

**protect your values**



## **PYRO-SAFE Flammotect** *four-layer*

### **Installation instructions**

**Penetration sealing system made of Mineral Fibre Boards (MFP) and an ablative coating for electric cables and wires of all kinds. Fire rating EI 240 in accordance with EN 13501-2 according to ETA-14/0418 and Classification Report No. 1858.1/12/Z00NP (concrete floor, t = 200 mm) and Classification Report No. 2163/11/Z00NP (aerated concrete wall, t = 250 mm)**



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## PYRO-SAFE Flammotect *four-layer*

### 1. Preliminary Remarks / Overview

#### 1.1 Target group

- The installation instructions are aimed exclusively at individuals trained in fire protection.

#### 1.1 Use of the manual

- Read through these installation instructions completely once before starting work. Observe the following safety instructions in particular.
- The authorisation holder assumes no liability for damage caused by non-observance of these instructions.
- Pictorial representations are examples only. Assembly results may differ visually.

#### 1.1 Safety information

Consult the safety data sheets when working with the penetration seal components.



##### Personal protective equipment:



In case of short-term or low-level exposure: P2 particle filter.  
In case of intensive or long-term exposure: use self-contained breathing apparatus.  
Only use respirators that comply with international/national standards.



Hand protection  
Use chemical-resistant gloves.  
Recommended material: butyl rubber, nitrile rubber, fluorinated rubber, PVC.



Eye protection  
Wear protective goggles, safety glasses



Body protection  
Wear protective clothing and non-slip shoes



Safety information for installation of floor-mounted penetration seals:

- The area below the floor penetration seal must be cordoned off while work on the penetration seal is underway (warning tape, or sign: danger - falling objects; keep off this area; sealing work underway in the floor above!)
- The contractor for the manufacture of floor partitions must inform the client in writing (to be forwarded to the building owners or their agents) that, after the manufacture of fire partitions in floors, this site must be secured against strain with suitable measures, in particular from intrusion (e.g. safety fence or grating).

## PYRO-SAFE Flammotect *four-layer*

### 1.2 Field of application - Scope

The usefulness of the PYRO-SAFE Flammotect four-layer cable penetration seal was determined according to ETAG 026-2 regarding the features „fire performance“, „fire resistance“, „release of dangerous substances“ and „durability and fitness for use“.

#### Reaction to fire

The ablative „PYRO-SAFE FLAMMOTECT-A“ component complies with reaction to fire performance class E of EN 13501-1; the intumescent „PYRO-SAFE DG-CR“ material complies with reaction to fire performance class B-s1,d0 of EN 13501-1; the mineral-fibre boards comply with reaction to fire performance class A1 and A2-s1,d0, respectively, of EN 13501-1.

#### Resistance to fire

The maximum requirements that the PYRO-SAFE Flammotect four-layer system complies with are those of class EI 240 in accordance with EN 13501-2.

When installed in walls/floors with a lower fire resistance time, the fire resistance time of the penetration seal is also reduced to the fire resistance class of the wall or floor.

#### Release of dangerous substances

The ablative „PYRO-SAFE FLAMMOTECT-A“ component and the intumescent „PYRO-SAFE DG-CR“ fabric do not contain any substances that are identified as dangerous substances in the list of the European Commission.

The mineral-fibre board and the Loose Mineralwool do not contain any dangerous substances that are listed in Directive 67/548/EC or Regulation (EC) No. 1272/2008 or the Indicative List on Dangerous Substances.

#### Durability and serviceability

The ablative „PYRO-SAFE FLAMMOTECT-A“ component and the intumescent „PYRO-SAFE DG-CR“ fabric comply with use category X in accordance with EOTA TR 024.

The fire safety characteristics of the PYRO-SAFE Flammotect four-layer system do not have to be expected to be affected in any significant way when exposed to indoor climates (with and without exposure to moisture) or atmospheric conditions.

### 1.2 Field of application - Structural elements

#### Solid walls

Made of stone, concrete, reinforced concrete or aerated concrete with a density  $\geq 600 \text{ kg/m}^3$ .

The walls must be classified with the required fire resistance rating in accordance with EN 13501-2.

#### Applicability of DIN 4102

The classifications according to DIN 4102-2 and according to DIN EN 13501-2, DIN EN 13501-3 and DIN EN 13501-5 are used alternatively for evidence of the required fire resistance rating of a component. (Building Regulations List A Part 1 - Appendix 0.1)

#### Solid floors

Made of concrete.

The walls must be classified with the required fire resistance rating in accordance with EN 13501-2.

# PYRO-SAFE Flammotect *four-layer*

## 1.3 Fire resistance classes for wall or floor penetration seals

Fire resistance classes							
	Wall ≥ 240 mm						
	Fire resistance classes						
	EI 30	EI 45	EI 60	EI 90	EI 120	EI 240	E 240
<b>Cables on cable trays or without cable trays, with "PYRO-SAFE DG-CR 1,5" intumescent wrap</b>							
Cable dia. ≤ 21 mm	●	●	●	●	●	●	●
Cable bundle dia. ≤ 100 mm with cable dia. ≤ 21 mm	●	●	●	●	●	●	●
Cable support structures	●	●	●	●	●	●	●
Cable dia. > 21 mm to dia. ≤ 80 mm	●	●	●	●	●	●	●

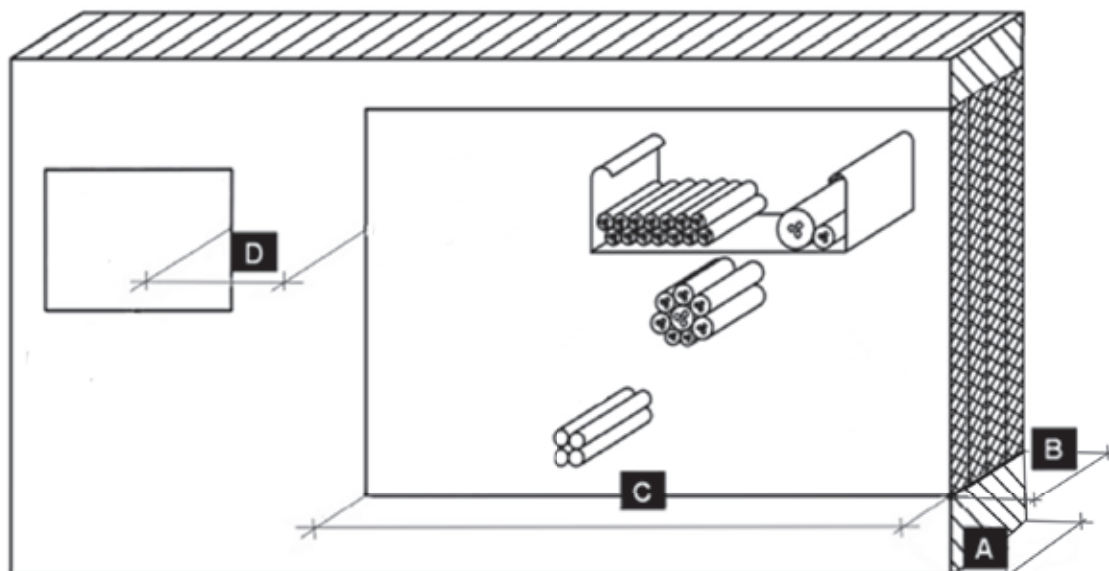
Fire resistance classes							
	Floor ≥ 200 mm						
	Fire resistance classes						
	EI 30	EI 45	EI 60	EI 90	EI 120	EI 240	E 240
<b>Cables on cable trays or without cable trays, with "PYRO-SAFE DG-CR 1,5" intumescent wrap</b>							
Cable dia. ≤ 21 mm	●	●	●	●	●	●	●
Cable bundle dia. ≤ 100 mm with cable dia. ≤ 21 mm	●	●	●	●	●	●	●
Cable support structures	●	●	●	●	●	●	●
Cable dia. > 21 mm to dia. ≤ 80 mm	●	●	●	●	●	●	●

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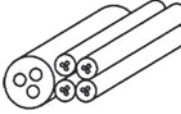
# PYRO-SAFE Flammotect *four-layer*

## 1.4 Field of application - Dimensions

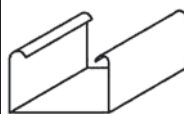
Dimensions			
Item	Designation	Wall [mm]	Ceiling [mm]
<b>A</b>	Component thickness	≥ 240	≥ 200
<b>B</b>	Partition thickness	240	240
<b>C</b>	Maximum dimensions of the component opening (width x height)	600 x 600	600 x ∞
<b>D</b>	Distance to other openings or fittings	≥ 200	≥ 200



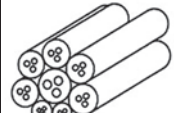
## 2 Permissible services



**Electrical cables and ducts of any kind (incl. fibre optic cables)**  
Maximum size of the overall conductor cross section of the individual cables dia. ≤ 80 mm



**Cable support structures**  
cable trays as well as cable ladders made from steel, possibly with organic coating, if the overall reaction to fire at least conforms with A2 in accordance with EN 13501-1

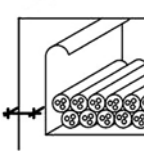
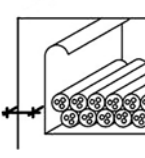
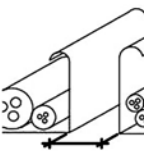
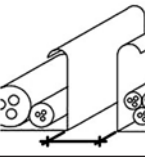
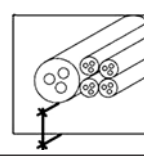
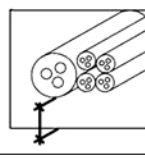
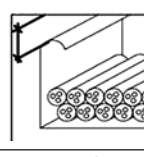
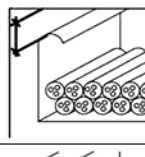
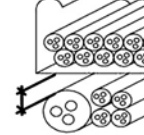
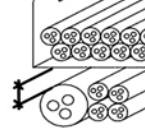


**Cable bundle**  
Up to dia. ≤ 100 mm with individual cable dia. ≤ 21 mm. Cable filler not required with tightly packed and tied cable bundles

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## 3 Spacing requirements for solid wall and floor - cables


Cable / cable bundle / cable support structure with PYRO-SAFE DG-CR 1,5 wrap in walls		[mm]	Cable / cable bundle / cable support structure with PYRO-SAFE DG-CR 1,5 wrap in floors		[mm]
	Lateral distance from interior surface of opening	≥ 20		Lateral distance from interior surface of opening	≥ 20
	Distance of cable support structures next to each other	≥ 10		Distance of cable support structures next to each other	≥ 10
	Bottom/rear distance from interior surface of opening	≥ 0		Bottom/rear distance from interior surface of opening	≥ 0
	Top / front distance from interior surface of opening	≥ 20		Top / front distance from interior surface of opening	≥ 20
	Distance to one another in walls	≥ 80		Distance in front of each other in floors	≥ 40


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### 4. Used products


	<p><b>PYRO-SAFE FLAMMOTECT- A Coating</b></p> <p>Reaction to fire performance class in accordance with EN 13501-1: class E 12.5-kg pail - product No. 01155101</p>
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	<p><b>PYRO-SAFE FLAMMOTECT- A Solid emulsion</b></p> <p>Reaction to fire performance class in accordance with EN 13501-1: class E 12.5-kg pail - product No. 01155106</p>
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	<p><b>PYRO-SAFE FLAMMOTECT- A Filler</b></p> <p>Reaction to fire performance class in accordance with EN 13501-1: class E 12.5-kg pail - product No. 01155104</p>
---	---


	<p><b>PYRO-SAFE FLAMMOTECT- A Filler</b></p> <p>Reaction to fire performance class in accordance with EN 13501-1: class E 310- cartridge - product No. 01155115</p>
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	<p><b>PYRO-SAFE DG-CR 1,5</b></p> <p>Cable and pipe wrap in accordance with ETA-13/0100 Reaction to fire performance class in accordance with EN 13501-1: B-s1,d0 Intumescent construction material for cable and pipe wraps of different widths</p>
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	<p><b>Mineral-fibre board in accordance with DIN EN 13162</b></p> <p>criteria: nominal density <math>\geq 150 \text{ kg / m}^3</math> Reaction to fire performance class A1 according to EN 13501:1 Melting point <math>\geq 1,000^\circ\text{C}</math>. (TR 10) tensile strength perpendicular to the plane of the panel <math>\geq 10\text{kPa}</math> according to EN1607 Thickness: 60 mm</p>
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	<p><b>Mineral-fibre board</b></p> <p>pre-coated with PYRO-SAFE FLAMMOTECT - A on one side Dimensions: 1,000 x 600 x 60 mm Product No. 01181160</p>
--	--

	<p><b>Mineral wool</b></p> <p>in acc. with abZ approval Z-23.15-1468 Reaction to fire performance class in accordance with EN 13501-1: class A1 Melting point <math>&gt; 1,000^\circ\text{C}</math> 10-kg bag - product No. 01183000</p>
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	<p><b>Label</b></p> <p>1 piece - Part No.</p>
--	---

	<p><b>Recommended tools</b></p> <ul style="list-style-type: none"> <li>• Spatulas, brushes, masking tape</li> <li>• Matte knife and saw</li> <li>• Possibly foil, folding ladder</li> <li>• Wire binding pliers, galvanized steel wire</li> </ul>
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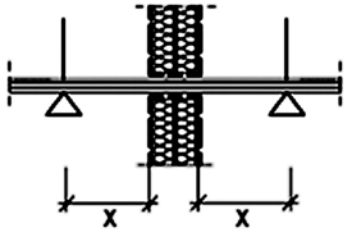
## PYRO-SAFE Flammotect *four-layer*

### 5. Regulations and variants for implementation

- The cable penetration seal should be used to seal openings without installations (so-called reserve partition).
- Penetration seals in floors must be protected with adequate barriers or covered with grating by the user, to prevent them from being loaded or walked on.
- Penetration seal surfaces that consist of mineral-fibre boards must be provided with an at least 2 mm thick (dry film thickness) PYRO-SAFE FLAMMOTECT-A coating
- The required fire safety measures are shown on the following pages and also apply for reinstallations.

#### 5.1 Arrangement of the first brackets (supports)

- The essential parts of the brackets/supports of the installations in front of the wall partition must be non-combustible (fire performance of Class A1 or A2 according to EN 13501-1) and arranged on both sides at a distance in line with the overview.

First support for wall installations		X [mm]
	Cables, cable bundles, cable support structures	≤ 100

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# PYRO-SAFE Flammotect *four-layer*

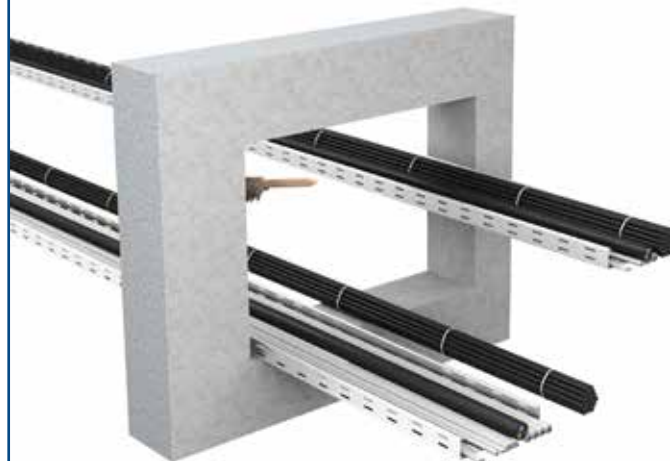


## 6.1 Installation procedure in walls

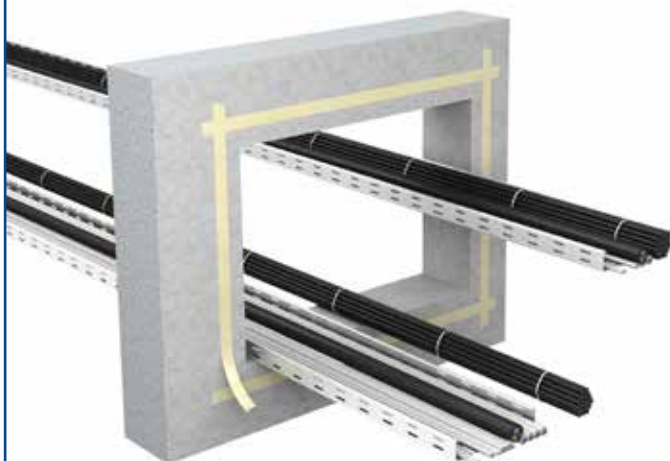
1. Opening with transits



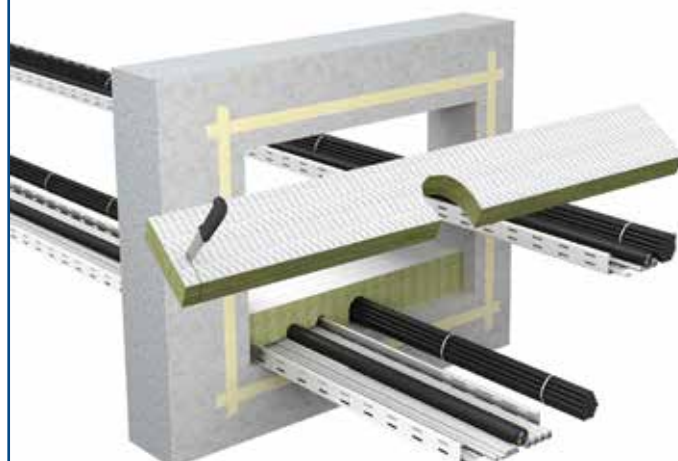
2. Cleaning the soffit



3. Cover opening all around with masking tape 25 mm from the edge.



4. Cut mineral-fibre board to size (provide openings for cables, cable trays).

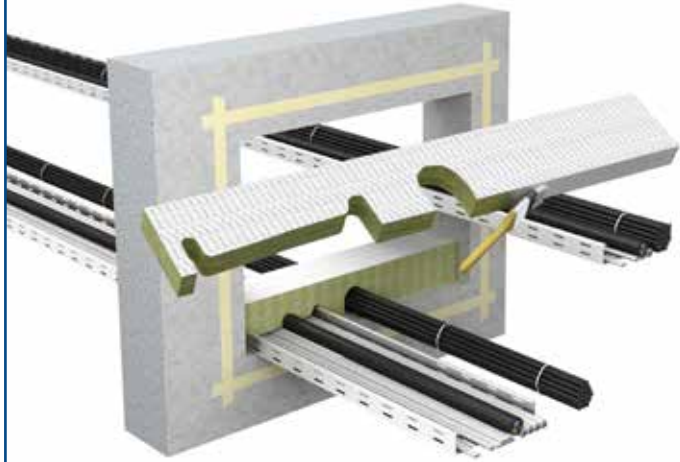


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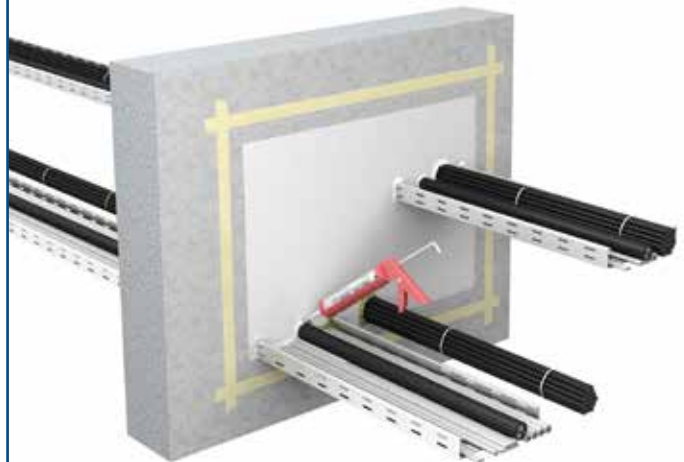
# PYRO-SAFE Flammotect *four-layer*

## 6.1 Installation procedure in walls - requirements for cables

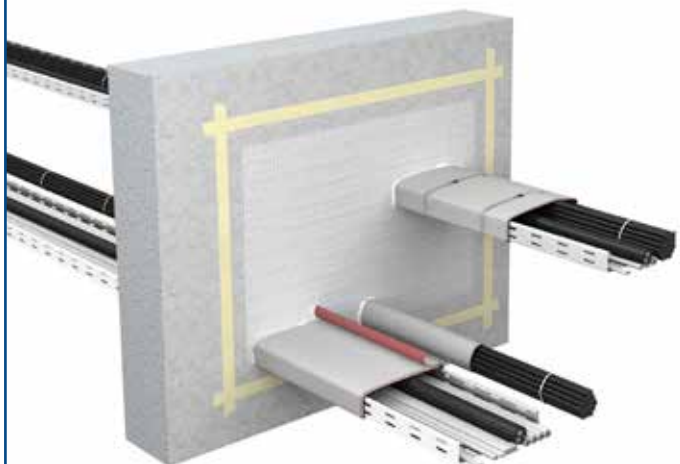
**5. Apply PYRO-SAFE FLAMMOTECT-A to the cut faces of the mineral-fibre board, and place the board into the opening, so its fits the opening tightly.**



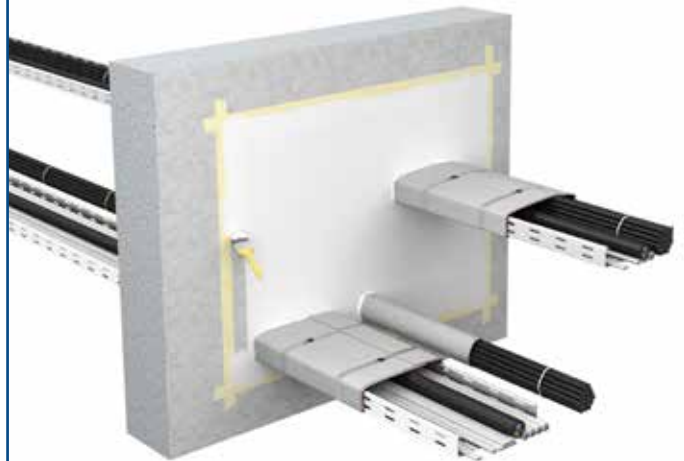
**6. Stuff residual opening / gap columns with mineral fibre wool and/or fill with PYRO-SAFE FLAMMOTECT-A filler.**



**7. Wrap cables, cable bundles and cable support structures with PYRO-SAFE DG-CR 1,5 For details, see next page.**



**8. Apply a final PYRO-SAFE FLAMMOTECT-A coat**



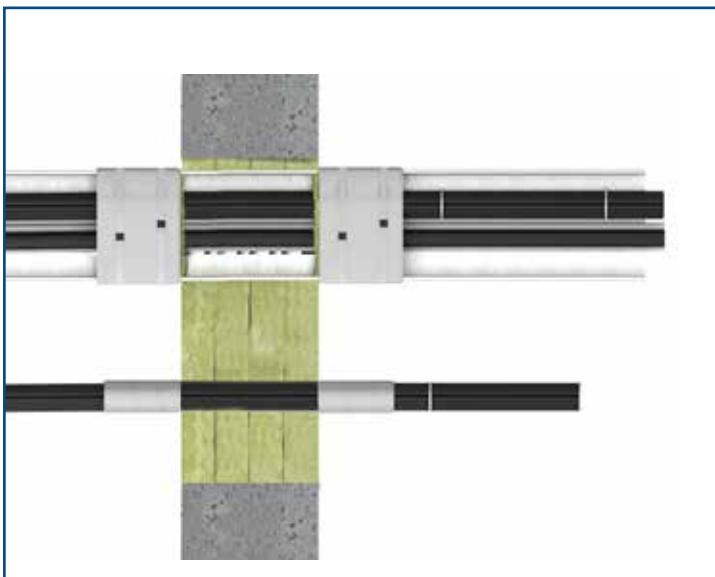
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## 6.1 Installation procedure in walls

9. Label partition (recommended and/or if requested by local authorities). Fill out partition sign clearly and attach permanently next to/above (not on!) the partition.



## 6.1 Fire protection measures in walls



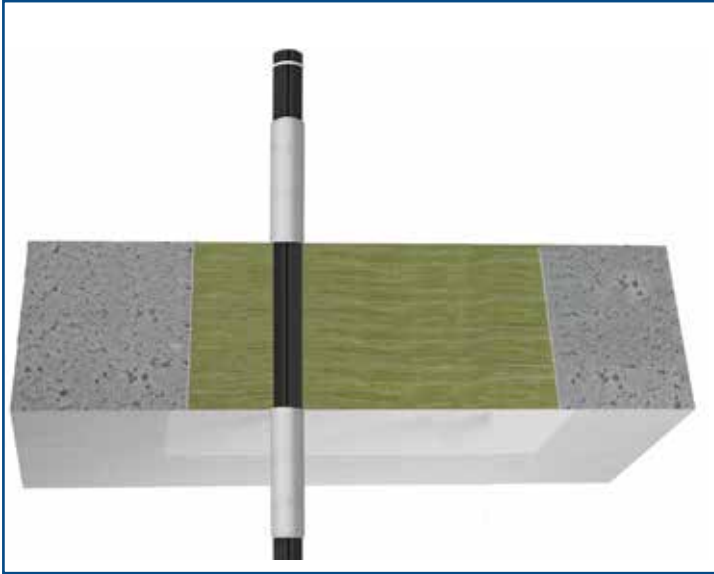
Measures for wall penetration seals (per side)

	Type	Dry coat thickness / wrap width [mm]	Length inside / in front of seal surface [mm]		Layers	Overlap [mm]	Steel-wire fixing (number)
			Inside	in front of			
Cable dia. ≤ 21 mm	PYRO-SAFE DG-CR 1,5 wrap	500	-	500	2	2 at 150 mm and 300 mm measured from penetration seal surface	
Cable bundle dia. ≤ 100 mm with cable dia. ≤ 21 mm							
Cable support structures							
Cable dia. > 21 mm to dia. ≤ 80 mm							

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## 6.2 Fire protection measures in floors



Measures for floor penetration seals (per side)							
	Type	Dry coat thickness / wrap width [mm]	Length inside / in front of seal surface [mm]		Layers	Overlap [mm]	Steel-wire fixing (number)
			Inside	in front of			
Cable dia. ≤ 21 mm	PYRO-SAFE DG-CR 1,5 wrap	500	-	500	2	2 at 150 mm and 300 mm measured from penetration seal surface	
Cable bundle dia. ≤ 100 mm with cable dia. ≤ 21 mm							
Cable support structures							
Cable dia. > 21 mm to dia. ≤ 80 mm							

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**Declaration of Performance**  
**N° 01155-PYRO-SAFE-FLAMMOTECT-A**  
**PYRO-SAFE FLAMMOTECT-A**

Date: 27.01.2015  
 Rev. 02  
 Page 1 of 1

*Unique identification code of the product type*  
**PYRO-SAFE FLAMMOTECT-A**

*Intended use:*  
**Ablative fire stopping product used in penetration seals**

*Producer*  
**svt Brandschutz Vertriebsgesellschaft mbH International**  
**Gluesinger Strasse 86**  
**D - 21217 Seevetal**  
**Germany**

*System for assessing and verifying constancy of performance*  
**System 1**

*European Assessment Document*  
**ETAG 026-2:2011-10-14**

*European Technical Assessment*  
**ETA-14/0418 of 04.12.2014**

*Technical Assessment Body*  
**Deutsches Institut für Bautechnik (DIBt), Berlin**

*The notified body*  
**Materialprüfanstalt für das Bauwesen Braunschweig, code number 0761**

*Declared performance*

Essential characteristics	Performance	Harmonised technical specification
Reaction to fire	<b>Class E</b>	EN 13501-1
Fire resistance	<b>Class EI 30</b> of a penetration seal (with mineral wool; see Annexes 1 and 17-22 of ETA-14/0418 for details)	EN 13501-2
	<b>Class EI 60</b> of a penetration seal (with mineral fibre board single-layer; see Annexes 1 and 2-6 of ETA-14/0418 for details)	
	<b>Class EI 60</b> of a penetration seal (with mineral wool; see Annexes 1 and 23-27 of ETA-14/0418 for details)	
	<b>Class EI 90</b> of a penetration seal (with mineral wool; see Annexes 1 and 28-32 of ETA-14/0418 for details)	
	<b>Class EI 90</b> of a penetration seal (without mineral wool; see Annexes 1 and 33 of ETA-14/0418 for details)	
	<b>Class EI 120</b> of a penetration seal (with mineral fibre boards double-layer; see Annexes 1 and 7-11 of ETA-14/0418 for details)	
	<b>Class EI 240</b> of a penetration seal (with mineral fibre boards quadruple-layer; see Annexes 1 and 12-16 of ETA-14/0418 for details)	
Emission of dangerous substances	no dangerous substances	ETAG 026-2
Durability and serviceability	Use category type X	EOTA TR 024

The performance of the product identified above is in conformity with the set of declared performances. This declaration of performance is issued, in accordance with Regulation (EU) No. 305/2011, under the sole responsibility of the manufacturer identified above

DoP online available at [www.svt.de](http://www.svt.de).

Signed for and on behalf of the manufacturer by:

i.V. Christian Meyer-Korte  
 Head of Product Management

i.V. Andree Schober  
 Head of chemical department