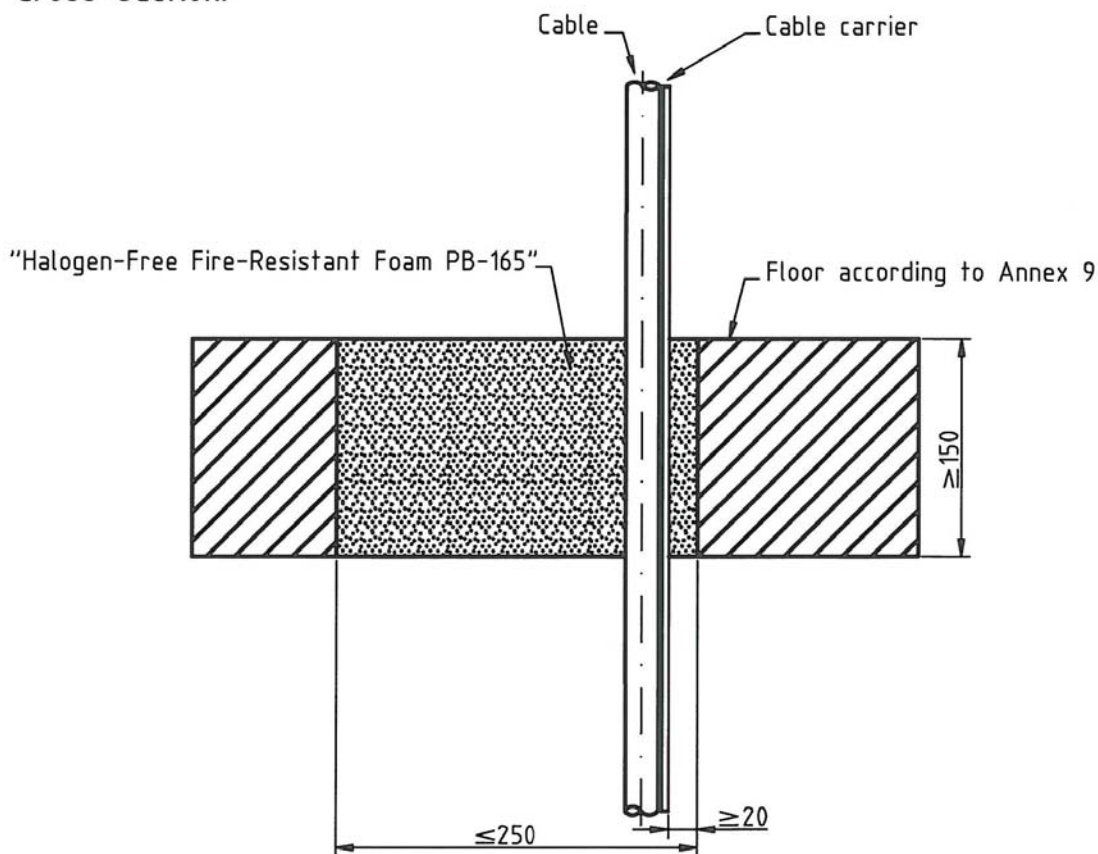


Arrangement of the cables:
either single- or multi-layer;
with optional cable carriers

Arrangement of
cable carriers or layers of cables:
one above the other; distance ≥ 20 mm

$a \geq 20$ mm

Cross Section:



Dimensions in mm

"Halogen-Free Fire-Resistant System PB-165"

APPENDIX 1 – DESCRIPTION OF THE PRODUCT

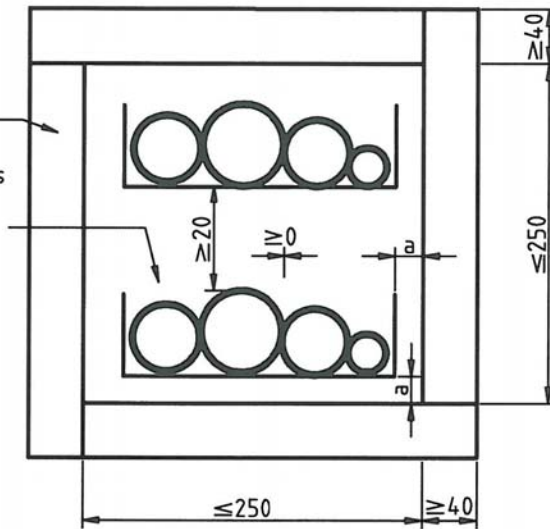
Construction of the penetration seal in floors – Fire resistance class EI 90;
cable diameter ≤ 21 mm

Annex 7

View:

Additional panel according to Annex 9

Wrapping of the cables with "Fire Protection Liner PB-300"



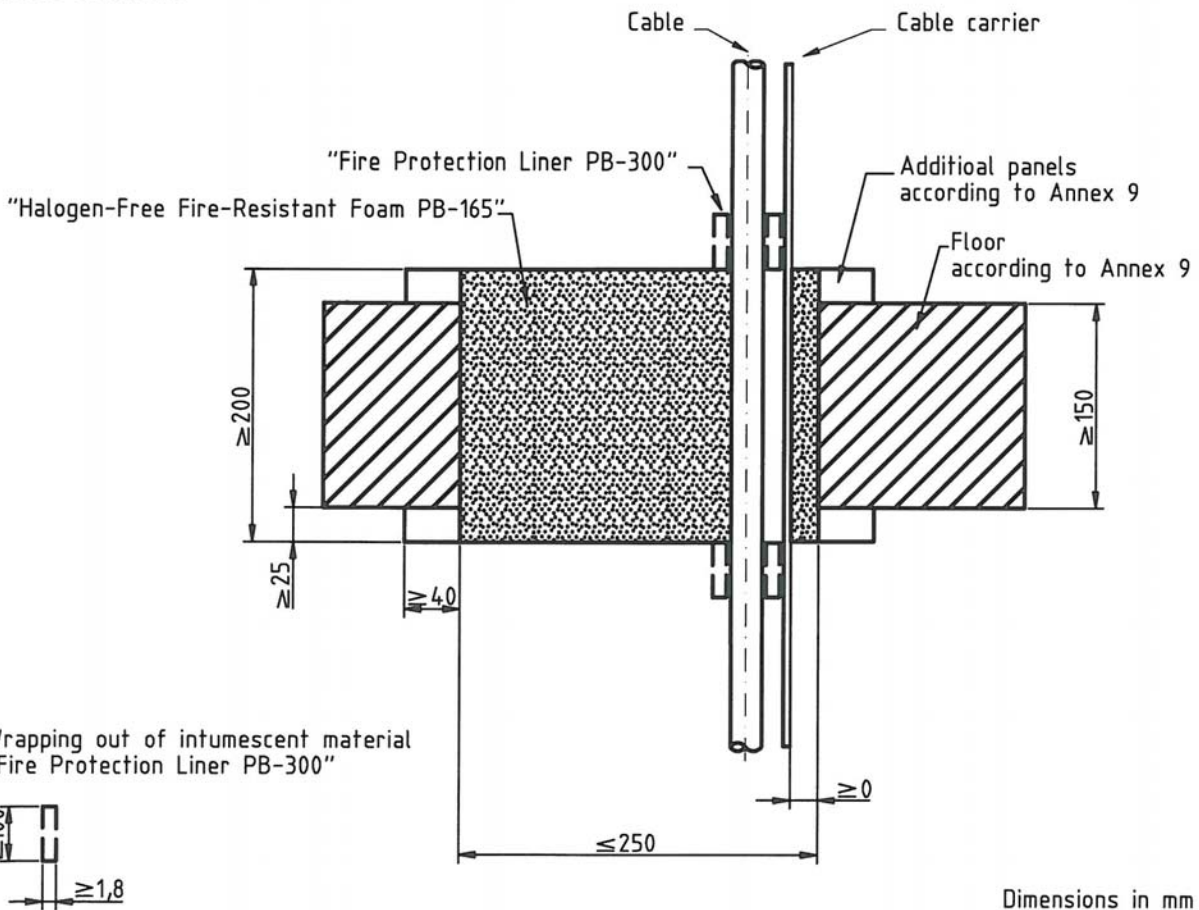
Arrangement of the cables:
single-layer;
with optional cable carriers

Arrangement of
cable carriers or layers of cables:
one above the other;
distance ≥ 20 mm

$a \geq 0$ mm to a maximum of two sides; i.e
 $a \geq 20$ mm in at least two sides of
the cable carrier resp.
 $a \geq 20$ mm for the annular space
around cable or cable bundle

Cables with a diameter ≤ 21 mm
do not require wrapping

Cross Section:



Wrapping out of intumescent material
"Fire Protection Liner PB-300"

Dimensions in mm

"Halogen-Free Fire-Resistant System PB-165"

APPENDIX 1 – DESCRIPTION OF THE PRODUCT

Construction of the penetration seal in floors – Fire resistance class EI 90;
cable diameter ≤ 50 mm

Annex 8

The cable penetration seal may be used in

Rigid walls

- of masonry, concrete, reinforced concrete or aerated concrete
- density $\geq 630 \text{ kg/m}^3$
- thickness $\geq 100 \text{ mm}$
- The walls shall be classified according to EN 13501-2 (maximum EI 60/ EI 90) corresponding to the required fire resistance period.

Flexible walls

- flexible walls with a steel stud substructure and a lining on both sides made from min. 2 layers of 12,5 mm thick cementitious or gypsum based slabs with a fire reaction class A1 or A2 according to EN 13501-1

The opening reveal shall be cladded as described below.

- flexible walls with a wood stud substructure and a lining on both sides made from min. 2 layers of 12,5 mm thick cementitious or gypsum based slabs with a fire reaction class A1 or A2 according to EN 13501-1

The distance between the wood substructure and the seal shall be $\geq 100 \text{ mm}$ and the cavity between the linings of the wall, the wood substructure and the seal shall be tightly clogged with mineral wool of fire reaction class A1 or A2 according to EN 13501-1 in a depth of minimum 100 mm. The opening reveal shall be cladded as described below.

- thickness $\geq 100 \text{ mm}$
- The walls shall be classified according to EN 13501-2 (maximum EI 60/ EI 90) corresponding to the required fire resistance period.
- Cladding of the opening reveal: A surrounding reveal (frame flush with the wall surface) shall be fitted in the opening in accordance with the layout of the respective wall lining (for walls without internal insulation) or made of at least 12.5 mm thick cementitious or gypsum bound sheets with fire reaction class A1 per EN 13501-1 (e.g. gypsum fibre or calcium silicate plates) (for walls with internal insulation).

Rigid floors

- of masonry, concrete, reinforced concrete or aerated concrete
- density $\geq 550 \text{ kg/m}^3$
- thickness $\geq 150 \text{ mm}$
- The floors shall be classified according to EN 13501-2 (maximum EI 60/ EI 90) corresponding to the required fire resistance period.

Note: This ETA does not cover the installation of the seal in special walls, i.e. in sandwich panel constructions.

"Halogen-Free Fire-Resistant System PB-165"

APPENDIX 2 – FIELD OF APPLICATION
Walls and floors

Annex 9

General

- The total permissible cross section of the installations (with regard to the respective external dimensions; including cable carriers) shall not exceed 60% of the component opening.
- The arrangement of the cables and the distances between the individual cables/cable carriers and between the cables/cable carriers and the opening reveals shall comply with the specifications in Annexes 2 to 8, depending on the type of services and the required fire resistance duration.

For wall application the first support of the installations shall be at a distance of ≤ 200 mm on both sides of the penetration seal. In their main parts the mounting brackets shall consist of materials with a reaction to fire of class A1 or A2 in accordance with EN 13501-1.

Type of installations

Type	Description
Cables	<ul style="list-style-type: none"> ➤ All types of sheathed cables* currently and commonly used in building practice in Europe (e.g. power cables, data cables, telecommunication cables, fibre optic cables) with the exception of waveguides ➤ $\varnothing \leq 50$ mm ➤ The cables may be grouped as layers and laid on cable carriers ➤ Cable bundles – consisting of parallel cables, densely packed and tightly bound, stitched or welded to one another – may pass through the opening provided the external diameter of the individual cables in the bundle does not exceed 21 mm and the overall diameter of the cable bundle does not exceed 100 mm.
Cable carriers	<ul style="list-style-type: none"> ➤ Perforated or unperforated cable trays and cable ladders made of steel, with organic coatings if required (provided the overall fire reaction complies at least with class A2 according to EN 13501-1)
small metal or plastic tubes for control lines	<ul style="list-style-type: none"> ➤ Tubes for control lines made from steel or plastic with an outer diameter ≤ 16 mm

* single or multicore cable with individual insulation of the cores and an additional protective covering of the assembly

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APPENDIX 2 – FIELD OF APPLICATION
Installations

Annex 10

INSTALLATION OF THE PENETRATION SEAL (I)

1. General

- 1.1 Before installing the cable penetration seals, all marginal conditions shall be checked for compliance (e.g. type and thickness of the wall or floor, type, arrangement and dimensions of the cables/cable carriers and the ambient conditions) with the provisions of section 1.2 and Appendices 1 and 2.
- 1.2 It shall be ensured that the assumptions under which the fitness for use was evaluated are complied with (see section 4). The installation instruction of the manufacturer shall be followed.

2. Framings and beadings

- 2.1 When installing cable penetration seals in walls with a thickness of ≤ 150 mm (for installation situations according to Annexes 2 and 3) or of ≤ 200 mm (for installation situations according to Annex 4) an aperture framing made of boards according to Annex 1 shall be installed in the component opening (for round seals half shells made of these materials shall be used). The depth of the framing shall comply with the necessary seal depth (150 mm or 200 mm; see Annexes 2 to 4). The individual boards of the frames shall be bolted together and with the wall. Possibly existing gaps between framing and wall shall be completely filled with cementitious or gypsum mortar.

For installation in rigid walls beadings made of boards according to Annex 1 may be used instead of a framing. The board stripes having a width of at least 50 mm shall be distributed evenly on both sides of the wall. The board stripes shall be fixed like a frame onto the wall surface(s) with steel screws at a distance ≤ 250 mm – and at least with two screws per stripe – such that the thickness of the building element immediately adjacent to the component opening is at least 150 mm (for installation situations according to Annexes 2 and 3) or 200 mm (for installation situations according to Annex 4) (see Annex 5). For round seals the beading shall be made of one board according to Annex 1 with a circular opening corresponding to the component opening (distance between opening and edge of the board ≥ 50 mm).

In flexible walls also beadings instead of a framing may be used if in the component opening an aperture framing is installed, which is flush with the surfaces of the wall.

- 2.2 For installation in floors with a thickness of ≤ 200 mm and in case of installation situations according to Annex 8 an aperture framing made of boards according to Annex 1 shall be installed. The board-stripes having a width of at least 40 mm shall be distributed evenly on both sides of the floor. Optionally they can be installed on top of the floor. The stripes shall be fixed like a frame onto the floor surface(s) with steel screws in a distance ≤ 250 mm – and at least with two screws per stripe – such that the thickness of the building element immediately adjacent to the component opening is at least 200 mm (see Annex 8).

3. Installation of the two-component-foam

- 3.1 At the beginning of the seal installation the reveals of the component openings shall be cleaned.
- 3.2 All openings between the services – in particular the interstices between the individual cables – as well as all openings between the services and the reveal of the component openings shall be filled completely at a depth of at least 150 mm (for installation situations according to Annexes 2, 3, 6, and 7) and/or 200 mm (for installation situations according to Annexes 4 and 8) with the two-component foam "halogen-free fire protection foam PB-165" (see Annexes 2 to 8). Cable bundles according to Annex 10 do not need to be filled with building materials in the interior.

4. Measures on cables for fire resistance class EI 90

- 4.1 For cable penetration seals of fire resistance class EI 90, at least 100 mm wide and at least 1.8 mm thick strips from the intumescent material "Fire Protection Liner PB-300" shall be wrapped around the cables single-layered and fixed with binding wire before foaming or after curing of the foam.
- 4.2 Deviating from section 4.1 no wrapping is necessary for cables with an outside diameter of ≤ 21 mm (see Annexes 3 and 4).

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APPENDIX 3 – INSTALLATION OF THE PENETRATION SEAL

Annex 11

INSTALLATION OF THE PENETRATION SEAL (II)

5. Retrofitting


- 5.1 Openings may be made for retrofittings, e.g. by drilling, provided the present number and arrangement of the installations in the penetration seal allow this (see section 1.1). The openings shall be made such that a joint of at least 20 mm width remains around the cables added.
- 5.2 The joints remaining after retrofitting shall be filled completely at a depth according to section 3.2 with the two-component-foam "Halogen-Free Fire-Resistant-Foam PB-165". If relevant, measures according to section 4 shall be installed on the additional cables.

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APPENDIX 3 – INSTALLATION OF THE PENETRATION SEAL

Annex 12

Example for CE-marking

 XXXX
Polymeric GmbH Landsberger Allee 378 12681 Berlin DEUTSCHLAND/GERMANY 12 XXXX-CPD-XXXX
ETA-12/XXXX ETAG 026 – Teil 2/Part 2 2-Komponenten-Schaum / 2-Component Foam "Halogenfreier Brandschutzschaum PB-165" / "Halogen-Free Fire-Resistant Foam PB-165" für/for Kabelabschottung/ Cable Penetration Seal "Halogenfreies Brandschutzsystem PB-165" / "Halogen-Free Fire-Resistant System PB-165" Nutzungskategorie/ Use category Z ₁

"CE"-Zeichen / "CE" marking

Identifizierungsnummer der notifizierten Stelle (für Konformitätsbescheinigungssystem 1)/ Identification number of notified certification body

Name und Anschrift des Herstellers oder seines autorisierten Vertreters (verantwortliche juristische Person)/ Name and address of the producer (legal entity responsible for the manufacturer)

Die letzten beiden Ziffern des Jahres, in dem die CE-Kennzeichnung angebracht wurde/ Two last digits of year of affixing CE marking

Nummer des EG-Konformitätszertifikats (für Konformitätsbescheinigungssystem 1)/ Number of EC certificate of conformity

Nummer der ETA / ETA number

Nummer der Leitlinie / ETAG number

Produktbezeichnung der Komponente (Handelsname) / Designation of the component (trade name)

Produktbezeichnung (Handelsname) / Designation of the product (trade name)

Nutzungskategorie/ Use category

Für weitere relevante Produktmerkmale (z.B. Feuerwiderstandsklasse, Abgabe gefährlicher Stoffe) s. ETA-12/XXXX/ See ETA-12/XXXX for other relevant characteristics (i.e. fire resistance class, dangerous substances)

"Halogen-Free Fire-Resistant System PB-165"

APPENDIX 4 – EXAMPLE FOR CE MARKING AND ADDITIONAL INFORMATION

Annex 13

Abbreviations

FWKL: maximum fire resistance class; If installed in building elements of the same type, thickness, density and with the same structure, but with a lower fire resistance class, the fire resistance class of the penetration seal is reduced to the fire resistance class of the building element.

LTW: flexible wall according to annex 8

MW: rigid wall according to annex 8

D: rigid floor according to annex 8

d_w: wall thickness

d_D: floor thickness

Ø: external diameter

Ø_{EK}: outer diameter of a single cable

Ø_B: outer diameter of a bundle

Standards

EN 13501-2:2010-02 Fire classification of construction products and building elements – Part 2: Classification using test data from resistance to fire tests, excluding ventilation services

EN 13501-1:2007 Fire classification of construction products and building elements – Part 1: Classification using test data from reaction to fire tests

prEN 1366-3: 07/2007 Document from CEN TC 127 for formal vote (document N 185); title see EN 1366-3: 2009-07

EN 1366-3: 2009-07 Fire resistance tests for service installations – Part 3: Penetration seals

Other documents

ETAG 026-2 Guideline for European Technical Approval of Fire Stopping and Fire Sealing Products, Part 2, Penetration Seals (edition January 2008)

EOTA TR 024 Characterisation, Aspects of Durability and Factory Production Control for Reactive Materials, Components and Products (edition November 2006)

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APPENDIX 5 – ABBREVIATIONS AND REFERENCE DOCUMENTS

Annex 14