

System Flammotect 1 × 80 mm

Ablative mineral fibre board seal

Mixed penetration sealing system made of a single mineral fibre board (80 mm) with an ablative coating for electrical installations of all types as well as for electrical installation conduits, speedpipes and HVAC split line combinations.

Fire resistance class EI 90 (max. EI 120) in accordance with EN 13501-2 as per ETA-22/0052.



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1. Preliminary remarks / overview

1.1 Use of the instructions

The installation instructions are intended solely for personnel trained in fire protection.

Before starting work, read through these installation instructions completely. Pay particular attention to the following safety instructions.

The authorisation holder assumes no liability for damage caused by failure to comply with these instructions.


Pictorial representations serve as examples only. Installation results may differ in appearance.


Upon request, flamro will be pleased to provide the relevant legal and technical framework and manufacturer specifications for each individual case.


1.2 Safety instructions


Consult the respective safety information for the individual penetration seal components.

Personal protective equipment:


	Wear protective clothing and non-slip shoes.
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	Use safety goggles, safety glasses.
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	P2 particle filter in case of short-term or low level exposure. Use breathing protection in compliance with international/national standards.
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	Use chemically resistant gloves. Recommended materials: butyl rubber, nitrile rubber, fluorinated rubber, PVC.
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Safety instructions for the installation of floor penetration seals

	The area below the floor penetration seal must be cordoned off against entry during penetration seal work (barrier tape and warning sign: warning of possible falling objects, do not enter the area, penetration seal work in floor openings).
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	The contractor for the production of floor penetration seals must inform the client in writing (for forwarding to the client or appointed representative) that after the production of the fire penetration seals in floors, these must be secured on site against loads, in particular against being stepped on, by suitable measures (e.g. by fencing or by covering with grating).
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1.3 Building elements

Flexible walls with steel substructure

In stud design and double-sided cladding with at least 2 layers of 12.5 mm cement or gypsum-bound building boards with a reaction to fire of class A1 or A2 according to EN 13501-1.

The stud construction must be complemented by additional wall struts and transoms to form the aperture.

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

Flexible walls with wood substructure

In stud design and double-sided cladding with at least 2 layers of 12.5 mm cement or gypsum-bound building boards with a reaction to fire of class A1 or A2 according to EN 13501-1.

The distance between the opening and the studs and transoms must be ≥ 100 mm and the cavities between the cladding of the wall, studs and transoms and the aperture must be tightly sealed to a depth of ≥ 100 mm with mineral wool, reaction to fire class A1 or A2 according to EN 13501-1.

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

Cladding of the aperture in flexible walls

Alongside the aperture edge, corresponding to the wall cladding, with at least one layer of 12.5 mm cement or gypsum-bound building boards with a reaction to fire of class A1 or A2 in accordance with EN 13501-1.

Rigid walls

Made of concrete or reinforced concrete with a density of ≥ 450 kg/m³.

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

Rigid floors

Made of concrete, reinforced concrete or aerated concrete with a density of ≥ 550 kg/m³.







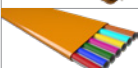
The floors must be classified for the required fire resistance rating in accordance with EN 13501-2.

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2. Allowed services

For specific fire resistance classes and pipe end configurations depending on measurements and fire protection measures see the respective chapters on design variants starting on page 10.

2.1 Cables / electrical installation conduits / speedpipes

Service		max. diameter [mm]	
	Cables	≤ 80	
	Cable bundles	≤ 100, Kabel-Ø ≤ 21	
	Cable trays	✓	
	Single conduits	made of plastic	≤ 16
		made of steel	≤ 16
	Electrical installation conduits made of plastic	single	≤ 63 with or without cables
		bundled	≤ 100, conduit Ø ≤ 25, with or without cables
	speedpipes	≤ 50, single Ø ≤ 14	

2.2 Other services

Service	Dimensions
 HVAC split line combinations	Copper pipe ≤ 2 × Ø 18 mm, + 9 mm PE foam, + 1 pipe made of PVC-U Ø ≤ 25.0 × 1.5 mm, + ≤ 3 × cables Ø ≤ 14.0 mm

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3. Thicknesses and spacing requirements

Dimensions		
	Wall [mm]	Floor [mm]
Thickness of building element	≥ 100	≥ 150
Thickness of penetration seal	≥ 80	≥ 80
Maximum dimensions of the aperture (width × height)	2000 × 600 / 600 × 2000	2000 × 600 / 10 000 × 490
Distance to other penetration seals	≥ 100	≥ 100
Distance to other apertures or installations	≥ 200	≥ 200

The total allowable cross section of the installations (outer dimensions) is ≤ 60% of the construction aperture.

3.1 Initial supports













Penetrating services must be supported at the distances specified in the table below. In wall constructions support is necessary on both sides. In floor constructions support is necessary on the upper side of the floor. Essential parts of the supports must be non-combustible.

Initial supports	Wall	Floor
Cables, cable bundles, cable support systems	≤ 250	≤ 250
Electrical installation conduits		
speedpipes for glass fibre cables and micro cables		
HVAC split line combinations		
All specifications in mm		

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4. Spacing requirements for services

All specifications refer to distances between the respective insulations and additional measures if applicable.

System Flammotect 1 × 80 mm, spacing distances in flexible walls, rigid walls and rigid floors										
								Aperture edge		
		Single cables	Cable bundles	Cable support systems	speedpipes	Electrical installation conduits made of plastic, single/bundled	HVAC split line combinations	Upper	Lower	Side
	Single cables	≥ 0	≥ 0	≥ 0	≥ 100	≥ 100	≥ 100	≥ 0		
	Cable bundles	≥ 0	≥ 0	≥ 0	≥ 100	≥ 100	≥ 100	≥ 0		
	Cable support systems	≥ 0	≥ 0	≥ 0 (horizontally) ≥ 50 (vertically)	≥ 100	≥ 100	≥ 100	≥ 0		
	speedpipes	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 20		
	Electrical installation conduits made of plastic, single/bundled	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 25		
	HVAC split line combinations	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 25		

All specifications in mm

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5. Included products



**FLAMMOTECT-A
Coating**

5 kg pail – Art. no. 01155132
12.5 kg pail – Art. no. 01155131



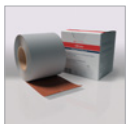
**FLAMMOTECT-A
Solid emulsion**

5 kg pail – Art. no. 01155121
12.5 kg pail – Art. no. 01155136



**FLAMMOTECT-A
Filler**

5 kg pail – Art. no. 01155135
12,5 kg pail – Art. no. 01155134
310 ml cartridge – Art. no. 01155115
600 ml flow pack – Art. no. 01155153



**NBR-plus
Fire protection wrap**

Roll, 5 m × 125 mm
(separable into 2 × 62.5 mm)
– Art. no. 0760150133
Roll, 10 m × 125 mm
(separable into 2 × 62.5 mm)
– Art. no. 01261941



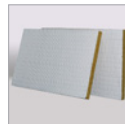
Mineral wool A1

Reaction to fire class in acc. with
EN 13501-1: A1
Melting point ≥ 1000 °C
10 kg bag – Art. no. 01183000



**Mineral fibre board
in acc. with EN 13162**

Criteria: Density ≥ 150 kg/m³
Reaction to fire class A1 in acc. with
EN 13501:1
Melting point ≥ 1000 °C.
(TR10) tensile strength vertical to board
surface ≥ 10 kPa according to EN 1607
Thickness ≥ 80 mm



Mineral fibre boards

pre-coated on both sides with
FLAMMOTECT-A
Dimensions 1000 × 600 × 80 mm
Box with 3 pcs. – Art. no. 01182185



Label

1 piece – Art. no. 14003

5.1 Declarations of Performance

The Declarations of Performance for the featured products are available for download on our website:

<https://flamro.com/eu/downloads>

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6. Design

6.1 Fire resistance classes

System Flammotect 1 × 80 mm meets the requirements of max. class EI 120 in acc. with EN 13501-2.

The fire resistance class of the sealing system is reduced to the fire resistance class of the installed service with the lowest fire resistance rating.

The fire resistance class of the sealing system is reduced to the maximum fire resistance class of the surrounding building element.

Building element	Fire resistance class
Flexible wall	max. EI 120
Rigid wall	max. EI 120
Rigid floor	max. EI 120

6.2 Pipe end configurations

Combustible pipes				
tested	included configurations			
	U/U	U/C	C/U	C/C
U/U	✓	✓	✓	✓
U/C	–	✓	–	✓
C/U	–	✓	✓	✓
C/C	–	–	–	✓

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7. Design variants

The sealing system may be used to close apertures without installations (reserve penetration for subsequent configurations).

Pieces of the mineral fibre boards must be coated with FLAMMOTECT-A so that they are glued together. The edges of the mineral fibre board and/or the aperture edge must be coated with FLAMMOTECT-A so that the board is glued to the building element.

Final coating of the outer board surface and a surrounding area of ≥ 20 mm with FLAMMOTECT-A (dry film thickness 1.0 mm).

Sealing of annular gap:

≤ 5 mm by filling the entire depth with FLAMMOTECT-A,

> 5 mm by filling with loose mineral wool and coating with FLAMMOTECT-A (dry film thickness ≥ 1 mm).

Design variants for flexible walls and rigid walls

--- = coated/glued with FLAMMOTECT-A (dry film thickness ≥ 1.0 mm)

All specifications in mm

Design variants for rigid floors

--- = coated/glued with FLAMMOTECT-A (dry film thickness ≥ 1.0 mm)

All specifications in mm

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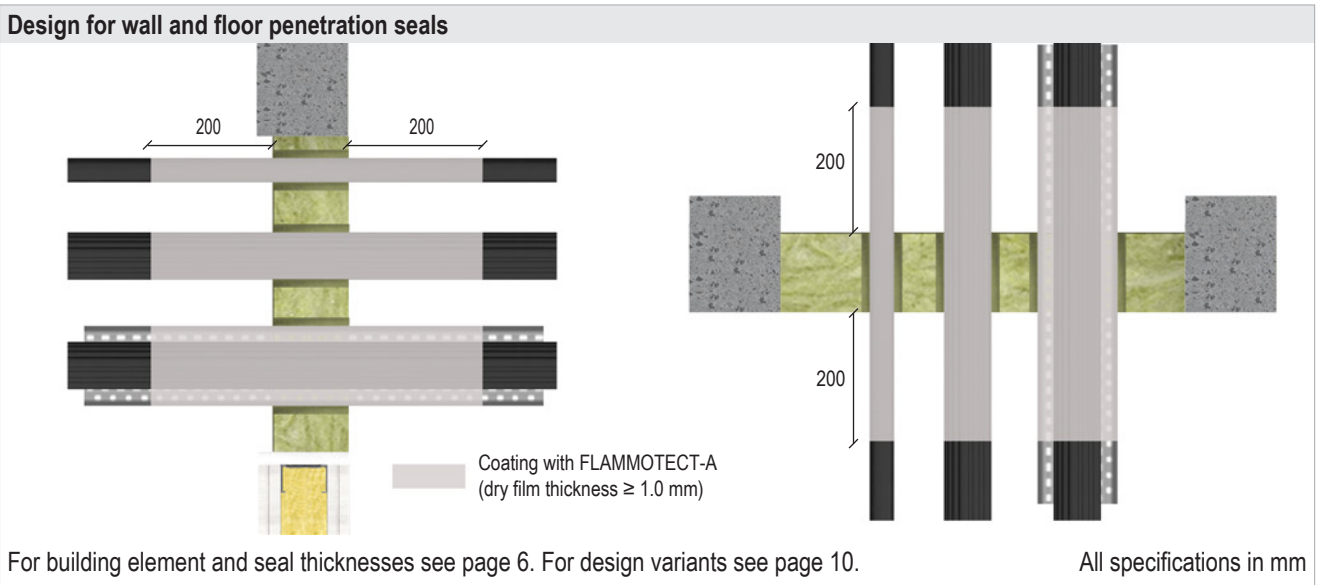
8. Fire protection measures

8.1 Cables / cable bundles / cable support systems

Cables and cable bundles may be installed with or without cable trays.

Cable bundles may be installed unopened in the seal. It is not necessary to fill the interstices if the bundles consist of parallel-running cables that are tightly packed, tied, stitched or welded together.

The supporting structures for cable trays must be designed in such a way that the penetration seal will not be subjected to additional mechanical stress in case of fire.



Services	Dimensions [mm]	Coating with FLAMMOTECT-A		Fire resistance class			
		Inside seal [mm]	In front of seal [mm]	Wall	Floor		
Cables	$\varnothing \leq 21$	80	≥ 200	EI 90 / E 120	EI 90 / E 120		
	$\varnothing > 21$ to ≤ 50			EI 90 / E 120	EI 90 / E 120		
	$\varnothing > 50$ to ≤ 80			EI 90 / E 120	EI 90 / E 120		
Cable bundles	$\varnothing \leq 100$ with cables $\varnothing \leq 21$			EI 90 / E 120	EI 90 / E 120		
Single conduits	steel $\varnothing \leq 16$					EI 90 U/C / E 120 U/C	-
	plastic $\varnothing \leq 16$					EI 120 U/U	EI 120 U/U

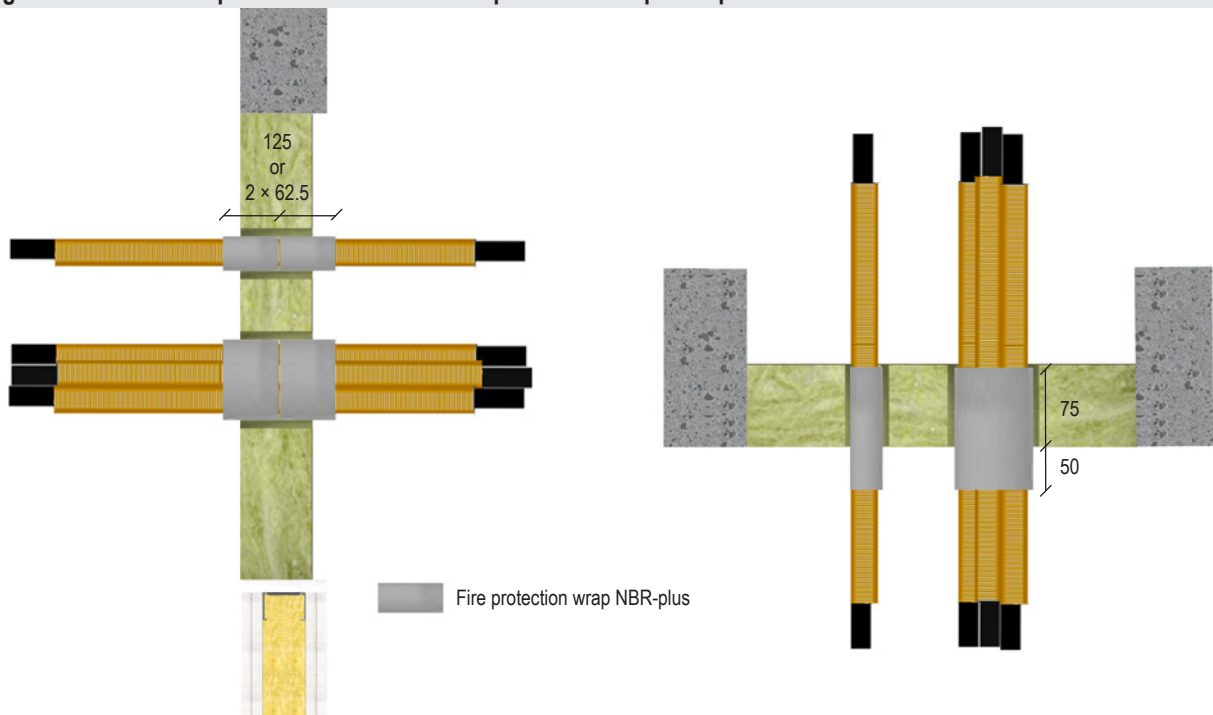
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8.2 Electrical installation conduits

It is possible to install both single and bundled electrical installation conduits with or without cables.

Electrical installation conduits must be wrapped with the fire protection wrap NBR-plus. The wrap must protrude 22.5 mm (± 5.0 mm) on both sides in walls and 50 mm (± 5.0 mm) on the lower side in floors. A wrap with a width of 125 mm or two wraps with a width of 62.5 mm each may be used. For easier installation the wrap can optionally be secured against falling out with duct tape or winding wire. In floors the wrap must be secured against falling out with winding wire.

Design for wall and floor penetration seals with fire protection wrap NBR-plus



For building element and seal thicknesses see page 6. For design variants see page 10.

All specifications in mm

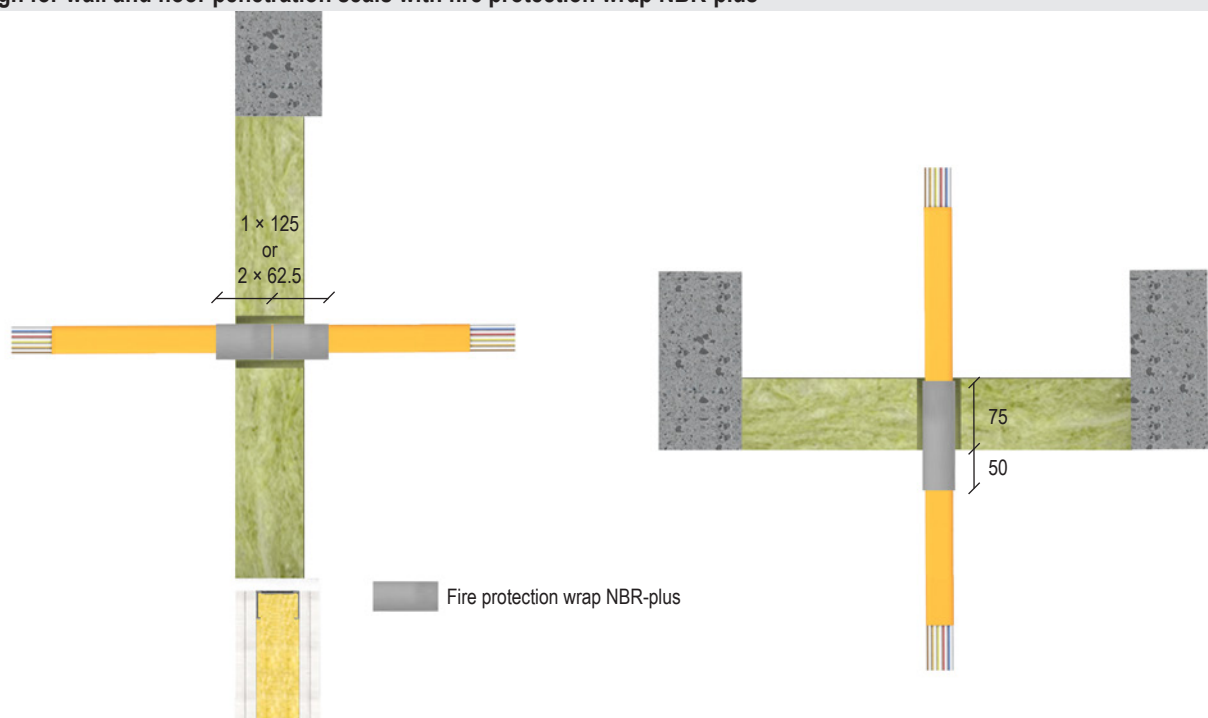
Services	Dimensions	Fire protection wrap NBR-plus		Fire resistance class	
		Number of wraps × width [mm]	Number of layers [n]	Wall	Floor
Conduits made of plastic, single	$\varnothing \leq 63$ (with/without cables $\varnothing \leq 21$)	1 × 125 or 2 × 62.5	2	EI 120 U/U	EI 90 U/U / E 120 U/U
Conduits made of plastic, bundled	$\varnothing \leq 100$ (single conduits $\varnothing \leq 25$, with/without cables $\varnothing \leq 14$)			EI 90 U/U / E 120 U/U	EI 90 U/U / E 120 U/U

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8.3 speedpipes

speedpipes must be wrapped with the fire protection wrap NBR-plus. The wrap must protrude 22.5 mm (± 5.0 mm) on both sides in walls and 50 mm (± 5.0 mm) on the the lower side in floors. A wrap with a width of 125 mm or two wraps with a width of 62.5 mm each may be used. For easier installation the wrap can optionally be secured against falling out with duct tape or winding wire. In floors the wrap must be secured against falling out with winding wire.

Design for wall and floor penetration seals with fire protection wrap NBR-plus



For building element and seal thicknesses see page 6. For design variants see page 10.

All specifications in mm

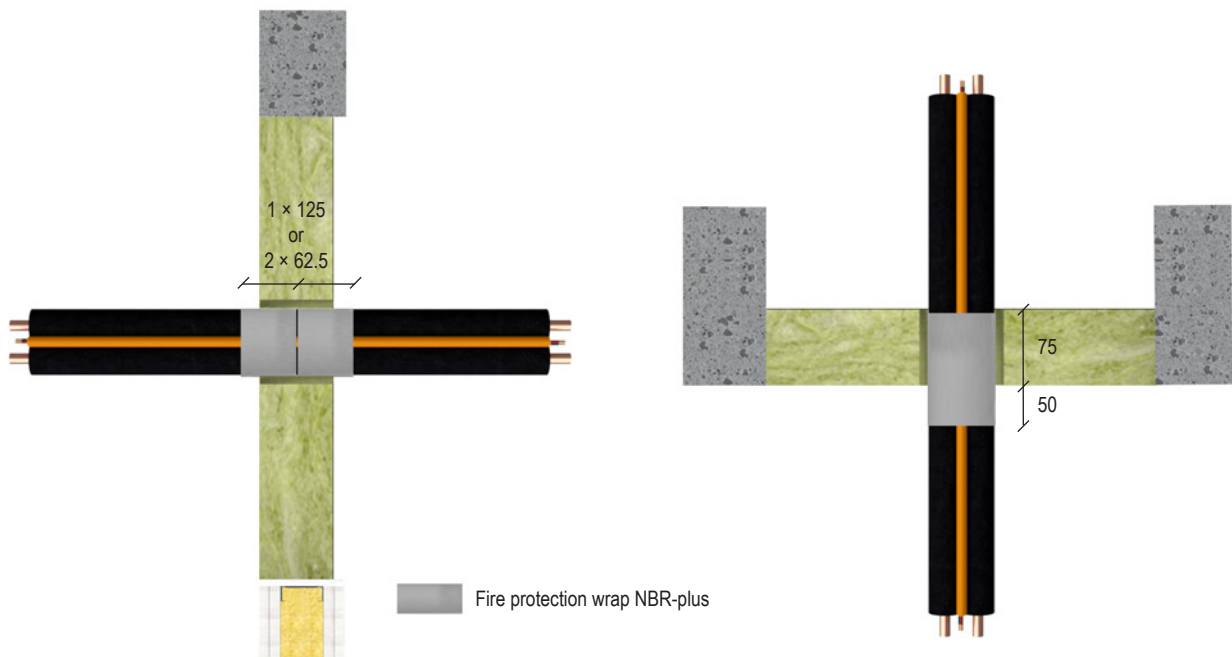
Configuration	Fire protection wrap NBR-plus		Fire resistance class	
	Number of wraps × width [mm]	Number of layers [n]	Wall	Floor
Bundle $\varnothing \leq 50$ mm Single $\varnothing \leq 14$ mm	1 × 125 or 2 × 62.5	1	EI 120 U/U	EI 120 U/U

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8.4 HVAC split line combinations

HVAC split line combinations must be wrapped with the fire protection wrap NBR-plus. The wrap must protrude 22.5 mm (± 5.0 mm) on both sides in walls and 50 mm (± 5.0 mm) on the the lower side in floors. A wrap with a width of 125 mm or two wraps with a width of 62.5 mm each may be used. For easier installation the wrap can optionally be secured against falling out with duct tape or winding wire. In floors the wrap must be secured against falling out with winding wire.

Design for wall and floor penetration seals with fire protection wrap NBR-plus



For building element and seal thicknesses see page 6. For design variants see page 10.

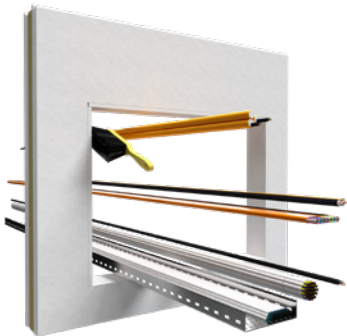
All specifications in mm

Configuration	Fire protection wrap NBR-plus		Fire resistance class	
	Number of wraps × width [mm]	Number of layers [n]	Wall	Floor
Copper pipe $\leq 2 \times \text{Ø } 18$ mm, + 9 mm PE foam, + 1 pipe PVC-U $\text{Ø} \leq 25.0 \times 1.5$ mm, + $\leq 3 \times$ cables $\text{Ø} \leq 14.0$ mm	1 × 125 or 2 × 62.5	2	EI 90 / E 120	EI 90 / E 120

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9. Installation steps

1. Clean the aperture edge. (The aperture edge must be cladded.)



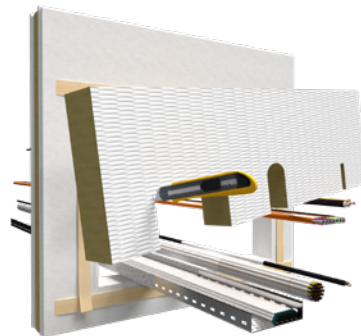
2. Mask the opening with crepe tape on all sides, keeping 20 mm distance to the edge. Coat the cables with FLAMMOTECT-A.



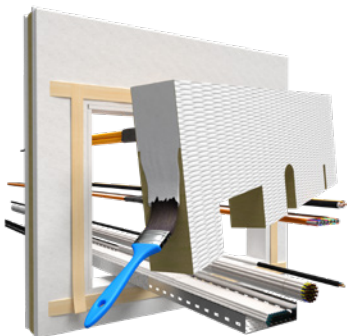
3. Wrap electrical installation conduits, speedpipes and HVAC split line combinations with NBR-plus.



4. Cut the mineral fibre board to size (make cut-outs for the installations).



5. Coat the edges of the mineral fibre boards with FLAMMOTECT-A and firmly place boards in position.



6. Seal the remaining aperture / joints with mineral fibre or fill them with FLAMMOTECT-A.

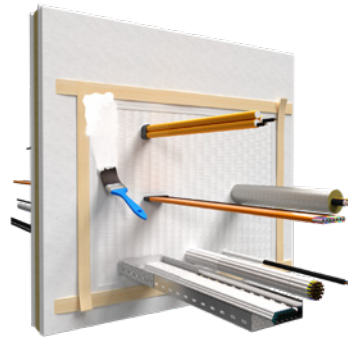


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7. Coat cables along the required length with FLAMMOTECT-A.



8. Final coating with FLAMMOTECT-A (dry film thickness ≥ 1.0 mm).



9. If required, label the penetration seal. Fill out the label neatly and attach it firmly next to/above (not on) the penetration seal.

