

PYRO-SAFE®

Flammotect double layer

Installation instructions

Mixed penetration sealing system made of mineral fibre boards and an ablative coating for electrical cables and lines of all types, electrical installation conduits, combustible/non-combustible pipes and other services.

Fire resistance class maximum EI 120 in accordance with EN 13501-2 and ETA-14/0418.





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1. Preliminary remarks / Overview

1.1 Target group





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

1.2 Use of the instructions



- Read through these installation instructions entirely before beginning work. Pay particular attention to the following safety instructions.
- The authorisation holder assumes no liability for damage caused by failure to comply with these instructions.
- Figures appear as examples only. Installation results may differ in appearance.
- Unless otherwise indicated, all lengths are in millimeters
- All information in this document corresponds to the current state of the art or the valid standard version at the time of preparation. Upon request, svt will gladly provide the relevant statutory and technical framework conditions or manufacturer's specifications for each individual case.
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- PYRO-SAFE® is a registered trademark of the svt group.

1.3 Safety instructions

- The safety data sheets must be used for advice when processing the fire protection compounds.
- Personal protective equipment:

	Wear protective clothing and non-slip shoes.
	Use protective goggles, wrap-around glasses.
	<p>In case of short-term or low-level exposure: P2 particle filter.</p> <p>In case of intensive or long-term exposure: use self-contained breathing apparatus.</p> <p>Only use respirators that comply with international/national standards.</p>
	<p>Use chemicals-resistant protective gloves.</p> <p>Recommended material: butyl rubber, nitrile rubber, fluoro rubber, PVC.</p>

Safety instructions for the installation of floor penetration seals

	<p>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!</p>
	<p>The company that is commissioned to install the floor penetration seals shall provide the client with written information (to be passed on to the owner or his authorised representative), pointing out that fire-resistant penetration seals in floors must be provided on site with adequate protection (e.g. barriers), or covered with grating to prevent them from being walked on after installation.</p>



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1.4 Scope

The PYRO-SAFE® Flammotect double layer mixed penetration sealing system in wall and floor openings is assessed and evaluated in accordance with ETAG 026-2 regarding the features „Reaction to fire“, „Fire resistance“, „Release of dangerous substances“ and „Durability and serviceability“

Reaction to fire

The ablative component „PYRO-SAFE® FLAMMOTECT-A“ is classified as E in accordance with EN 13501-1; the intumescent material „PYRO-SAFE® DG-CR“ is classified as C-s1, d0 in accordance with EN 13501-1; the mineral fibre boards „Hardrock 040“ and the mineral fibre mats „Klimarock“ are classified as A1; the pipe sleeves „ProRox PS 960“ are classified as A2-s1,d0 in accordance with EN 13501-1..

Fire resistance

„PYRO-SAFE® Flammotect double layer“ complies with requirements of max class EI 120 in accordance with EN 13501-2. The pipe end configuration -U/U covers also all other possible endings (C/U, U/C and C/C) in accordance with EN 13501-2. The pipe end configuration -U/C also covers the configuration -C/C in accordance with EN 13501-2. The -U/C configuration is also valid for -C/U and -C/C in accordance with EN 13501-2.

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

Release of dangerous substances

None

Durability and serviceability

The ablative „PYRO-SAFE® FLAMMOTECT-A“ component and the intumescent material „PYRO-SAFE® DG-CR“ fulfill the type X in accordance with EOTA TR 024. The PYRO-SAFE® Flammotect - double layer system can be subjected to the conditions of inside rooms with and without exposure to moisture or atmospheric conditions, without substantial changes to the fire protection characteristics being expected.



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1.5 Structural elements

Plasterboard walls with steel frame

In studworks and double-sided lining with at least 2 layers of 12.5 mm thick cement or gypsum-based building slabs with a fire performance of Class A1 or A2 in accordance with EN 13501-1.

The wall structure shall be complemented by additional wall struts and bars to form the edge of the opening.

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

Plasterboard walls with wood frame

In studworks and double-sided lining with at least 2 layers of 12.5 mm thick cement or gypsum-based building slabs with a fire performance of Class A1 or A2 in accordance with EN 13501-1.

The distance from the opening to the struts and bars shall be ≥ 100 mm and the hollow spaces between the linings of the wall, the struts and bars as well as the opening edge shall be stuffed down to a depth of ≥ 100 mm with mineral-wool, fire resistance Class A1 or A2 in accordance with EN 13501 -1. The walls shall be classified with the required fire resistance rating in accordance with EN 13501-2.

Lining of opening edge for plasterboard

Alongside the opening edge, there shall be at least two layers of 12.5 mm thick concrete or gypsum based slabs with a fire reaction class A1 or A2 according to EN 13501-1.

Solid walls

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

The walls shall be classified for the desired fire resistance time in accordance with EN 13501-2.

Solid floors

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

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



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1.6 Fire resistance classes

Fire resistance classes					
	Measure	Wall		Floor	
		Fire resistance classes	Source*	Fire resistance classes	Source*
Cables, cable bundles and cable trays with coating "PYRO-SAFE® FLAMMOTECT-A"					
Cable-Ø ≤ 21 mm through boreholes	≥ 230 mm, DFT ≥ 1 mm	EI 120	1	-	
Cable-Ø ≤ 21 mm	≥ 100 mm, DFT ≥ 1 mm	EI 120	1	-	
	≥ 250 mm, DFT ≥ 1 mm	-		EI 120	1
Cable-Ø ≤ 50 mm	≥ 200 mm, DFT ≥ 2 mm	EI 120	1	-	
	≥ 250 mm, DFT ≥ 2 mm	-		EI 120	1
Cable-Ø ≤ 80 mm	≥ 250 mm, DFT ≥ 2 mm	EI 120	1	EI 120	1
Cable bundle-Ø ≤ 100 mm	≥ 100 mm, DFT ≥ 1 mm	EI 120	1	-	
	≥ 250 mm, DFT ≥ 1 mm	-		EI 120	1
Cables, cable bundles and cable trays with fire protection wrap "PYRO-SAFE® DG-CR 1.5" – Wrap width 200 mm					
Cable-Ø ≤ 21 mm through boreholes	2x 2-layer, 45-60 mm overlap	EI 120	1, 2	EI 120	3
Cable-Ø ≤ 80 mm	2x 2-layer, 45-60 mm overlap	EI 120	1, 2	EI 120	1, 3
Cable bundle-Ø ≤ 100 mm	2x 2-layer, 45-60 mm overlap	EI 120	1	EI 120	1, 3
Electrical installation conduits with fire protection wrap "PYRO-SAFE® DG-CR 1.5" – Wrap width 125 mm					
EIC single-Ø ≤ 32 mm	2x 2-layer	EI 90 U/U	4	EI 90 U/U	4
	2x 3-layer	EI 120 U/U	1	-	
EIC bundled-Ø ≤ 100 mm	2x 2-layer	EI 90 U/U	4	EI 90 U/U	4
	2x 3-layer	EI 120 U/U	1	-	
"Speed pipes" bundled or single, with/without glass fibre cable, with fire protection wrap "PYRO-SAFE® DG-CR 1.5" – Wrap width 125 mm					
max. 24 pcs. outside pipe-Ø ≤ 7 max. 7 pcs. outside pipe-Ø ≤ 10 max. 5 pcs. outside pipe-Ø ≤ 12	2x 2-layer	EI 120 U/C	1	-	
Combustible pipes made of PVC-U with intumescent wrap "PYRO-SAFE® DG-CR BS" – Wrap width 100 mm					
Outside pipe-Ø ≤ 50 mm	2x 1-layer	EI 120 U/U	1	EI 120 U/U	1
Outside pipe-Ø ≤ 80 mm	2x 2-layer	EI 120 U/U	1	EI 120 U/U	1
Outside pipe-Ø ≤ 110 mm	2x 3-layer	EI 120 U/U	1	EI 120 U/U	1
Outside pipe-Ø ≤ 160 mm	2x 4-layer	EI 120 U/C	1	EI 120 U/C	1
Combustible pipes made of PE-100 with intumescent wrap "PYRO-SAFE® DG-CR BS" – Wrap width 100 mm					
Outside pipe-Ø ≤ 50 mm	2x 1-layer	EI 120 U/U	1	EI 120 U/U	1
Outside pipe-Ø ≤ 80 mm	2x 2-layer	EI 120 U/U	1	EI 120 U/U	1
Outside pipe-Ø ≤ 110 mm	2x 3-layer	EI 120 U/U	1	EI 120 U/U	1
Outside pipe-Ø ≤ 160 mm	2x 4-layer	EI 120 U/C	1	EI 90 U/C	1
Combustible pipes made of PP-H with intumescent wrap "PYRO-SAFE® DG-CR BS" – Wrap width 100 mm					
Outside pipe-Ø ≤ 50 mm	2x 1-layer	EI 120 U/U	1	EI 90 U/U	1
Outside pipe-Ø ≤ 80 mm	2x 2-layer	EI 120 U/U	1	EI 90 U/U	1
Outside pipe-Ø ≤ 110 mm	2x 3-layer	EI 120 U/U	1	EI 90 U/U	1
Outside pipe-Ø ≤ 160 mm	2x 4-layer	EI 120 U/C	1	EI 90 U/C	1
Multilayer pipes "HENCO pipes" with non-combustible insulation made of mineral fibre "Lamella mat"					
Outside pipe-Ø ≤ 32 mm	≥ 250 mm x ≥ 20 mm	EI 120 U/C	1	-	
	≥ 500 mm x ≥ 20 mm	-		EI 120 U/C	1
Outside pipe-Ø ≤ 63 mm	≥ 250 mm x ≥ 30 mm	EI 120 U/C	1	-	
	≥ 500 mm x ≥ 30 mm	-		EI 120 U/C	1

*Classification report no.: 1 → KB 02417/14/Z00NP, 2 → KB 3.2/12-107-2, 3 → KB 3.2/12-157-2, 4 → 00924.1/15/Z00NP 5 → GS 01699/16/Z00NZP



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Fire resistance classes					
	Measure	Wall		Floor	
		Fire resistance classes	Source*	Feuerwiderstandsklasse	Source*
Multilayer pipes "HENCO pipes" with combustible insulation "Armaflex Protect"					
Outside pipe-Ø ≤ 12 mm	≥ 240 mm x 13 mm	EI 120 U/C	1	EI 120 U/C	1
Outside pipe-Ø ≤ 63 mm	≥ 240 mm x 26 mm (2 x 13 mm)	EI 120 U/C	1	EI 120 U/C	1
Multilayer pipes "HENCO pipes" with PE foam insulation with intumescent wrap "PYRO-SAFE® DG-CR BS" – Wrap width 100 mm					
Outside pipe-Ø ≤ 14 mm, insulation thickness 6 mm	2x 1-layer, 25 mm overlap + lamella mat ≥ 250 mm x ≥ 20 mm	EI 120 U/C	1	EI 120 U/C	1
Outside pipe-Ø ≤ 26 mm, insulation thickness 13 mm	2x 1-layer, 25 mm overlap + lamella mat ≥ 250 mm x ≥ 20 mm	EI 120 U/C	1	EI 120 U/C	1
Outside pipe-Ø ≤ 32 mm, insulation thickness 6-10 mm	2x 1-layer, 25 mm overlap + lamella mat ≥ 250 mm x ≥ 20 mm	EI 120 U/C	1	EI 120 U/C	1
Non-combustible pipes made of copper, steel, stainless steel or cast iron with non-combustible insulation "Lamella mat"					
Outside pipe-Ø ≤ 15.0 mm	≥ 250 mm x ≥ 20 mm	EI 120 C/U	1	-	
Outside pipe-Ø ≤ 28.0 mm	≥ 500 mm x ≥ 20 mm	EI 120 C/U	1	EI 120 C/U	1
Outside pipe-Ø ≤ 42.0 mm	≥ 500 mm x ≥ 30 mm	EI 120 C/U	1	EI 120 C/U	1
Outside pipe-Ø ≤ 54.0 mm	≥ 750 mm x ≥ 40 mm + lamella mat ≥ 500 mm x ≥ 30 mm	EI 120 C/U	1	EI 120 C/U	1
	≥ 750 mm x ≥ 30 mm + lamella mat ≥ 500 mm x ≥ 30 mm	-		EI 120 C/U	1
Outside pipe-Ø ≤ 88.9 mm	≥ 750 mm x ≥ 40 mm + lamella mat ≥ 500 mm x ≥ 30 mm	EI 120 C/U	1	EI 120 C/U	1
	≥ 1000 mm x ≥ 30 mm + lamella mat ≥ 500 mm x ≥ 30 mm	EI 120 C/U	1	EI 120 C/U	1
Outside pipe-Ø ≤ 108.0 mm	≥ 1000 mm x ≥ 30 mm + lamella mat ≥ 500 mm x ≥ 30 mm	EI 120 C/U	1	EI 120 C/U	1
Non-combustible pipes made of steel, stainless steel or cast iron with non-combustible insulation "Lamella mat"					
Outside pipe-Ø ≤ 114.3 mm	≥ 1000 mm x ≥ 30 mm + lamella mat ≥ 500 mm x ≥ 30 mm	EI 120 C/U	1	EI 120 C/U	1
Outside pipe-Ø ≤ 170.0 mm	≥ 1000 mm x ≥ 40 mm + lamella mat ≥ 500 mm x ≥ 60 mm	EI 120 C/U	1	EI 120 C/U	1
	≥ 1000 mm x ≥ 60 mm + lamella mat ≥ 500 mm x ≥ 30 mm	EI 120 C/U	1	-	
Outside pipe-Ø ≤ 323.9 mm	≥ 1250 mm x ≥ 60 mm + lamella mat ≥ 1000 mm x ≥ 60 mm	-		EI 120 C/U	1
Non-combustible pipes made of copper, steel, stainless steel or cast iron with non-combustible insulation "ProRox PS 960"					
Outside pipe-Ø ≤ 22.0 mm	≥ 1000 mm x ≥ 30 mm	EI 90 / E 120 C/U	2	-	
	≥ 1000 mm x ≥ 40 mm + lamella mat ≥ 500 mm x ≥ 30 mm	-		EI 120 C/U	3
Outside pipe-Ø ≤ 54.0 mm	≥ 1000 mm x ≥ 40 mm	EI 90 / E 120 C/U	2	-	
	≥ 1000 mm x ≥ 40 mm + lamella mat ≥ 500 mm x ≥ 30 mm	-		EI 120 C/U	3
Outside pipe-Ø ≤ 88.9 mm	≥ 1000 mm x ≥ 40 mm	EI 60 / E 120 C/U	2	-	
	≥ 1000 mm x ≥ 40 mm + lamella mat ≥ 500 mm x ≥ 30 mm	-		EI 120 C/U	3
Non-combustible pipes made of steel, stainless steel or cast iron with non-combustible insulation "ProRox PS 960"					
Outside pipe-Ø ≤ 170.0 mm	≥ 1000 mm x ≥ 40 mm	EI 60 / E 120 C/U	2	-	
	≥ 1000 mm x ≥ 40 mm + lamella mat ≥ 500 mm x ≥ 30 mm	-		EI 120 C/U	3

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Fire resistance classes					
	Measure	Wall		Floor	
		Fire resistance classes	Source*	Feuerwiderstandsklasse	Source*
Non-combustible pipes made of copper, steel, stainless steel or cast iron with combustible insulation „NH/Armaflex“ with fire protection wrap „PYRO-SAFE® DG-CR 1.5“ – Wrap width 125 mm					
Outside pipe-Ø ≤ 10.0 mm	≥ 500 mm x 9 - 19 mm + wrap 2x 1-layer + Lamella mat ≥ 250 mm x ≥ 20 mm	EI 120 C/U	1	EI 120 U/C	1
Outside pipe-Ø ≤ 15.0 mm	≥ 750 mm x 9 - 25 mm + wrap 2x 1-layer + lamella mat ≥ 250 mm x ≥ 20 mm	EI 90 / E 120 C/U	1	EI 120 U/C	1
	≥ 750 mm x 9 - 19 mm + Armaflex Protect ≥ 250 mm x 13 mm	EI 120 C/U	1	EI 120 U/C	1
Outside pipe-Ø ≤ 28.0 mm	Continuous insulation x 9 - 50 mm + wrap 2x 1-layer + lamella mat ≥ 250 mm x ≥ 20 mm	EI 120 C/U	5	-	
	≥ 750 mm x 9 - 25 mm + wrap 2x 1-layer + lamella mat ≥ 250 mm x ≥ 20 mm	EI 90 / E 120 C/U	1	EI 120 U/C	1
	Continuous insulation x 10 - 50 mm + wrap 2x 1-layer + lamella mat ≥ 250 mm x ≥ 20 mm	EI 120 C/U	5	-	
Outside pipe-Ø ≤ 42.0 mm	Continuous insulation x 89 mm + wrap 2x 1-layer + lamella mat ≥ 500 mm x ≥ 40 mm	EI 120 C/U	5	-	
	≥ 750 mm x 10 - 50 mm + wrap 2x 1-layer + lamella mat ≥ 250 mm x ≥ 20 mm	EI 120 C/U	1	EI 120 U/C	1
	≥ 750 mm x 10 - 50 mm + wrap 2x 1-layer + Armaflex layer ≥ 250 mm x 2 x 13 mm	EI 120 C/U	1	EI 120 U/C	1
Outside pipe-Ø ≤ 54.0 mm	Continuous insulation x 89 mm + wrap 2x 1-layer + lamella mat ≥ 500 mm x ≥ 40 mm	EI 120 C/U	5	-	
	≥ 1000 mm x 25 mm + wrap 2x 1-layer + lamella mat ≥ 250 mm x ≥ 20 mm	EI 90 / E 120 C/U	1	EI 120 U/C	1
	Continuous insulation x 25 mm + wrap 2x 1-layer + lamella mat ≥ 250 mm x ≥ 20 mm	EI 120 C/U	5	-	
	≥ 1000 mm x 29 - 57 mm + wrap 2x 1-layer + lamella mat ≥ 500 mm x ≥ 30 mm	EI 90 C/U	4	-	
Outside pipe-Ø ≤ 88.9 mm	Continuous insulation x 89 mm + wrap 2x 1-layer + lamella mat ≥ 500 mm x ≥ 40 mm	EI 120 C/U	5	-	
	≥ 1000 mm x 25 mm + wrap 2x 1-layer + lamella mat ≥ 250 mm x ≥ 40 mm	-		EI 90 U/C	1
	≥ 1000 mm x 89 mm + wrap 2x 1-layer + lamella mat ≥ 250 mm x ≥ 40 mm	-		EI 90 U/C	1
	≥ 1000 mm x 25 - 89 mm + wrap 2x 2-layer + lamella mat ≥ 500 mm x ≥ 30 mm	EI 90 C/U	4	-	
	Continuous insulation x 89 mm + wrap 2x 1-layer + lamella mat ≥ 500 mm x ≥ 40 mm	EI 120 C/U	5	-	
Outside pipe-Ø ≤ 108.0 mm	≥ 1000 mm x 57 mm + wrap 2x 2-layer + lamella mat ≥ 750 mm x ≥ 40 mm	EI 90 C/U	4	-	
	≥ 1000 mm x 57 mm + wrap 1x 2-layer + lamella mat ≥ 1000 mm x ≥ 40 mm	-		EI 90 C/U	4
Non-combustible pipes made of steel, stainless steel or cast iron with combustible insulation „NH/Armaflex“ with fire protection wrap „PYRO-SAFE® DG-CR 1.5“ – Wrap width 125 mm					
Outside pipe-Ø ≤ 170.0 mm	≥ 1000 mm x 50-89 mm + wrap 2x 1-layer + lamella mat ≥ 750 mm x ≥ 60 mm	EI 120 C/U	1	EI 90 U/C	1

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Fire resistance classes					
	Measure	Wall		Floor	
		Fire resistance classes	Source*	Fire resistance classes	Source*
Non-combustible pipes made of copper, steel, stainless steel or cast iron with combustible insulation „Kaiflex ST“ with fire protection wrap „PYRO-SAFE® DG-CR 1.5“ – Wrap width 125 mm					
Outside pipe-Ø ≤ 8.0 mm	≥ 2000 mm x 9 - 18 mm + wrap 2x 1-layer	EI 120 C/U	2	EI 120 C/U	3
Outside pipe-Ø ≤ 22.0 mm	≥ 2000 mm x 32 mm + wrap 2x 2-layer	EI 120 C/U	2	-	
Outside pipe-Ø ≤ 88.9 mm	≥ 2000 mm x 9 - 32 mm + wrap 2x 2-layer + lamella mat ≥ 500 mm x ≥ 30 mm	-		EI 120 C/U	3
	≥ 2000 mm x 32 mm + wrap 2x 2-layer + lamella mat ≥ 500 mm x ≥ 30 mm	EI 120 C/U	2	-	
Non-combustible pipes made of steel, stainless steel or cast iron with combustible insulation „Kaiflex ST“ with fire protection wrap „PYRO-SAFE® DG-CR 1.5“ – Wrap width 125 mm					
Outside pipe-Ø ≤ 170.0 mm	≥ 2000 mm x 10 - 32 mm + wrap 2x 2-layer + lamella mat ≥ 500 mm x ≥ 30 mm	EI 90 / E 120 C/U	2	EI 90 / E 120 C/U	3
Non-combustible pipes made of copper, steel, stainless steel or cast iron with combustible insulation „Armaflex Protect“					
Outside pipe-Ø ≤ 8,0 mm	≥ 1000 mm x 16 mm	-		EI 120 C/U	3
Outside pipe-Ø ≤ 10,0 mm	≥ 1000 mm x 16 mm	EI 120 C/U	2	-	
Outside pipe-Ø ≤ 15,0 mm	≥ 1000 mm x 19 mm	EI 90 / E 120 C/U	2	EI 120 C/U	3
Outside pipe-Ø ≤ 22,0 mm	≥ 1000 mm x 20 mm	EI 120 C/U	2	EI 120 C/U	3
Outside pipe-Ø ≤ 28,0 mm	≥ 1000 mm x 25 mm	EI 60 / E 120 C/U	2	EI 120 C/U	3
Outside pipe-Ø ≤ 35,0 mm	≥ 1000 mm x 25 mm	EI 90 / E 120 C/U	2	EI 120 C/U	3
Outside pipe-Ø ≤ 54,0 mm	≥ 1000 mm x 25 mm	EI 90 / E 120 C/U	2	EI 90 / E 120 C/U	3
Outside pipe-Ø ≤ 88,9 mm	≥ 1000 mm x 25 mm	EI 60 / E 120 C/U	2	EI 60 / E 120 C/U	3
Non-combustible pipes made of steel, stainless steel or cast iron with combustible insulation „Armaflex Protect“					
Outside pipe-Ø ≤ 170,0 mm	≥ 1000 mm x 26 mm (2x 13 mm)	EI 90 / E 120 C/U	2	EI 90 / E 120 C/U	3

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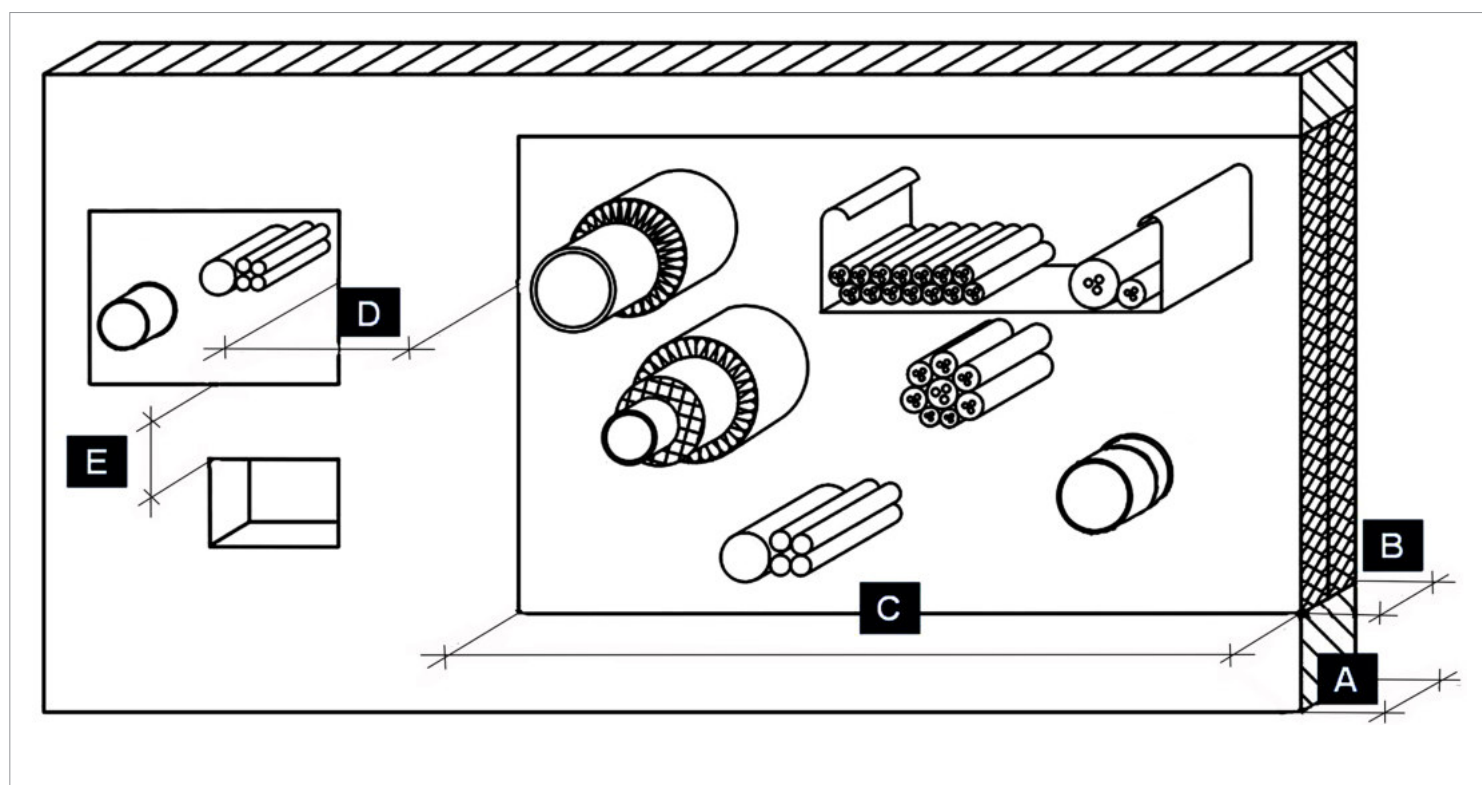
Fire resistance classes					
	Measure	Wall		Floor	
		Fire resistance classes	Source*	Fire resistance classes	Source*
HVAC split line combinations with fire protection wrap „PYRO-SAFE® DG-CR 1.5“ – Wrap width 125 mm					
Double (6-10/6-18 mm) or single copper pipe (6-22 mm) + PE-HD pipe ≤ 25 mm + max. 5 sheathed lines ≤ 21 mm	2x 1-layer + lamella mat ≥ 250 mm x ≥ 30 mm	EI 120 U/U	1	-	
Double- (6-22/8-22 mm) single copper pipe (6-22 mm) + PE-HD pipe ≤ 25 mm + max. 4 sheathed lines ≤ 21 mm	1x 2-layer + lamella mat ≥ 250 mm x ≥ 30 mm	-		EI 90 C/U	4
Double solar pipes „NanoSUN²⁴“ with fire protection wrap „PYRO-SAFE® DG-CR 1.5“ – Wrap width 125 mm					
≤ DN 25	2x 1-layer	EI 120 C/U	2	-	
	-	-		EI 120 C/U	3
≤ DN 40	2x 1-layer, 25 mm overlap	EI 60 / E 120 U/U	1	-	
	2x 1-layer, 25 mm overlap + lamella mat ≥ 250 mm x ≥ 30 mm	EI 120 U/U	1	-	
	-	-		EI 120 C/U	3

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1.7 Field of application (Dimensions)

Dimensions				
Item.	Name	Wall [mm]	Floor [mm]	
A	Thickness of structural element	≥ 100	≥ 150	
B	Thickness of penetration seal	≥ 120	≥ 150	
C	Maximum dimensions of the opening (width x height)	1.400 x 2.000	1.400 x 2.000	
D	Distance from other openings or installations	≥ 200	≥ 200	
E	Reduced distance from neighbouring openings for penetration seals, if both openings are ≤ 400 mm x 400 mm	≥ 100	≥ 100	






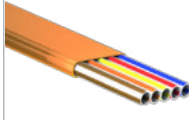


The total allowable cross section of the installations (Outer dimensions) is ≤ 60% of the construction opening!


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2. Allowed services

2.1 Cables / cable bundles / cable supports / electrical installation conduits / PE lines


	<p>Electrical cables and lines of all types (including optical fibre cables)</p> <p>overall cross-section of individual cable up to $\varnothing \leq 80$ mm</p>		<p>Electrical installation conduits, single made of plastic.</p> <p>Outer $\varnothing \leq 32$ mm, with/without cable assignment $\varnothing \leq 21$ mm.</p>												
	<p>Cable bundles</p> <p>up to $\varnothing \leq 100$ mm with cables up to $\varnothing \leq 21$ mm. No filling needed for tightly compressed and tied bundles.</p>		<p>Electrical installation conduits, bundled made of plastic.</p> <p>Outside $\varnothing \leq 100$ mm with individual conduits with a maximum $\varnothing \leq 32$ mm, with and without cable assignment, Individual cable $\varnothing \leq 21$ mm.</p>												
	<p>Cable support constructions</p> <p>Cable ducts and trays made of steel, with organic coating if applicable, as long as the fire reaction class complies at least with class A2 according to EN 13501-1.</p>		<p>PE lines „speed pipes“ (for glass fibre cables and micro cables)</p> <p>from Gabocom Systemtechnik GmbH, bundled or individual, with/without glass fibre cable.</p> <table border="1" data-bbox="1010 1016 1554 1198"> <thead> <tr> <th>Outside pipe-\varnothing [mm]</th> <th>Max. qty. [pcs.]</th> <th>Thickness of pipe wall [mm]</th> </tr> </thead> <tbody> <tr> <td>≤ 7</td> <td>24</td> <td>$\leq 1,5$</td> </tr> <tr> <td>≤ 10</td> <td>7</td> <td>$\leq 2,0$</td> </tr> <tr> <td>≤ 12</td> <td>5</td> <td>$\leq 2,0$</td> </tr> </tbody> </table>	Outside pipe- \varnothing [mm]	Max. qty. [pcs.]	Thickness of pipe wall [mm]	≤ 7	24	$\leq 1,5$	≤ 10	7	$\leq 2,0$	≤ 12	5	$\leq 2,0$
Outside pipe- \varnothing [mm]	Max. qty. [pcs.]	Thickness of pipe wall [mm]													
≤ 7	24	$\leq 1,5$													
≤ 10	7	$\leq 2,0$													
≤ 12	5	$\leq 2,0$													

2.2 Combustible pipes


	<p>Combustible pipes</p> <p>With fire protection wrap PYRO-SAFE® DG-CR BS up to an outside $\varnothing \leq 160$ mm for ventilated sewer pipes and closed piping systems. Circulation of non-combustible liquids and gases allowed (except ventilation lines).</p>					
<p style="text-align: center;">PVC-U, PVC-C</p>		<p style="text-align: center;">PP-H</p>		<p style="text-align: center;">PE 100</p>		
<p>Standards: EN 1329-1, EN 1453-1, EN 1542-1, EN 15493, DIN 8061/8062, EN 1566-1</p>		<p>Standards: EN 1555-2, EN 12201-2+A1, DIN 8074/8075, EN 15874, DIN 8077/8078</p>		<p>Standards: EN 1555-2, EN 12201-2+A1, DIN 8074/8075</p>		
<p style="text-align: center;">Outside pipe-\varnothing [mm]</p>	<p style="text-align: center;">Wall thickness [mm]</p>	<p style="text-align: center;">Outside pipe-\varnothing [mm]</p>	<p style="text-align: center;">Wall thickness [mm]</p>	<p style="text-align: center;">Outside pipe-\varnothing [mm]</p>	<p style="text-align: center;">Wall thickness [mm]</p>	
<p style="text-align: center;">≤ 50</p>	<p style="text-align: center;">1,8 - 3,7</p>	<p style="text-align: center;">≤ 50</p>	<p style="text-align: center;">1,8 - 4,6</p>	<p style="text-align: center;">≤ 50</p>	<p style="text-align: center;">1,8 - 4,8</p>	
<p style="text-align: center;">≤ 80</p>	<p style="text-align: center;">1,9 - 6,0</p>	<p style="text-align: center;">≤ 80</p>	<p style="text-align: center;">2,0 - 7,3</p>	<p style="text-align: center;">≤ 80</p>	<p style="text-align: center;">2,0 - 7,3</p>	
<p style="text-align: center;">≤ 110</p>	<p style="text-align: center;">2,1 - 8,2</p>	<p style="text-align: center;">≤ 110</p>	<p style="text-align: center;">2,4 - 10,0</p>	<p style="text-align: center;">≤ 110</p>	<p style="text-align: center;">2,4 - 10,0</p>	
<p style="text-align: center;">≤ 160</p>	<p style="text-align: center;">2,4 - 11,9</p>	<p style="text-align: center;">≤ 160</p>	<p style="text-align: center;">3,0 - 9,1</p>	<p style="text-align: center;">≤ 160</p>	<p style="text-align: center;">3,0 - 9,5</p>	

PYRO-SAFE® Flammotect double layer

2.3 Multilayer pipes „HENCO pipes“

	Multilayer pipes „HENCO pipes“	
	Pipes in a multi-layered network and cross-linked PE (PE-Xc/Al/PE Xc) by HENCO with an outside-Ø ≤ 63.0 mm	
	Without PE foam insulation	
	Outside pipe-Ø [mm]	Wall thickness [mm]
	≤ 12	1,6
	≤ 32	3,0
	≤ 63	4,5
	With PE foam insulation	
	Outside pipe-Ø [mm]	Wall thickness [mm]
≤ 14	2,0	
≤ 32	3,0	

2.4 Non-combustible pipes

	Non-combustible pipes Pipes made of copper, steel, stainless steel or cast iron		Wall thickness [mm]
	Pipe material / insulation	Outside-Ø [mm]	Min. / max.
	Copper with non-combustible insulation made of mineral fibre, e.g. „Klimarock“	≤ 108,0	0,8 - 2,5
	Steel, stainless steel, cast iron with non-combustible insulation made of mineral fibre, e.g. „Klimarock“	≤ 323,9*	2,9 - 7,1
	Copper with non-combustible insulation made of mineral fibre "ProRox PS 960"	≤ 88,9	1,0 - 2,0
	Steel, stainless steel, cast iron with non-combustible insulation made of mineral fibre "ProRox PS 960"	≤ 170,0	3,0
	Copper with combustible insulation „Armaflex Protect“	≤ 88,9	1,0 - 2,0
	Copper with combustible insulation "NH/Armaflex"	≤ 108,0	0,8 - 2,9
	Copper with combustible insulation "Kaiflex ST"	≤ 88,9	1,0 - 2,0
	Steel, stainless steel, cast iron with combustible insulation "Armaflex Protect"	≤ 170,0	3,0
	Steel, stainless steel, cast iron with combustible insulation "NH/Armaflex"		2,9
	Steel, stainless steel, cast iron with combustible insulation "Kaiflex ST"		3,0

* In walls up to outside-Ø 170.0 mm

The penetration seal may also be used for pipes from other materials, whose heat transfer rate is lower than that of steel or copper with a melting point ≥ 1049°C

PYRO-SAFE® Flammotect double layer

2.5 Further allowed services



HVAC split line combinations

E.g. „Tubolit DuoSplit“ or „Tubolit Split“ by Armacell or types with the same characteristics.

Wall:

Double (6-10/6-18 mm) or single copper pipe (6-22 mm) and pipe insulation of 9 mm thickness made of PE foam in accordance with EN14313 with optional accompanying lines (one plastic pipe made of PE-HD, up to outside Ø 25 mm and pipe wall thickness 1.8-3.5 mm and up to 3 sheathed lines with max. 5 cores à 1.5 mm, Ø ≤ 21 mm) without spacing.

Floor:

Double (6-22/8-22 mm) or single copper pipe (6-22 mm) and 9 mm thick PE foam pipe insulation in accordance with EN14313 with optional accompanying pipes (one plastic pipe (U/U) made of PE-HD, outer Ø 25 mm and pipe wall thickness 1.8-3.5 mm, in accordance with EN 1519-1, DIN 8074:2011, DIN 8075:2011 and 4 sheathed lines Ø ≤ 21 mm at zero distance).



Double solar pipes „NanoSUN²“















Pipes for solar thermal applications made of corrugated stainless steel with insulation, an accessory line integrated in the insulation and a PVC sheath by Aktarus Group Srl Outside-Ø ≤ DN 40.

3. Distances

PYRO-SAFE® Flammotect double layer Distances – Wall



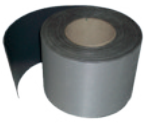

Protect your values. 																Seal edge		
		Cables	Cable bundles	Cable trays	Electrical installation conduits single or bundled	Combustible pipes	Multilayer pipes	Non-combustible pipes; insulation made of "Lamella mat"	Non-combustible pipes; insulation made of "ProRox PS 960"	Non-combustible pipes; insulation made of FEF "Armaflex Protect"	Non-combustible pipes; insulation made of FEF "NH/Armaflex"	Non-combustible pipes; insulation made of FEF "Kaiflex ST"	HVAC split line combinations	Double solar pipes "NanoSUN2"	PE lines "speed pipes"	Upper	Under	Side
	Cables	≥ 0	≥ 25	≥ 25	≥ 20	≥ 0	≥ 60	≥ 75	≥ 25	≥ 90	≥ 0	≥ 30	≥ 25	≥ 0	≥ 0	≥ 0		
	Cable bundles	≥ 0	≥ 25	≥ 25	≥ 20	≥ 0	≥ 60	≥ 75	≥ 25	≥ 90	≥ 0	≥ 30	≥ 25	≥ 0	≥ 0	≥ 0		
	Cable trays	≥ 0	≥ 25	≥ 25	≥ 20	≥ 0	≥ 60	≥ 75	≥ 25	≥ 90	≥ 0	≥ 30	≥ 25	≥ 0	≥ 0	≥ 0		
	Electrical installation conduits single or bundled	≥ 25	≥ 25	≥ 100	≥ 100	≥ 60	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 25	≥ 25		
	Combustible pipes	≥ 25	≥ 100	≥ 25	≥ 100	≥ 100	≥ 50	≥ 100	≥ 40	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 0	≥ 0		
	Multilayer pipes	≥ 20	≥ 100	≥ 100	≥ 0	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 0	≥ 0		
	Non-combustible pipes; insulation made of lamella mat	≥ 0	≥ 60	≥ 100	≥ 100	≥ 0	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 0	≥ 50	≥ 100	≥ 0	≥ 0		
	Non-combustible pipes; insulation made of "ProRox PS 960"	≥ 60	≥ 100	≥ 50	≥ 100	≥ 100	≥ 50	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 10	≥ 10		
	Non-combustible pipes; insulation made of FEF "Armaflex Protect"	≥ 75	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 50	≥ 0	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 10	≥ 10		
	Non-combustible pipes; insulation made of FEF "NH/Armaflex"	≥ 25	≥ 100	≥ 40	≥ 100	≥ 100	≥ 100	≥ 0	≥ 0	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 0	≥ 0		
	Non-combustible pipes; insulation made of FEF "Kaiflex ST"	≥ 90	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 70	≥ 100	≥ 100	≥ 100	≥ 100	≥ 50	≥ 50		
	HVAC split line combinations	≥ 0	≥ 100	≥ 100	≥ 100	≥ 0	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 0	≥ 25	≥ 100	≥ 0	≥ 0		
	Double solar pipes "NanoSUN2"	≥ 30	≥ 100	≥ 100	≥ 100	≥ 50	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 25	≥ 100	≥ 100	≥ 100	≥ 100		
	PE lines "speed pipes"	≥ 25	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 0	≥ 100	≥ 100		

PYRO-SAFE® Flammotect double layer Distances – Floor

 Protect your values.																Seal edge		
		Cables	Cable bundles	Cable trays	Electrical installation conduits single or bundled	Combustible pipes	Multilayer pipes	Non-combustible pipes; insulation made of „Lamella mat“	Non-combustible pipes; insulation made of „ProRox PS 960“	Non-combustible pipes; insulation made of FEF „Armaflex Protect“	Non-combustible pipes; insulation made of FEF „NH/Armaflex“	Non-combustible pipes; insulation made of FEF „Kaiflex ST“	HVAC split line combinations	Double solar pipes „NanoSUN2“	PE lines „speed pipes“	Upper	Under	Side
	Cables	≥ 0		≥ 0 (≥ 100 in regard of cables > 21)	≥ 25	≥ 0	≥ 50	≥ 60	≥ 75	≥ 0	≥ 90	≥ 100	≥ 100	-			≥ 0	
	Cable bundles	≥ 0		≥ 0 (≥ 100 in regard of cables > 21)	≥ 25	≥ 0	≥ 50	≥ 60	≥ 75	≥ 0	≥ 90	≥ 100	≥ 100	-			≥ 0	
	Cable trays	≥ 0		≥ 0 (≥ 100 in regard of cables > 21)	≥ 25	≥ 0	≥ 50	≥ 60	≥ 75	≥ 0	≥ 90	≥ 100	≥ 100	-			≥ 0	
	Electrical installation conduits single or bundled	≥ 0 (≥ 100 in regard of cables > 21)		≥ 25	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100				≥ 25	
	Combustible pipes	≥ 25		≥ 100	≥ 25	≥ 100	≥ 100	≥ 100	≥ 100	≥ 50	≥ 100	≥ 100	≥ 100				≥ 0	
	Multilayer pipes	≥ 0		≥ 100	≥ 100	≥ 0	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100				≥ 0	
	Non-combustible pipes; insulation made of lamella mat	≥ 50		≥ 60	≥ 100	≥ 100	≥ 0	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 50			≥ 0	
	Non-combustible pipes; insulation made of „ProRox PS 960“	≥ 60		≥ 100	≥ 100	≥ 100	≥ 100	≥ 65	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100				≥ 10	
	Non-combustible pipes; insulation made of FEF „Armaflex Protect“	≥ 75		≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 50	≥ 100	≥ 100	≥ 100	≥ 100				≥ 20	
	Non-combustible pipes; insulation made of FEF „NH/Armaflex“	≥ 0		≥ 100	≥ 50	≥ 100	≥ 100	≥ 100	≥ 100	≥ 0	≥ 70	≥ 100	≥ 100				≥ 0	
	Non-combustible pipes; insulation made of FEF „Kaiflex ST“	≥ 90		≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100				≥ 50	
	HVAC split line combinations	≥ 50		≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 25				≥ 0	
	Double solar pipes „NanoSUN2“	≥ 100		≥ 100	≥ 100	≥ 100	≥ 50	≥ 100	≥ 100	≥ 100	≥ 100	≥ 25	≥ 100				≥ 100	
	PE lines „speed pipes“	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

PYRO-SAFE® Flammotect double layer

4. Used products

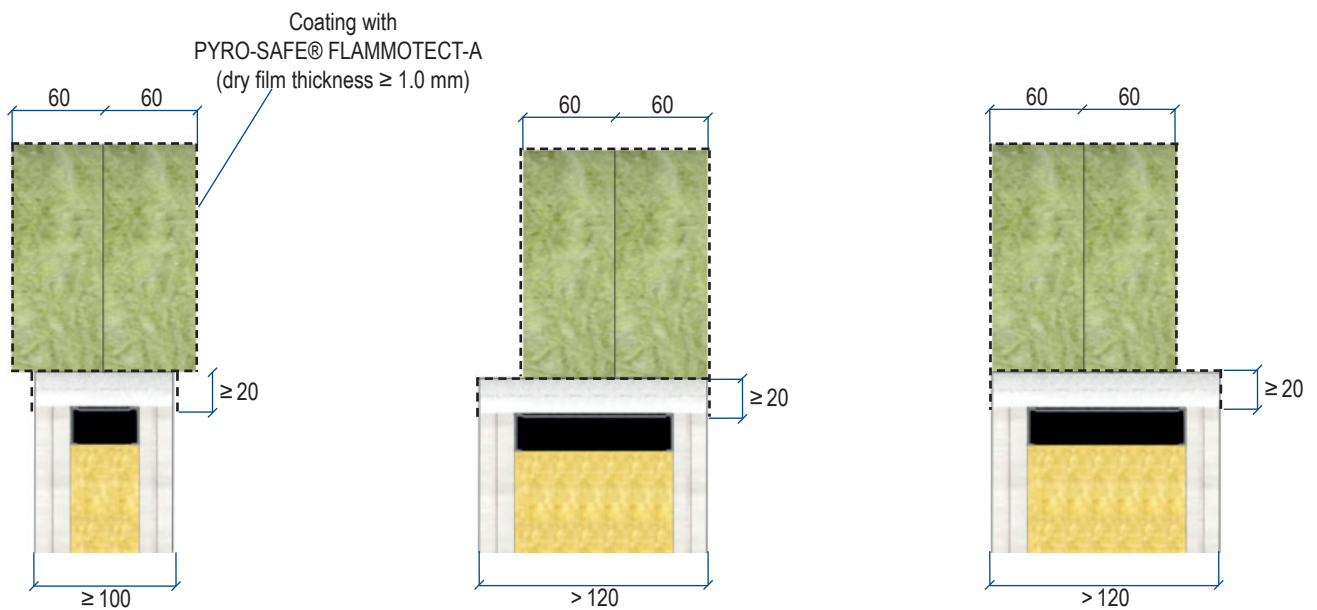
	<p>PYRO-SAFE® FLAMMOTECT-A Coating in accordance with ETA-14/0418 12,5 kg Pail – Product no. 01155101 15,0 kg Pail – Product no. 01155105</p>		<p>Mineral wool A1 Reaction to fire class acc. to EN 13501-1: A1 Melting point ≥ 1000 °C 10 kg bag – Product no. 01183000</p>								
	<p>PYRO-SAFE® FLAMMOTECT-A Solid emulsion in accordance with ETA-14/0418 12,5 kg Pail – Product no. 01155106 15,0 kg Pail – Product no. 01155107</p>		<p>Lamella mat „Klimarock“ in accordance with DIN EN 14303 and DoP DE0628071802 dated 13.07.2018 Reaction to fire class according to EN 13501-1: Class A1 Dimensions 610 x 50 cm Thickness 30 mm Roll à 3.05 m² – product no. 01187100</p> <p>It is allowed to apply any lamella mats/ mineral fibre mats/ mineral-fibre pipe shells if they match the following requirements: EN 14303 density ≥ 40 kg/g³ Reaction to fire class according to EN 13501-1: Class A1 in accordance with EN 13501-1 Thickness = minimum 30 mm</p>								
	<p>PYRO-SAFE® FLAMMOTECT-A Filler in accordance with ETA-14/0418 12,5 kg Pail – Product no. 01155104 15,0 kg Pail – Product no. 01155109</p>		<p>Pipe sleeve „ProRox PS 960“ Density ≥ 100 kg/m³ DoP: PROPS960NL-03</p>								
	<p>PYRO-SAFE® DG-CR 1.5 Fire protection wrap in accordance with ETA-16/0268 Roll à 10 m x 125 mm – Product no. 01261125</p>		<p>Label 1 piece – Product no. 01229000</p>								
	<p>PYRO-SAFE® DG-CR BS Fire protection wrap in accordance with ETA-16/0268 Roll à 10 m x 100 mm – Product no. 01264100</p>		<p>Recommended tools Filler, brush, masking tape Mineral-wool knife and saw If required: plastic film, folding ladder Lock wire pliers, steel wire (galvanized)</p>								
	<p>Mineral fibre board acc. to EN 13162 Criteria: Density ≥ 150 kg/m³ Reaction to fire class A1 according to EN 13501:1 Melting point $\geq 1,000$°C. (TR10) tensile strength vertical to board surface ≥ 10 kPa according to EN1607 Thickness ≥ 60 mm</p>		<p>Sectional and protective insulation made of flexible elastomeric foam (FEF) according to DIN EN 14304</p>								
	<p>Mineral fibre boards Pre-coated on one side with PYRO-SAFE® FLAMMOTECT-A Dimensions 1000 x 600 x 60 mm Carton à 4 pcs. – Product no. 01181160</p>	<table border="1"> <thead> <tr> <th>Name</th> <th>DIN/ abZ/abP</th> </tr> </thead> <tbody> <tr> <td>NH/Armaflex</td> <td>DIN EN 14304</td> </tr> <tr> <td>Kaiflex ST</td> <td>DIN EN 14304</td> </tr> <tr> <td>Armaflex Protect</td> <td>DIN EN 14304</td> </tr> </tbody> </table>		Name	DIN/ abZ/abP	NH/Armaflex	DIN EN 14304	Kaiflex ST	DIN EN 14304	Armaflex Protect	DIN EN 14304
Name	DIN/ abZ/abP										
NH/Armaflex	DIN EN 14304										
Kaiflex ST	DIN EN 14304										
Armaflex Protect	DIN EN 14304										

PYRO-SAFE® Flammotect double layer

5. Regulations and variants

- The mixed penetration sealing system may be used to close openings without installations (so-called reserve penetration sealing system).
- Penetration sealing systems in floors must be protected against loads/walking on using suitable measures in the building.
- On installation in plasterboard walls, continuous reveal cladding is necessary.
- The penetration sealing system surface of mineral fibre boards and their edges, and 20 mm all around on the structural element must be provided with a coating of PYRO-SAFE® FLAMMOTECT-A with a dry film thickness of at least 1.0 mm.
- The fire protection measures described on the following pages also apply to retrofitting.

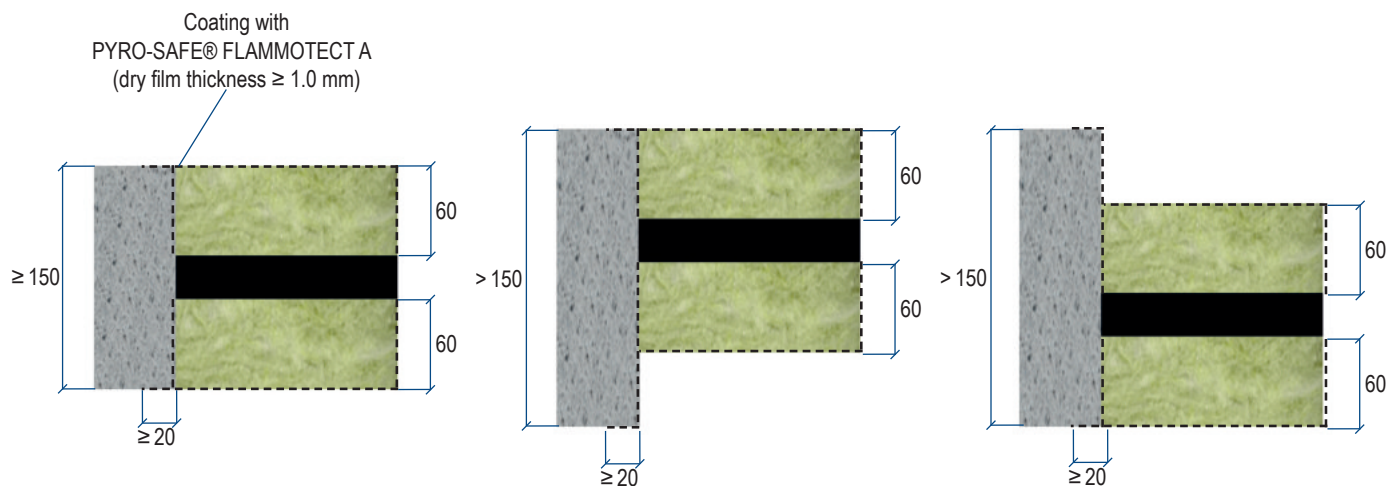
Variants in walls



Plasterboard wall or solid wall

Dimensions in mm

Variants in floors

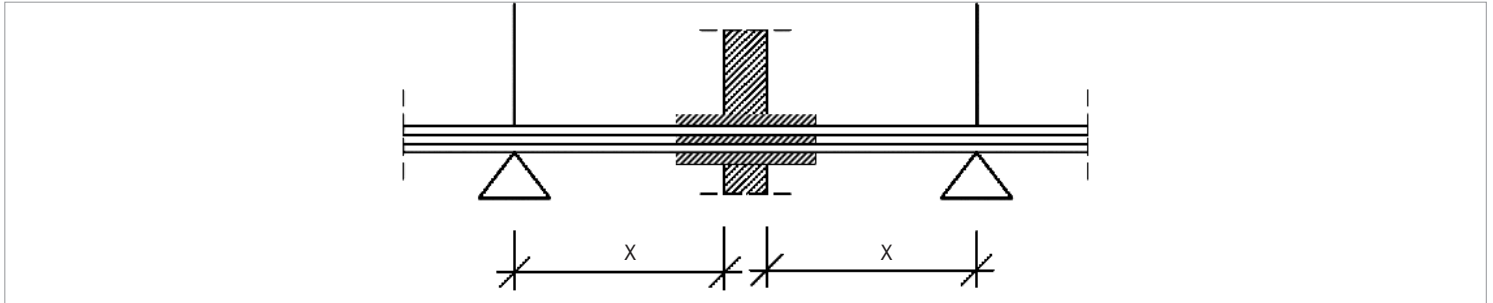


Dimensions in mm

PYRO-SAFE[®] Flammotect double layer

5.1 Rules over the first cable/pipe support

- The first supports before the installation shall be made of non-combustible material (fire resistance class A1 or A2 in accordance with EN 13501-1); the supports shall be placed at a distance according to the table below.



Initial bracket (support) of the installations in front of the wall penetration sealing system made of steel or equivalent

First cable/pipe support		
Cables, cable bundles, cable trays, control cables	Wall	≤ 500 mm
	Floor	≤ 250 mm
Electrical installation conduits		≤ 500 mm
Combustible pipes		≤ 400 mm
Multilayer pipes "HENCO pipes"		≤ 550 mm
Non-combustible pipes – Insulation made of mineral fibre mats or sleeves		≤ 650 mm
Non-combustible pipes – insulation made of FEF		≤ 550 mm
Double solar pipes "NanoSUN ² "		≤ 500 mm
PE lines "speed pipes" for glass fibre cables and micro cables		Spacing as per manufacturer's specifications
HVAC split-line combinations		≤ 500 mm

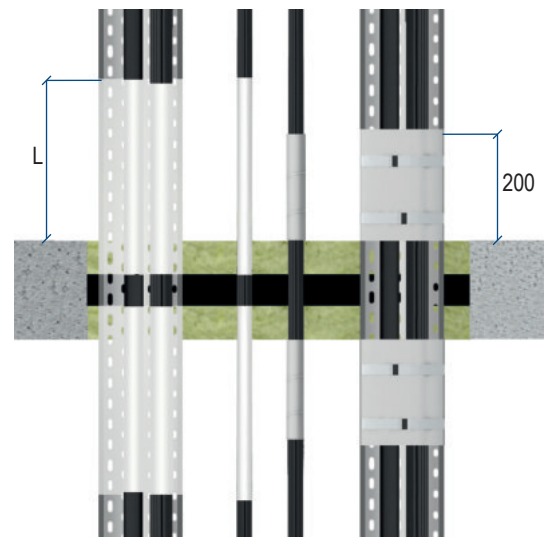
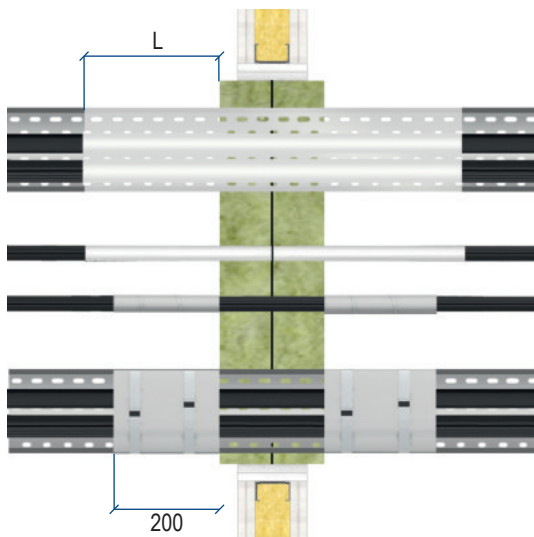
PYRO-SAFE® Flammotect double layer

6. Fire protection measures

6.1 Cables / cable bundles / cable trays

- The passage of cables or cable bundles is allowed without and with cable trays.
- Cable bundles can be installed unopened through the penetration sealing system. If they consist of parallel-running cables that are densely packed and permanently bound, stitched or welded together they don't have to be filled inside with filler material.
- The support constructions of the cable trays must be designed in such a way that in the event of fire no additional mechanical stress can occur on the penetration sealing system.
- As an alternative to the coating, the passages can be wrapped with the fire protection wrap PYRO-SAFE® DG-CR 1.5.
- The fire protection wrap PYRO-SAFE® DG-CR 1.5 is coated on one side and equipped with a protective film. This must be removed before the wrap is fixed in position with the coated side pointing inwards and with steel wires.

Measures for sealing in walls and floors



Wall-/Floor-, seal thickness and implementation variants. See page 18

Dimensions in mm

	Dimensions [mm]	Fire protection coating PYRO-SAFE® FLAMMOTECT-A (per side)			Fire resistance classes	
		Dry film thickness [mm]	Inside seal [mm]	Outside seal L [mm]	Wall	Floor
Cables	$\varnothing \leq 21$ (through holes)	$\geq 1,0$	0	≥ 200	EI 120	-
	$\varnothing \leq 21$	$\geq 1,0$	60	≥ 100	EI 120	-
		$\geq 1,0$		≥ 250	-	EI 120
	$\varnothing \leq 80$	$\geq 2,0$		≥ 200	EI 120	-
$\geq 2,0$		≥ 250		-	EI 120	
Cable bundles	$\varnothing \leq 100$	$\geq 1,0$	≥ 100	EI 120	-	
		$\geq 1,0$	≥ 250	-	EI 120	

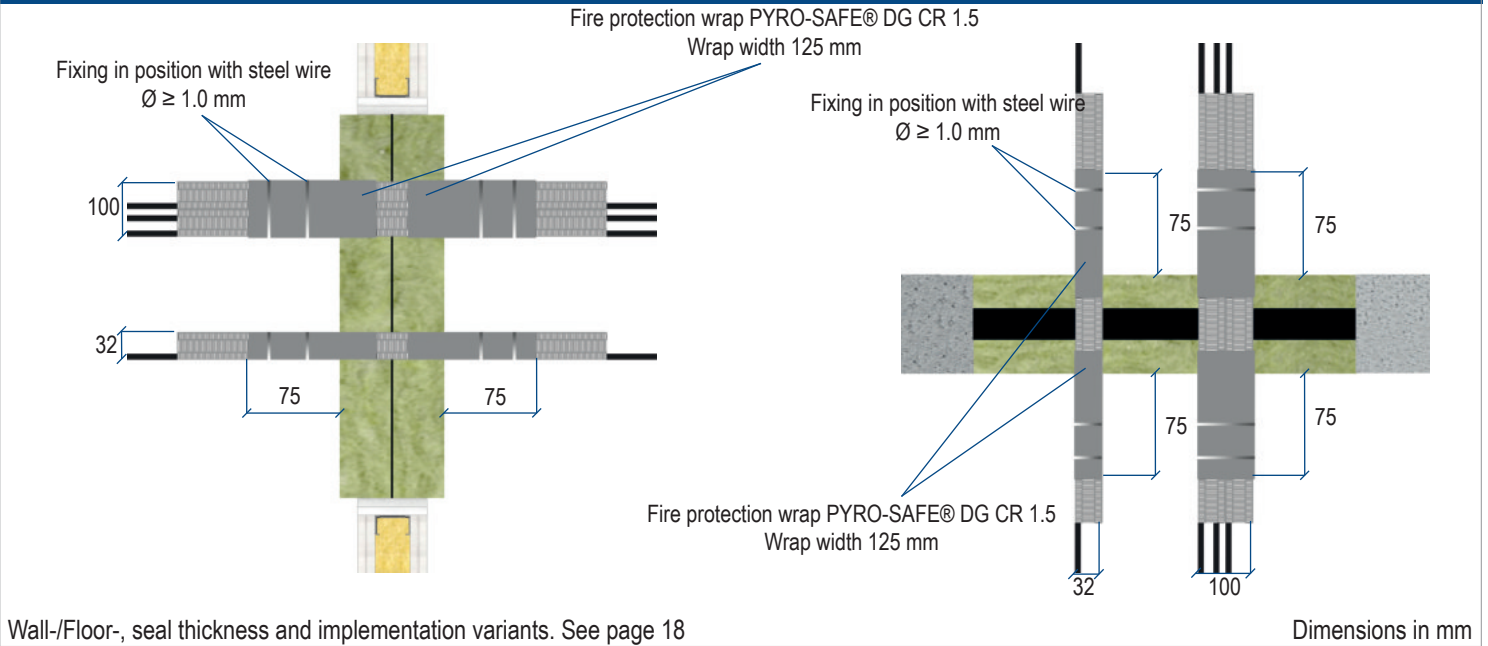
	Dimensions [mm]	Fire protection wrap PYRO-SAFE® DG-CR 1.5						Fire resistance classes	
		Wrap width [mm]	Qty. wraps [n]	Qty. layer [n]	Overlap [mm]	Inside seal [mm]	Outside seal [mm]	Wall	Floor
Cables	$\varnothing \leq 21$ (through bore-holes)	200	2	2	≥ 45	0	200	EI 120	EI 120
	$\varnothing \leq 80$							EI 120	EI 120
Cable bundles	$\varnothing \leq 100$							EI 120	EI 120

PYRO-SAFE® Flammotect double layer

6.2 Electrical installation conduits, single or bundled

- Electrical installation conduits can be passed through both individually (up to $\varnothing \leq 32$ mm) and in bundled form (up to $\varnothing \leq 100$ mm with single pipes up to $\varnothing \leq 32$ mm) with/without cable assignment up to $\varnothing \leq 21$ mm.
- The electrical installation conduits must be wrapped on both sides with the fire protection wrap PYRO-SAFE® DG-CR 1.5.
- The fire protection wrap PYRO-SAFE® DG-CR 1.5 is coated on one side and equipped with a protective film. This must be removed before the wrap is fixed in position with the coated side pointing inwards and with steel wires.

Measures for sealing in walls and floors



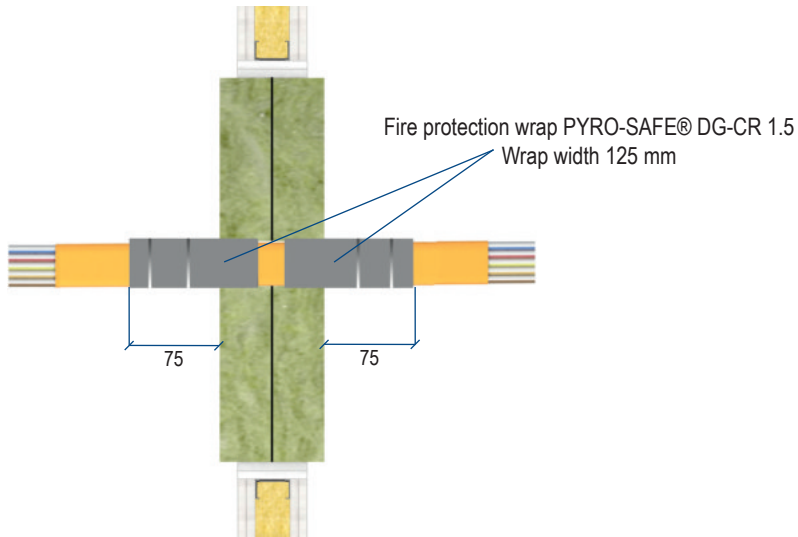
	Dimensions [mm]	Fire protection wrap PYRO-SAFE® DG-CR 1.5						Fire resistance classes	
		Wrap width [mm]	Qty. wraps [n]	Qty. layer [n]	Overlap [mm]	Inside seal [mm]	Outside seal [mm]	Wall	Floor
EIC made of plastic, single	$\varnothing \leq 32$ (with/without cables $\varnothing \leq 21$)	125	2	2	0	50	75	EI 90 U/U	EI 90 U/U
				3				-	
EIC made of plastic, bundled	$\varnothing \leq 100$ (Single conduits $\varnothing \leq 32$ with/without cables $\varnothing \leq 21$)	125	2	2	0	50	75	EI 90 U/U	EI 90 U/U
				3				-	

PYRO-SAFE® Flammotect double layer

6.3 PE lines „speed pipes“

- The PE lines „speed pipes“ must be wrapped on both sides with the fire protection wrap PYRO-SAFE® DG-CR 1.5.
- The fire protection wrap PYRO-SAFE® DG-CR 1.5 is coated on one side and equipped with a protective film. This must be removed before the wrap is fixed in position with the coated side pointing inwards and with steel wires.

Measures for sealing in walls



Wall-/Floor-, seal thickness and implementation. See page 18

Dimensions in mm

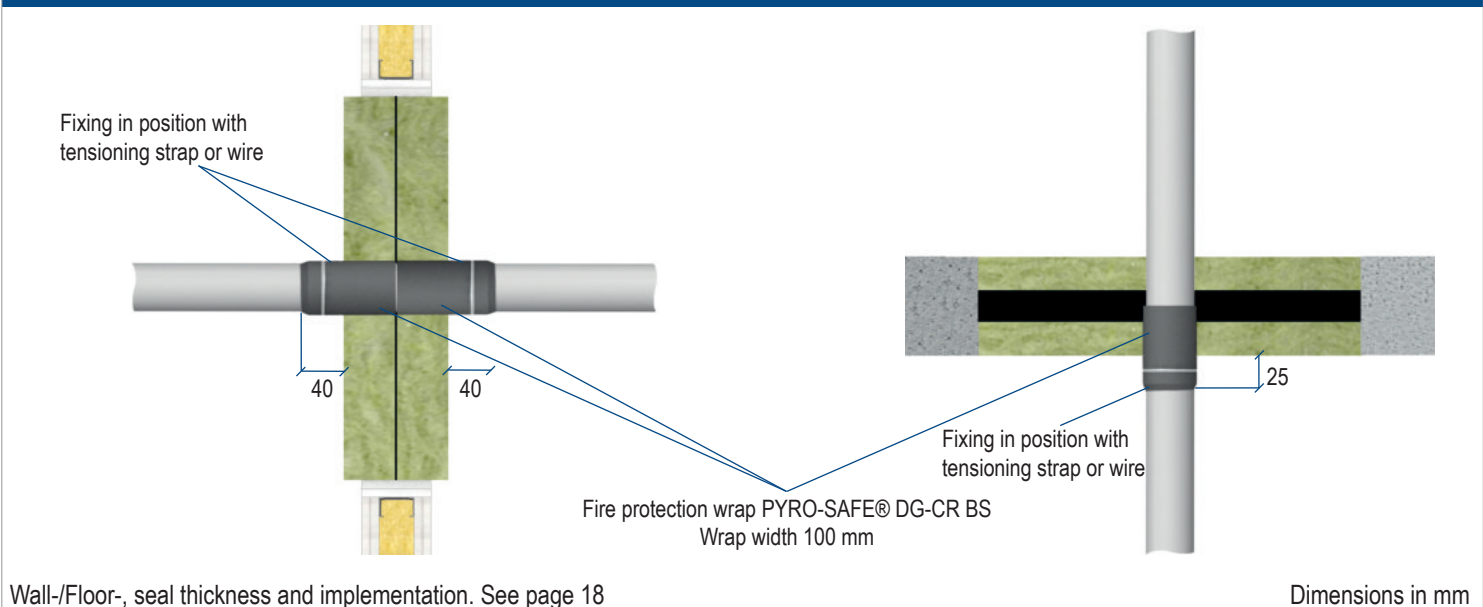
Set-up speed pipes	Wall thickness [mm]	Fire protection wrap PYRO-SAFE® DG-CR 1.5						Fire resistance classes	
		Wrap width [mm]	Qty. wraps [n]	Qty. layer [n]	Overlap [mm]	Inside seal [mm]	Outside seal [mm]	Wall	Floor
Ø 7,0 mm x 24 pieces	≥ 1,5	125	2	2	0	50	75	EI 120 U/C	-
Ø 10,0 mm x 7 pieces	≥ 2,0								
Ø 12,00 mm x 5 pieces	≥ 2,0								

PYRO-SAFE® Flammotect double layer

6.4 Combustible pipes

- Combustible pipes must be wrapped with the intumescent wrap PYRO-SAFE® DG-CR BS. For installations in walls, the wrap has to be arranged on both sides, in floors only one wrap is necessary.
- The penetration sealing may be used on pneumatic conveyors, compressed air lines and so on if the pipeline system is switched off in the event of a fire.

Measures for sealing in walls and floors



Combustible pipes made of PVC-U, PE-100

Dimensions [mm]	Intumescent wrap PYRO-SAFE® DG-CR BS						Fire resistance classes	
	Wrap width [mm]	Qty. wraps [n]	Qty. layers [n]	Overlap [mm]	Inside seal [mm]	Outside seal [mm]	Wall	Floor
≤ Ø 50	100	2	1	0	60	40	EI 120 U/U	-
		1			75	25	-	EI 120 U/U
2		2	60		40	EI 120 U/U	-	
1			75		25	-	EI 120 U/U	
≤ Ø 80		2	3		60	40	EI 120 U/U	-
		1			75	25	-	EI 120 U/U
≤ Ø 110		2	4		60	40	EI 120 U/C	-
		1			75	25	-	EI 120 U/C (PVC-U) EI 90 U/C (PE-100)
≤ Ø 160	2	4	60	40	EI 120 U/C	-		
	1		75	25	-	EI 120 U/C (PVC-U) EI 90 U/C (PE-100)		

Combustible pipes made PP-H

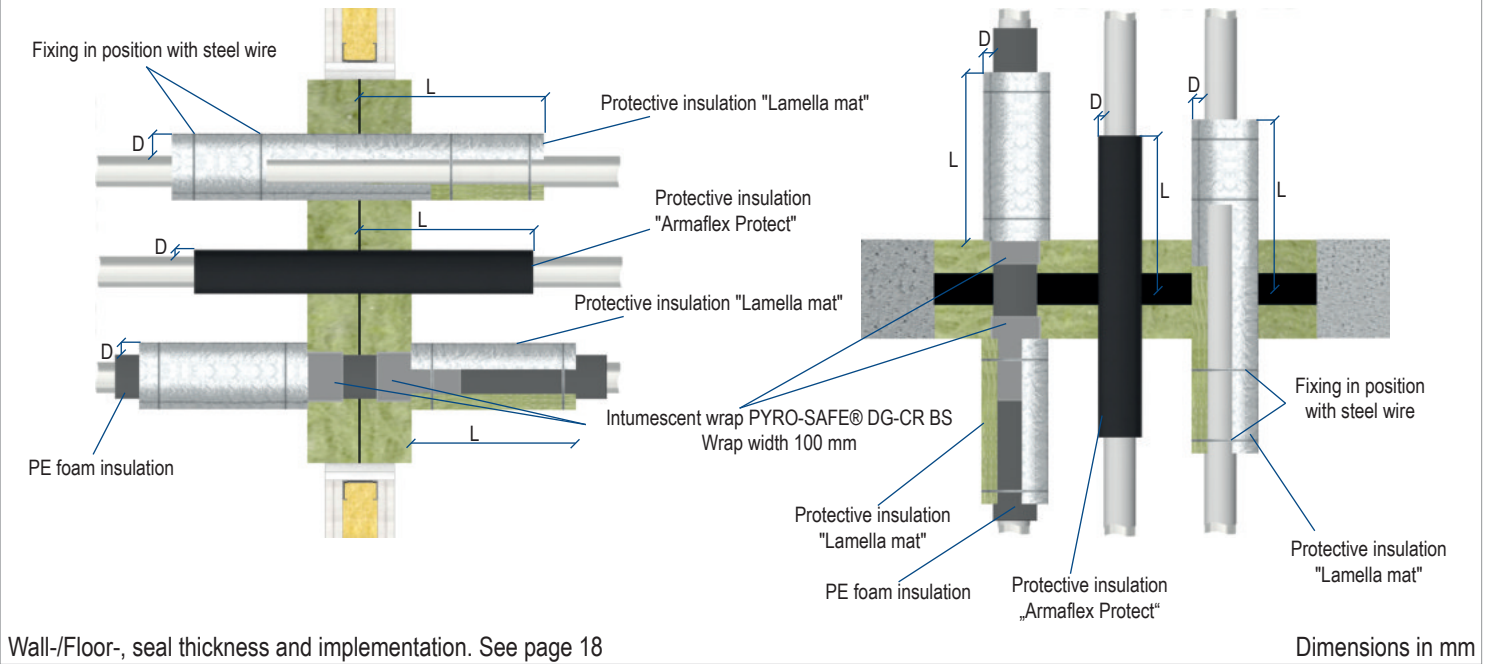
Dimensions [mm]	Intumescent wrap PYRO-SAFE® DG-CR BS						Fire resistance classes	
	Wrap width [mm]	Qty. wraps [n]	Qty. layers [n]	Overlap [mm]	Inside seal [mm]	Outside seal [mm]	Wall	Floor
≤ Ø 50	100	2	1	0	60	40	EI 120 U/U	-
		1			75	25	-	EI 90 U/U
2		2	60		40	EI 120 U/U	-	
1			75		25	-	EI 90 U/U	
≤ Ø 80		2	3		60	40	EI 120 U/U	-
		1			75	25	-	EI 90 U/U
≤ Ø 110		2	4		60	40	EI 120 U/C	-
		1			75	25	-	EI 90 U/C
≤ Ø 160	2	4	60	40	EI 120 U/C	-		
	1		75	25	-	EI 90 U/C		

PYRO-SAFE® Flammotect double layer

6.5 Multilayer pipes „HENCO pipes“

- Multilayer pipes with PE foam insulation must be wrapped with the intumescent wrap PYRO-SAFE® DG-CR BS and provided with protective insulation consisting of mineral fibre (lamella mat „Klimarock“).

Measures for sealing in walls and floors



Wall-/Floor-, seal thickness and implementation. See page 18

Outside-Ø [mm]	Installation in	Protection insulation		Fire resistance classes	
		Length L [mm]	Thickness D [mm]	Wall	Floor
Multilayer pipes „HENCO STANDARD“		„Lamella mat“			
≤ 32 mm	Wall	≥ 250	≥ 20	EI 120 U/C	-
	Floor	≥ 500		-	EI 120 U/C
≤ 63 mm	Wall	≥ 250	≥ 30	EI 120 U/C	-
	Floor	≥ 500		-	EI 120 U/C
Multilayer pipes „HENCO STANDARD“		„Armaflex Protect“			
≤ 12 mm	Wall/ Floor	≥ 240	13	EI 120 U/C	EI 120 U/C
≤ 63 mm			26 (2 x 13)	EI 120 U/C	EI 120 U/C

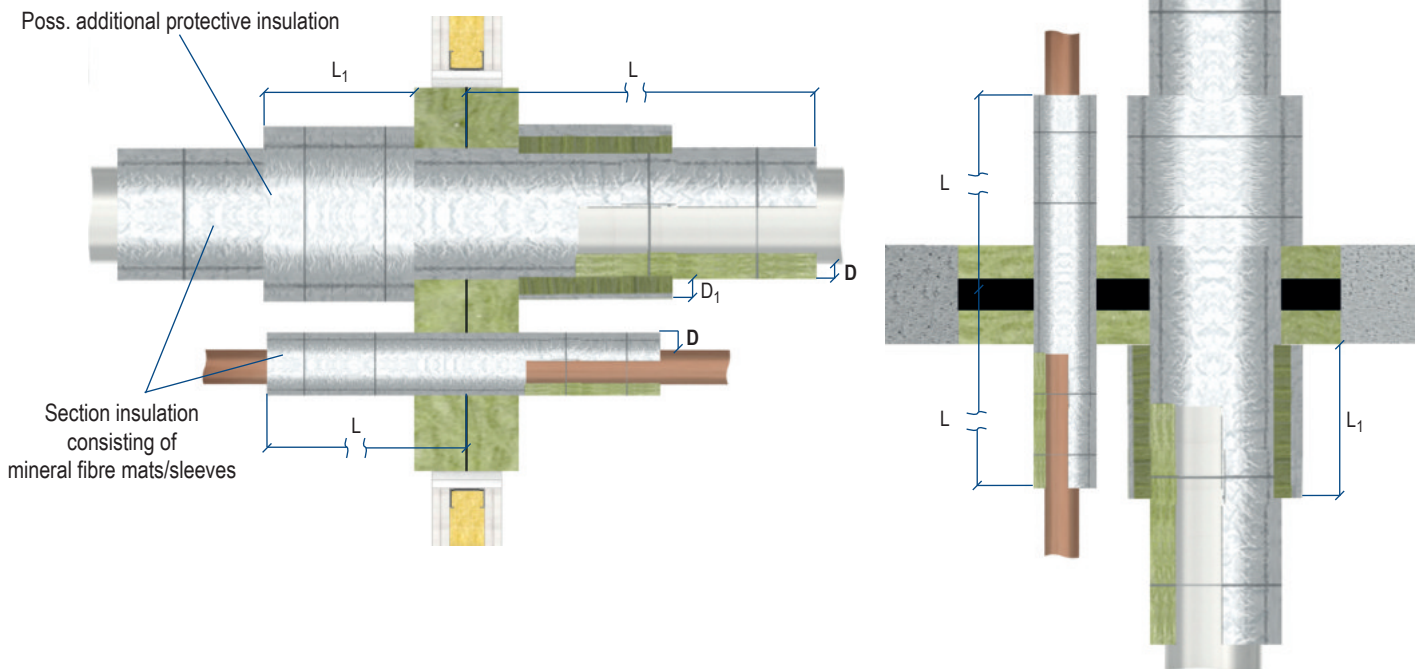
Intumescent wrap PYRO-SAFE® DG-CR BS							Protection insulation		Fire resistance classes	
Outside-Ø [mm]	Wrap width [mm]	Qty. wraps [n]	Qty. layer [n]	Overlap [mm]	Inside seal [mm]	Outside seal [mm]	Length L [mm]	Thickness D [mm]	Wall	Floor
Multilayer pipes „HENCO STANDARD“ with PE foam insulation							„Lamella mat“			
≤ 32 mm	100	2	1	≥ 25	50	50	≥ 250	≥ 20	EI 120 U/C	EI 120 U/C

PYRO-SAFE® Flammotect double layer

6.6 Non-combustible pipes - section insulation made of lamella mat „Klimarock“

- Depending on the pipe wall thickness and pipe outside diameter, an additional protective insulation consisting of mineral fibre mats may be necessary. The section insulation must be fixed in position on the pipe with tensioning straps or wire.
- On installation in floors, the insulation must be fixed in position using suitable measures to prevent it from slipping.

Measures for sealing in walls and floors



Wall-/Floor-, seal thickness and implementation. See page 18

Dimensions in mm

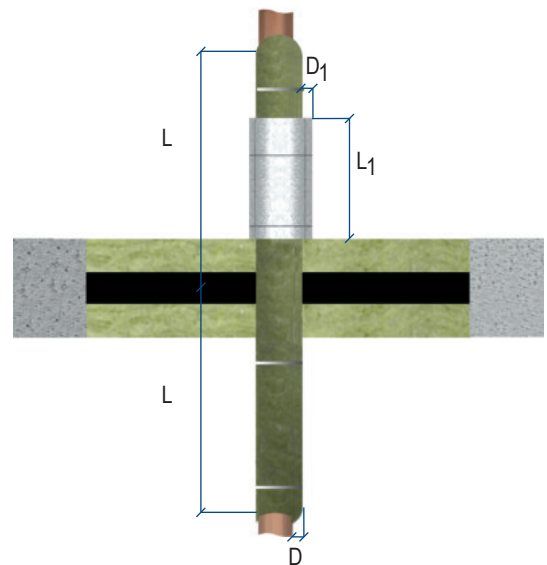
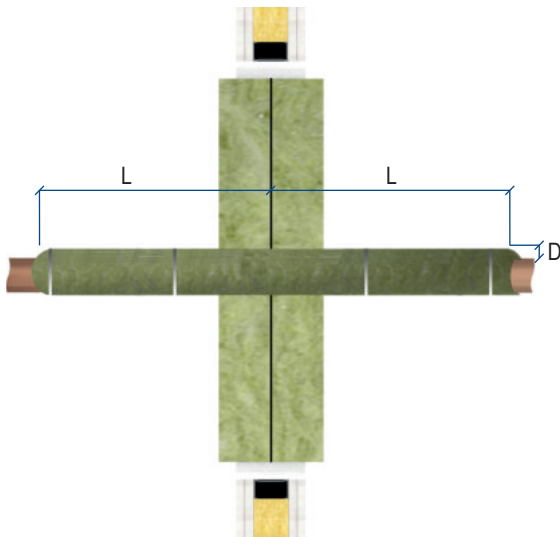
Pipe material	Outside-Ø [mm]	Pipe wall thickness [mm]	Section insulation		Protective insulation		Fire resistance classes	
			Insulation length L [mm]	insulation thickness D [mm]	Insulation length L1 [mm]	insulation thickness D1 [mm]	Wall	Floor
Copper, steel, stainless steel, cast iron	Ø ≤ 15,0	≥ 0,8	≥ 250	≥ 20	-	-	EI 120 C/U	-
			≥ 500	≥ 20	-	-	-	EI 90 C/U
			≥ 500	≥ 20	≥ 250	≥ 20	-	EI 120 C/U
	Ø ≤ 28,0	≥ 1,0	≥ 500	≥ 20	-	-	EI 120 C/U	EI 120 C/U
			Ø ≤ 42,0	≥ 1,2	≥ 500	≥ 30	-	-
	Ø ≤ 54,0	≥ 1,5	≥ 750	≥ 40	≥ 500	≥ 30	EI 120 C/U	EI 120 C/U
			≥ 750	≥ 30	≥ 500	≥ 30	-	EI 120 C/U
≥ 750			≥ 40	≥ 500	≥ 30	EI 120 C/U	EI 120 C/U	
Ø ≤ 88,9	≥ 2,0	≥ 1000	≥ 30	≥ 500	≥ 30	EI 120 C/U	EI 120 C/U	
		Ø ≤ 108,0	≥ 2,5	≥ 1000	≥ 30	≥ 500	≥ 30	EI 120 C/U
Steel, stainless steel, cast iron	Ø ≤ 114,3	≥ 3,6	≥ 1000	≥ 30	≥ 500	≥ 30	EI 120 C/U	EI 120 C/U
	Ø ≤ 170,0	≥ 2,9	≥ 1000	≥ 40	≥ 500	≥ 60	EI 120 C/U	EI 120 C/U
			≥ 1000	≥ 60	≥ 500	≥ 30	EI 120 C/U	-
	Ø ≤ 323,9	≥ 7,1	≥ 1250	≥ 60	≥ 1000	≥ 60	-	EI 120 C/U

PYRO-SAFE® Flammotect double layer

6.7 Non-combustible pipes – section insulation made of mineral fibre pipe sleeve „ProRox PS 960“

- „ProRox PS 960“ pipe sleeves with or without aluminium lamination may be used.
- The section insulation must be fixed in position on the pipe with tensioning straps or wire.
- If installed in floors, a protective insulation consisting of mineral fibre mats must be installed on the upper side.
- On installation in floors, the insulation must be fixed in position using suitable measures to prevent it from slipping.

Measures for sealing in walls and floors



Wall-/Floor-, seal thickness and implementation. See page 18

Dimensions in mm

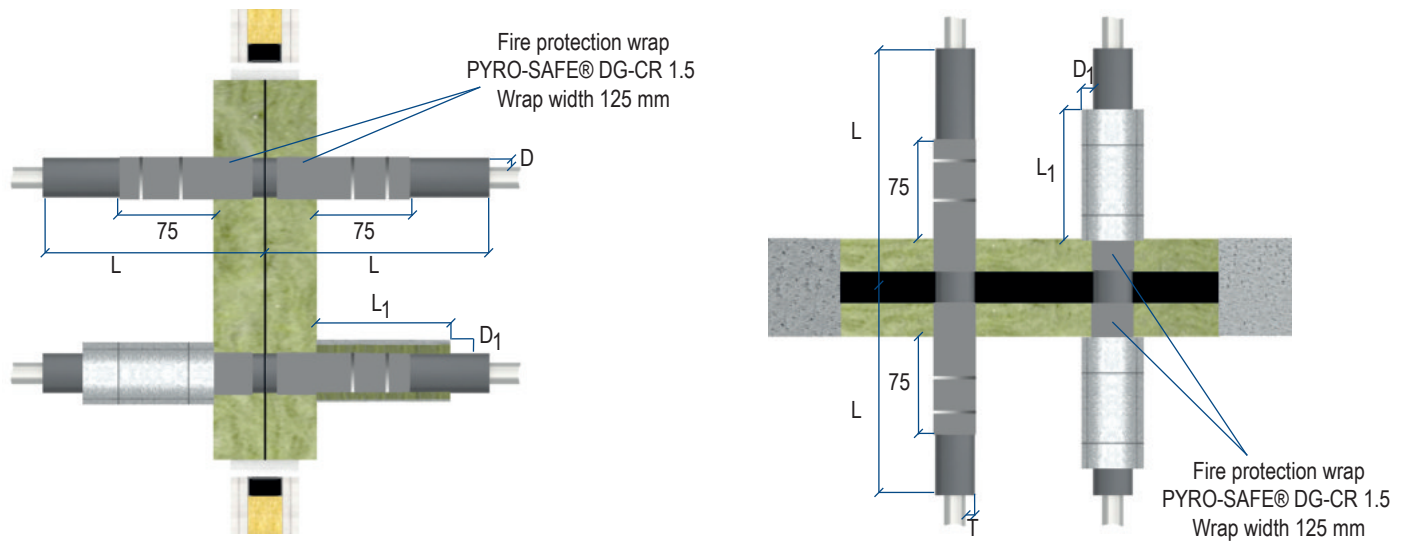
Pipe material	Outside-Ø [mm]	Pipe wall thickness [mm]	Section insulation		Protective insulation		Fire resistance classes	
			Insulation length L [mm]	insulation thickness D [mm]	Insulation length L1 [mm]	insulation thickness D1 [mm]	Wall	Floor
Copper, steel, stainless steel, cast iron	$\varnothing \leq 22,0$	$\geq 1,0$	≥ 1000	≥ 30	-	-	EI 90 / E 120 C/U	-
			≥ 1000	≥ 40	≥ 500	≥ 30	-	EI 120 C/U
	$\varnothing \leq 54,0$	$\geq 1,5$	≥ 1000	≥ 40	-	-	EI 90 / E 120 C/U	-
			≥ 1000	≥ 40	≥ 500	≥ 30	-	EI 120 C/U
	$\varnothing \leq 88,9$	$\geq 2,0$	≥ 1000	≥ 40	-	-	EI 60 / E 120 C/U	-
			≥ 1000	≥ 40	≥ 500	≥ 30	-	EI 120 C/U
Steel, stainless steel, cast iron	$\varnothing \leq 170,0$	$\geq 3,0$	≥ 1000	≥ 40	-	-	EI 60 / E 120 C/U	-
			≥ 1000	≥ 40	≥ 500	≥ 30	-	EI 120 C/U

PYRO-SAFE® Flammotect double layer

6.8 Non-combustible pipes – section insulation made of FEF „NH/Armaflex“

- Section insulation consisting of FEF must be routed through the component opening to be sealed.
- The pipes must be wrapped with the fire protection wrap PYRO-SAFE® DG-CR 1.5.
- The fire protection wrap PYRO-SAFE® DG-CR 1.5 is coated on one side and equipped with a protective film. This must be removed before the wrap is fixed in position with the coated side pointing inwards and with steel wires.
- Protective insulation must additionally be installed; fixing in position must be ensured through suitable measures to prevent slipping.

Measures for sealing in walls and floors



Wall-/Floor-, seal thickness and implementation. See page 18

Dimensions in mm



PYRO-SAFE® Flammotect double layer

Non-combustible pipes – section insulation made of FEF „NH/Armaflex“

Material	Pipe		Insulation length (L) x insulation thickness (D) [mm]	Fire protection wrap PYRO-SAFE® DG-CR 1.5					Protective insulation		Fire resistance class	
	Outside Ø [mm]	Wall thickness [mm]		Wrap width [mm]	Qty. wraps [n]	Qty. layer [n]	Inside seal [mm]	Outside seal [mm]	Length (L1): [mm]	Thickness D1 [mm]	Wall	Floor
Copper, steel, stainless steel, cast iron	Ø ≤ 10	≥ 0,8	≥ 500 x 9-19	125	2	1	50	75	250	20	EI 120 C/U	EI 120 U/C
	Ø ≤ 15		≥ 750 x 9-25	125	2	1	50	75	250	20	EI 90 / E 120 C/U	EI 120 C/U
			Continuous x 9-25	125	2	1	50	75	250	20	EI 120 C/U	-
			≥ 750 x 9-19	125	2	1	50	75	250*	13*	EI 120 C/U	EI 120 U/C
	Ø ≤ 28	≥ 1,0	Continuous x 10-50	125	2	1	50	75	250	20	EI 120 C/U	-
			≥ 750 x 9-25	125	2	1	50	75	250	20	EI 90 / E 120 C/U	EI 120 U/C
		≥ 1,2	Continuous x 25	125	2	1	50	75	250	20	EI 120 C/U	-
			Continuous x 10-50	125	2	1	50	75	250	20	EI 120 C/U	-
	Ø ≤ 42	≥ 1,2	Continuous x 89	125	2	1	50	75	500	40	EI 120 C/U	-
			≥ 750 x 10-50	125	2	1	50	75	250	20	EI 120 C/U	EI 120 U/C
		≥ 2,0	≥ 750 x 10-50	125	2	1	50	75	250*	26 (2x13)*	EI 120 C/U	EI 120 U/C
	Ø ≤ 54	≥ 1,5	Continuous x 89	125	2	1	50	75	500	40	EI 120 C/U	-
			≥ 1000 x 25	125	2	1	50	75	250	20	EI 90 / E 120 C/U	EI 120 U/C
		≥ 2,0	Continuous x 25	125	2	1	50	75	250	20	EI 120 C/U	-
			≥ 1000 x 29-57	125	2	1	50	75	500	30	EI 90 C/U	-
	Ø ≤ 88,9	≥ 2,0	Continuous x 89	125	2	1	50	75	500	40	EI 120 C/U	-
			≥ 1000 x 25-89	125	2	2	50	75	500	30	EI 90 C/U	-
		≥ 2,5	≥ 1000 x 25	125	2	1	50	75	250	40	-	EI 90 U/C
			≥ 1000 x 89	125	2	1	50	75	250	40	-	EI 90 U/C
	Ø ≤ 108	≥ 2,5	≥ 1000 x 57	125	2	2	50	75	750	40	EI 90 C/U	-
≥ 1000 x 57			125	1	1	125**	0**	1000**	40**	-	EI 90 C/U	
Steel, stainless steel, cast iron	Ø ≤ 170	≥ 2,9	≥ 1000 x 50-89	125	2	1	50	75	750	60	EI 120 C/U	EI 90 U/C

* Protective insulation „Armaflex Protect“

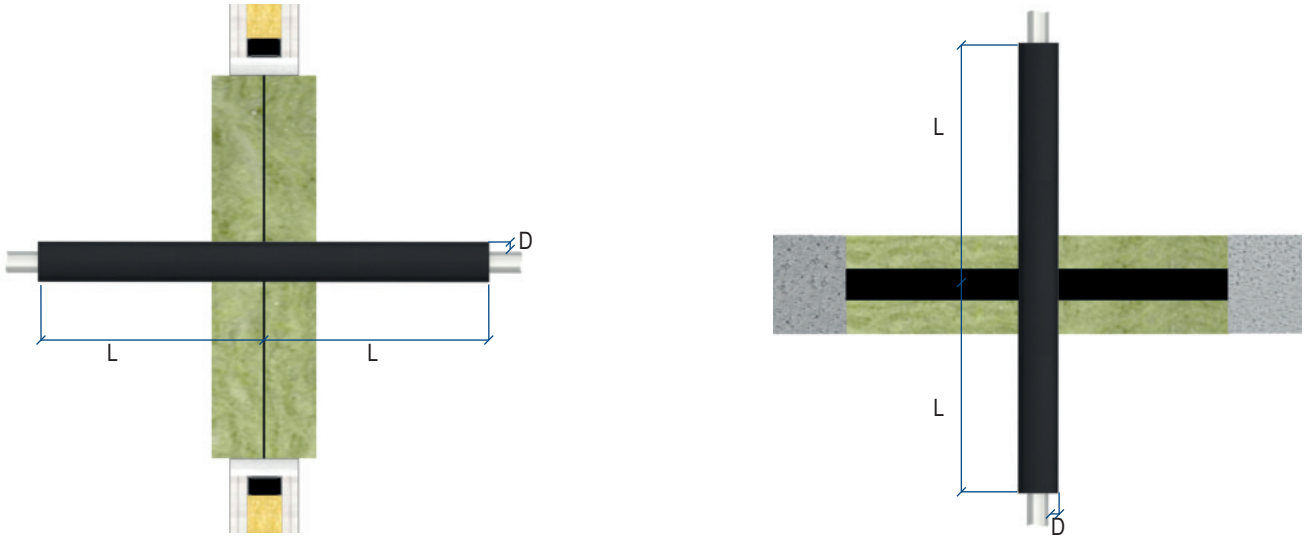
** Install wrap flush with lower penetration sealing system board; the protective insulation must only be installed on the upper ceiling side.

PYRO-SAFE® Flammotect double layer

6.9 Non-combustible pipes – section insulation made of FEF „Armaflex Protect“

Section insulation consisting of FEF must be routed through the component opening to be sealed

Measures for sealing in walls and floors



Wall-/Floor-, seal thickness and implementation. See page 18

Dimensions in mm

Pipe			Insulation length L x insulation thickness D [mm]	Fire resistance class	
material	Outside Ø [mm]	Wall thickness [mm]		Wall	Floor
Copper, steel, stainless steel, cast iron	Ø ≤ 8,0	≥ 1,0	≥ 1000 x 16	-	EI 120 C/U
	Ø ≤ 10,0	≥ 1,0	≥ 1000 x 16	EI 120 C/U	-
	Ø ≤ 15,0	≥ 1,0	≥ 1000 x 19	EI 90 / E 120 C/U	EI 120 C/U
	Ø ≤ 22,0	≥ 1,0	≥ 1000 x 20	EI 120 C/U	EI 120 C/U
	Ø ≤ 28,0	≥ 1,0	≥ 1000 x 25	EI 60 / E 120 C/U	EI 120 C/U
	Ø ≤ 35,0	≥ 1,5	≥ 1000 x 25	EI 90 / E 120 C/U	EI 120 C/U
	Ø ≤ 54,0	≥ 1,5	≥ 1000 x 25	EI 90 / E 120 C/U	EI 90 / E 120 C/U
	Ø ≤ 88,9	≥ 2,0	≥ 1000 x 25	EI 60 / E 120 C/U	EI 60 / E 120 C/U
Steel, stainless steel, cast iron	Ø ≤ 170	≥ 3,0	≥ 1000 x 26 (2x 13)	EI 90 / E 120 C/U	EI 90 / E 120 C/U

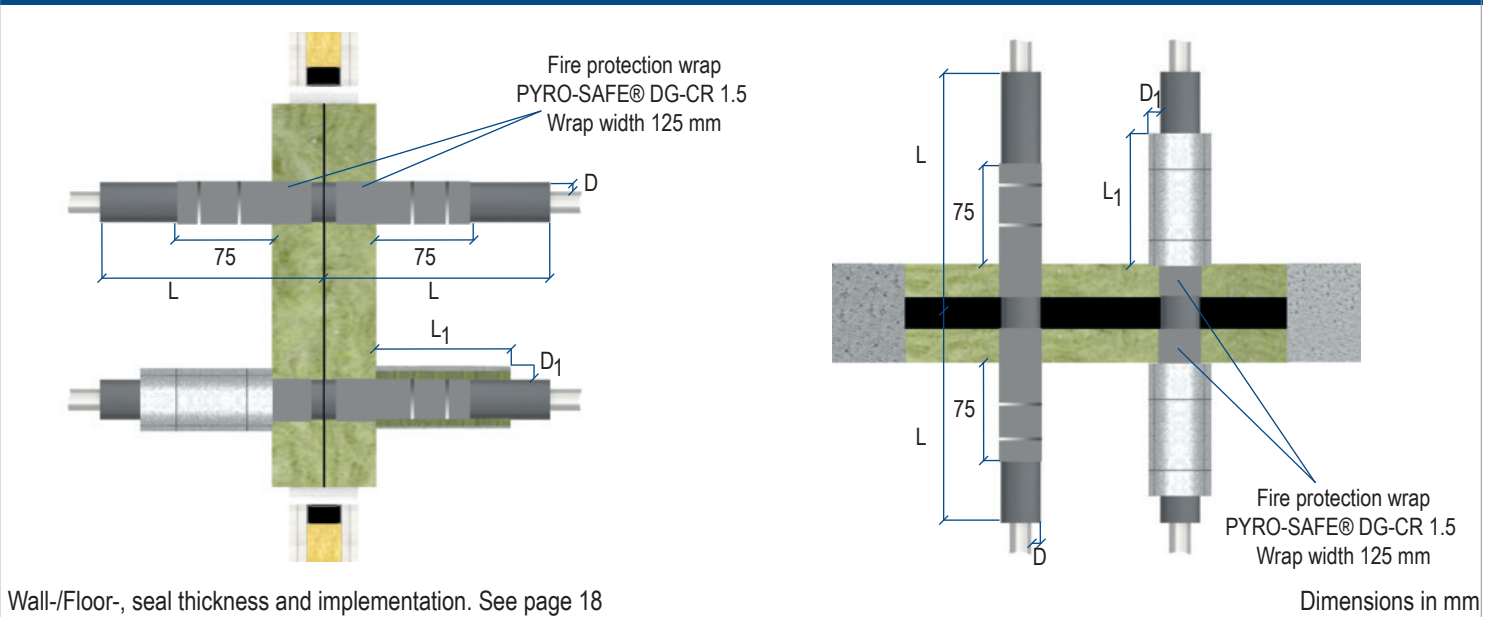
Protective insulation „Armaflex Protect“

PYRO-SAFE® Flammotect double layer

6.10 Non-combustible pipes – section insulation consisting of FEF „Kaiflex ST“

- Section insulation consisting of FEF must be routed through the component opening to be sealed.
- The pipes must be wrapped on both sides with the fire protection wrap PYRO-SAFE® DG-CR 1.5.
- The fire protection wrap PYRO-SAFE® DG-CR 1.5 is coated on one side and equipped with a protective film. This must be removed before the wrap is fixed in position with the coated side pointing inwards and with steel wires.
- Depending on the pipe outer diameter, protective insulation consisting of FEF or mineral fibre mat „lamella mat“ may be necessary.
- The protective insulation must be installed at both ends; fixing in position must be ensured through suitable measures to prevent slipping.

Measures for sealing in walls and floors



Wall-/Floor-, seal thickness and implementation. See page 18

Material	Pipe		Insulation length (L) x insulation thickness (D) [mm]	Fire protection wrap „PYRO-SAFE® DG-CR 1.5“						Isolation		Fire resistance classes	
	Outside Ø [mm]	Wall thickness [mm]		Wrap width [mm]	Qty. wraps [n]	Qty. layer [n]	Overlap [mm]	Inside seal [mm]	Outside seal [mm]	Length (L1) [mm]	Thick-ness D1 [mm]	Wall	Floor
Copper, steel, stainless steel, cast iron	Ø ≤ 8,0	≥ 1,0	≥ 2000 x 9-18	125	2	2	-	50	75	500	30	EI 120 C/U	EI 120 C/U
	Ø ≤ 22,0	≥ 1,0	≥ 2000 x 32									EI 120 C/U	-
	Ø ≤ 88,9	≥ 1,5 / 2,0	≥ 2000 x 9-32 ≥ 2000 x 32									-	EI 120 C/U
Steel, stainless steel, Cast iron	Ø ≤ 170,0	≥ 3,0	≥ 2000 x 10-32									EI 90 / E 120 C/U	EI 90 / E 120 C/U

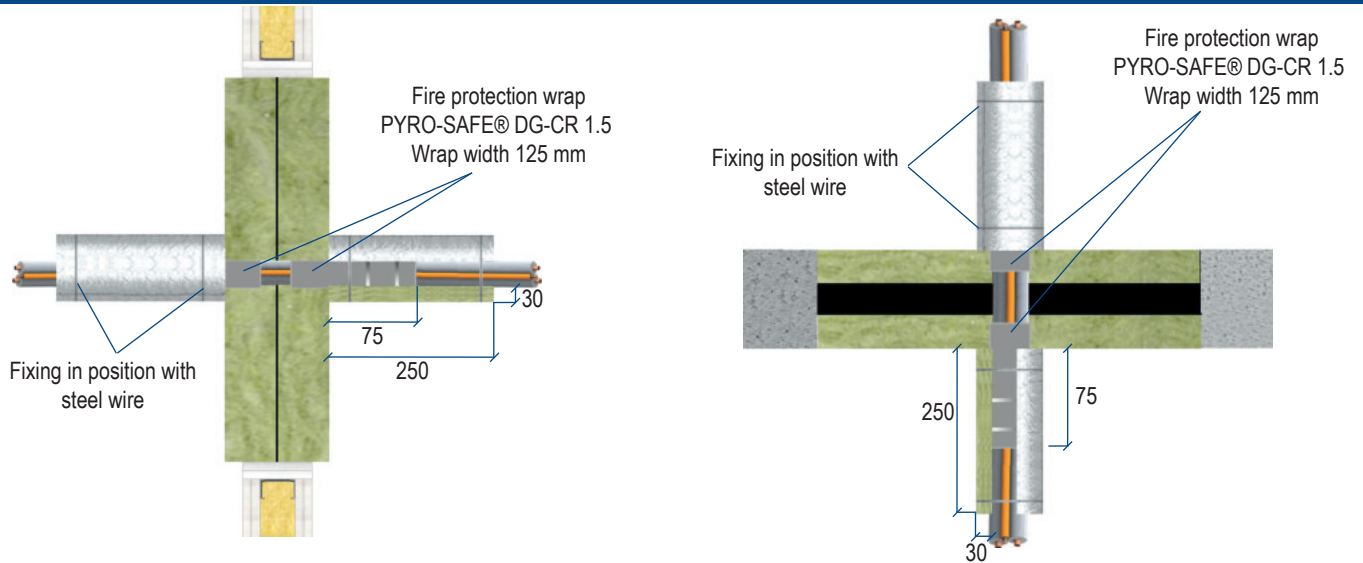
* Isolation of Armaflex Protect

PYRO-SAFE® Flammotect double layer

6.11 HVAC split line combinations

- The HVAC split line combinations must be wrapped at both ends with the fire protection wrap PYRO-SAFE® DG-CR 1.5 and provided with protective insulation „Lamella mat“ ($\geq 250 \text{ mm} \times \geq 30 \text{ mm}$).
- The protective insulation must be installed at both ends; fixing in position must be ensured through suitable measures to prevent slipping.
- The fire protection wrap PYRO-SAFE® DG-CR 1.5 is coated on one side and equipped with a protective film. This must be removed before the wrap is fixed in position with the coated side pointing inwards and with steel wires.

Measures for sealing in walls and floors



Wall-/Floor-, seal thickness and implementation. See page 18

Dimensions in mm

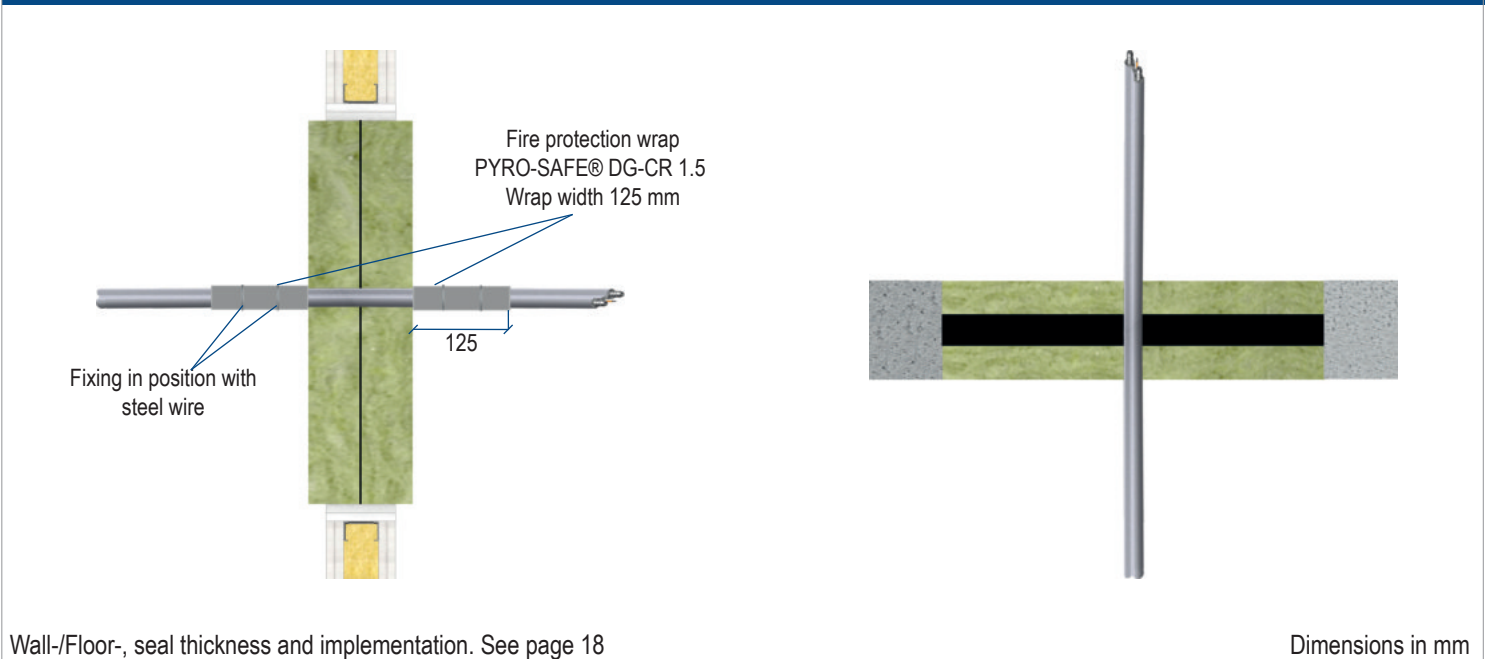
Pipe					Qty. of accompanying cables $\varnothing \leq 21 \text{ mm}$ [n]	Accompanying pipe made of PE \varnothing [mm]	Fire protection wrap PYRO-SAFE® DG-CR 1.5					Fire resistance class	
Material	Outside \varnothing [mm]	Wall thickness [mm]	Insulation [Type]	Insulation thickness D [mm]			Wrap width [mm]	Qty. wraps [n]	Qty. layer [n]	Overlap [mm]	Inside seal [mm]	Outside seal [mm]	Wall
Copper	6 - 10 and 6 - 18	1,0	PEF	9	3 (max. à 5x 1,5 mm ²)	125	-	50	75	2	1	EI 120	U/U
	6 - 22												
	6-22 and 8-22				4					1	2	-	EI 90
	6 - 22											C/U	

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6.12 Double solar pipes „NanoSUN2“

- If installed in walls, the double solar pipes must be wrapped on both sides with the fire protection wrap PYRO-SAFE® DG-CR 1.5; protective insulation „Lamella mat“ may be necessary (DN 40, EI 120 U/U).
- The fire protection wrap PYRO-SAFE® DG-CR 1.5 is coated on one side and equipped with a protective film. This must be removed before the wrap is fixed in position with the coated side pointing inwards and with steel wires.

Measures for sealing in walls and floors



Outside Ø [mm]	Fire protection wrap PYRO-SAFE® DG-CR 1.5						Fire resistance class	
	Wrap width [mm]	Qty. wraps [n]	Qty. layer [n]	Overlap [mm]	Inside seal [mm]	Outside seal [mm]	Wall	Floor
≤ DN 25	125	2	1	-	-	125	EI 120 C/U	-
	-						-	EI 120 C/U
≤ DN 40	125	2	1	25	0	125	EI 60 / E 120 U/U	-
	125	2	1	25	0	125	EI 120 U/U*	-
	-						-	EI 120 C/U

* Additional protective insulation „Lamella mat“ (≥ 250 mm x ≥ 30 mm) required.

PYRO-SAFE® Flammotect double layer

7. Installation steps

7.1 For cable penetrations

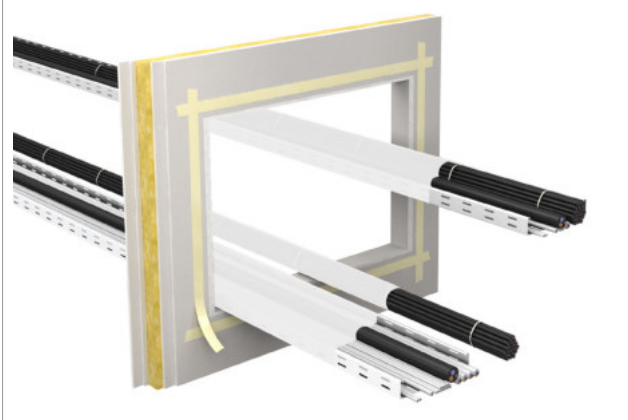
1. Opening with installations passed through it



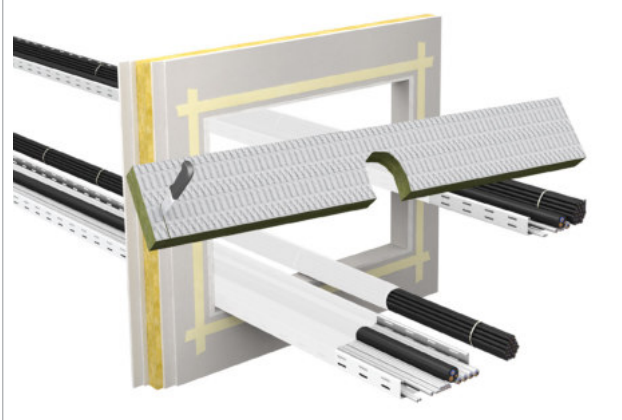
2. Clean the inside edges (reveal panelling must be present in the building)



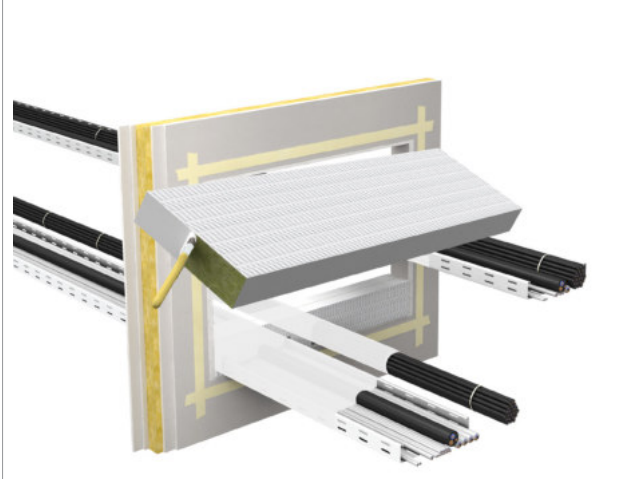
3. Mask the passage all around with masking tape 20 mm away from the edge. Coat the cables with PYRO-SAFE® FLAMMOTECT-A; alternatively, design with fire protection wrap.



4. Cut mineral fibre board to site (produce cut-outs for the installations).



5. Coat edges of the mineral fibre boards with PYRO-SAFE® FLAMMOTECT-A and firmly seat boards into position.

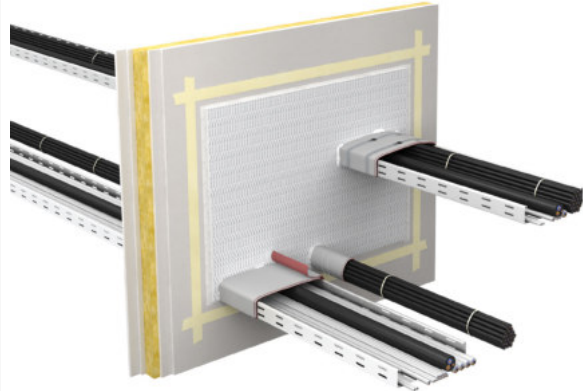


6. Seal residual opening/joint gaps with mineral fibre or fill with PYRO-SAFE® FLAMMOTECT-A.

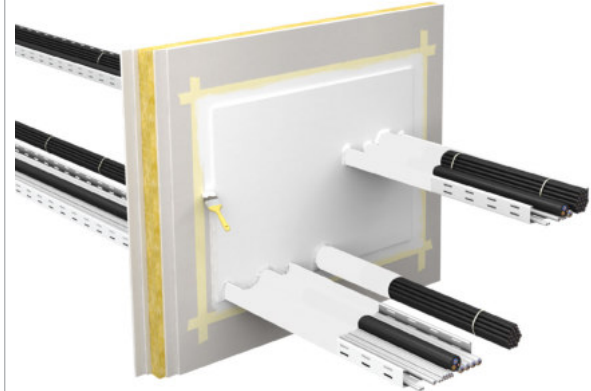


PYRO-SAFE® Flammotect double layer

7. Alternative to cable coating: wrap cables, cable bundles, cable trays with PYRO-SAFE® DG-CR 1.5



8. Top coat with PYRO-SAFE® FLAMMOTECT-A.



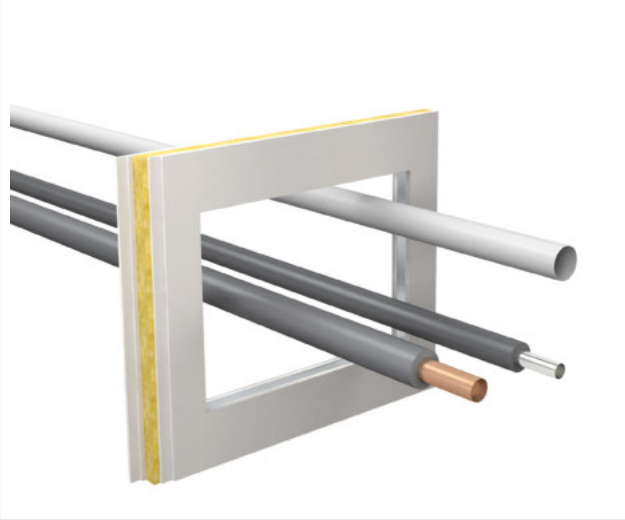
9. If required or mandatory, fill the identification label and apply it next to / above (not on!) the penetration seal for permanent marking.



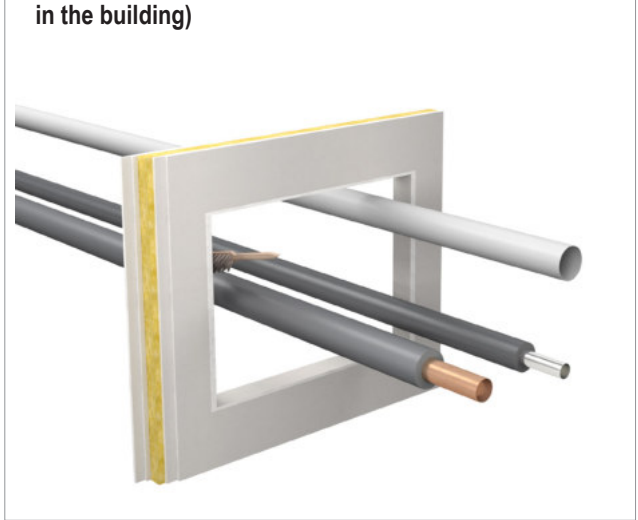
PYRO-SAFE® Flammotect double layer

7.2 For pipe penetrations

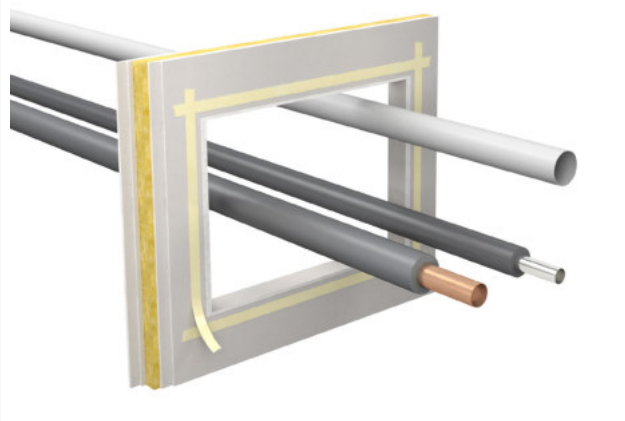
1. Opening with installations passed through it



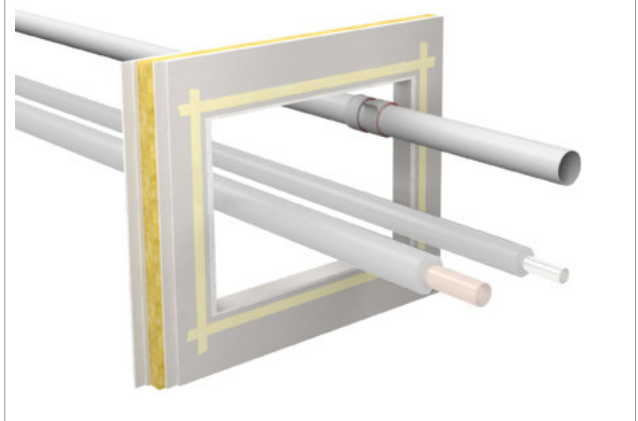
2. Clean the inside edges (reveal panelling must be present in the building)



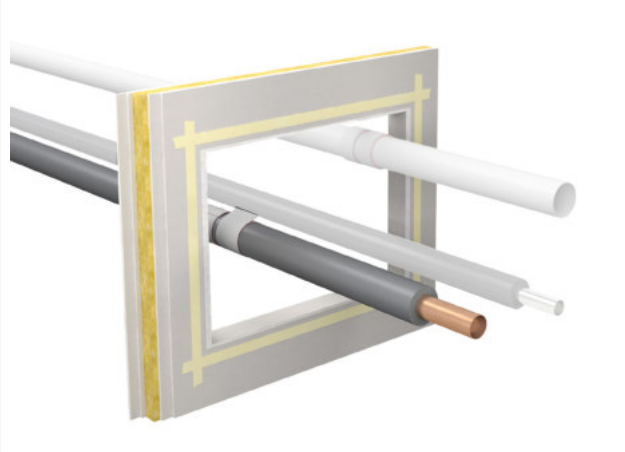
3. Mask the passage all around with masking tape 20 mm away from the edge. Coat the cables with PYRO-SAFE® FLAMMOTECT-A; alternatively, design with fire protection wrap.



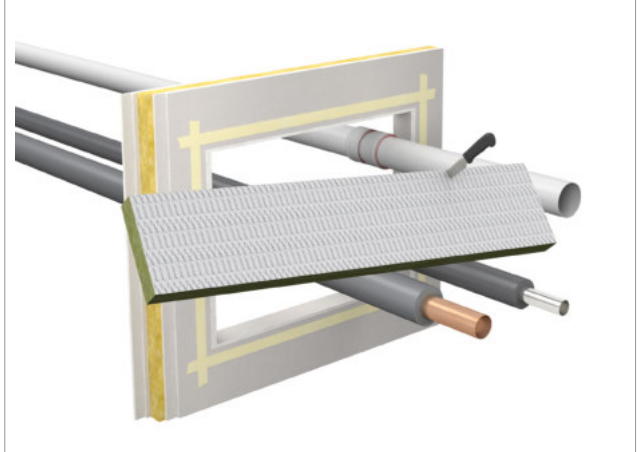
4. Wrap combustible pipes with PYRO-SAFE® DG-CR BS. See page 23.



4a. Wrap non-combustible pipes with combustible insulation with PYRO-SAFE® DG-CR 1.5. See page 27.

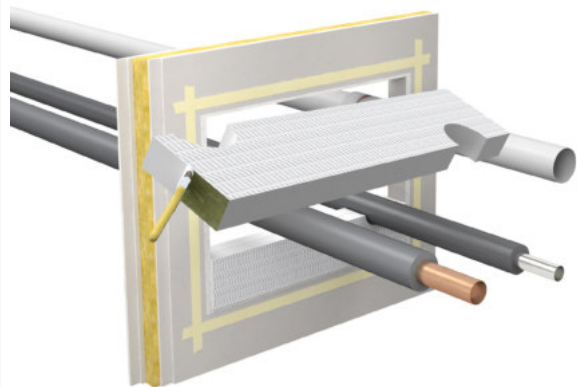


5. Cut mineral fibre boards to size (produce cut-outs for the passages).

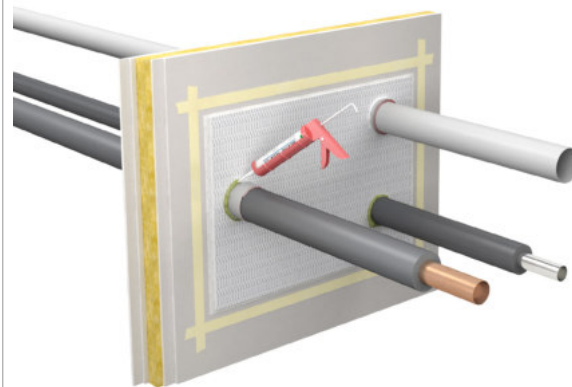


PYRO-SAFE® Flammotect double layer

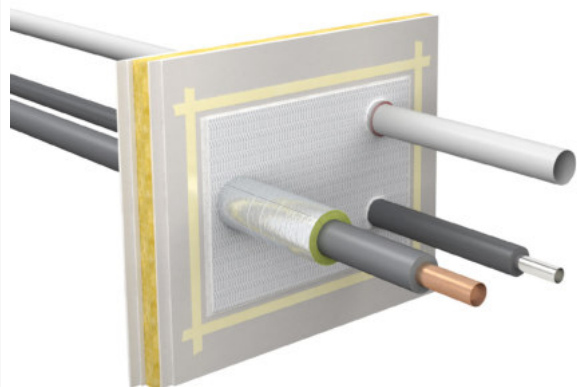
6. Coat edges of the mineral fibre boards with PYRO-SAFE® FLAMMOTECT-A and firmly seat boards into position.



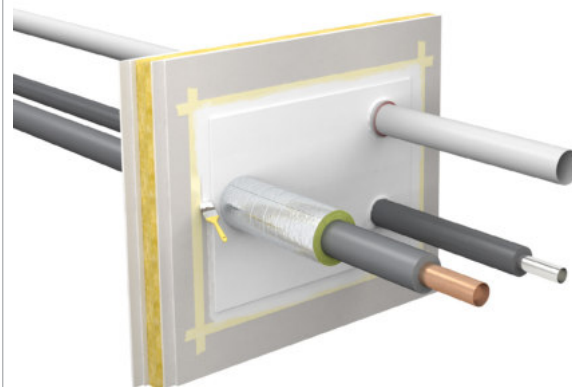
7. Seal residual opening/joint gaps with mineral fibre or fill with PYRO-SAFE® FLAMMOTECT-A.



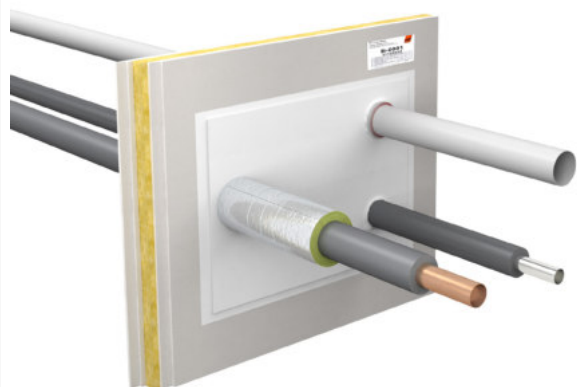
8. If required, additionally provide pipes with protective insulation.



9. Top coat using PYRO-SAFE® FLAMMOTECT-A.



10. If required or mandatory, fill the identification label and apply it next to / above (not on!) the penetration seal for permanent marking.



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7.3 Combination penetration sealing system

1. Opening with passages



2. Clean the inside edges (reveal panelling must be present in the building).



3. Mask the passage all around with masking tape 20 mm away from the edge. Coat the cables with PYRO-SAFE® FLAMMOTECT-A; alternatively, design with fire protection wrap.



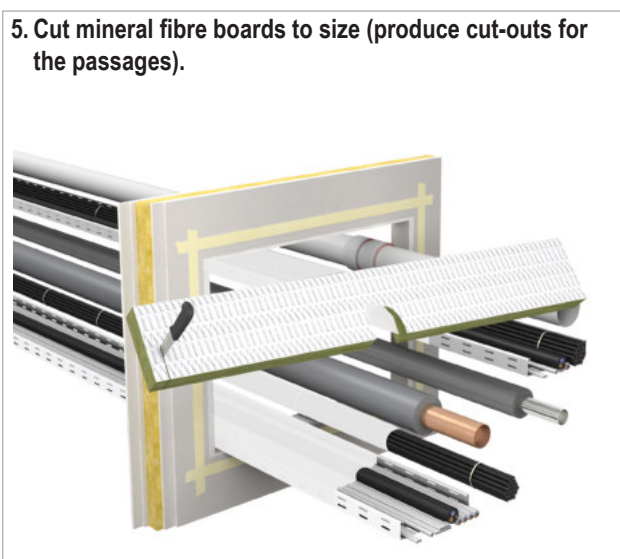
4. Wrap combustible pipes with PYRO-SAFE® DG-CR BS. See page 23.



4a. Wrap non-combustible pipes with combustible insulation with PYRO-SAFE® DG-CR 1.5. See page 27.



5. Cut mineral fibre boards to size (produce cut-outs for the passages).

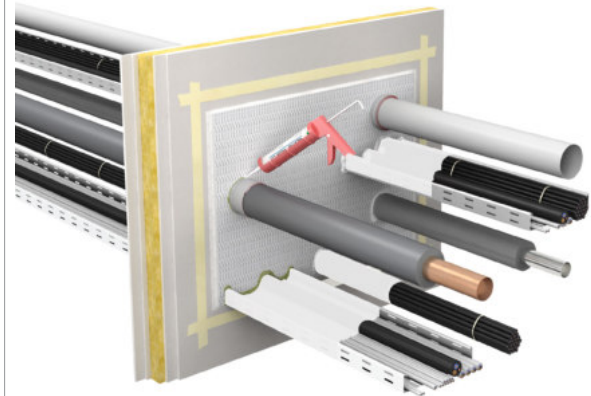


PYRO-SAFE® Flammotect double layer

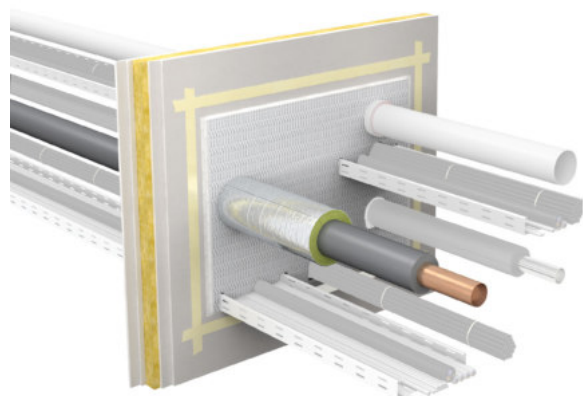
6. Coat edges of the mineral fibre boards using PYRO-SAFE® FLAMMOTECT-A and firmly seat boards.



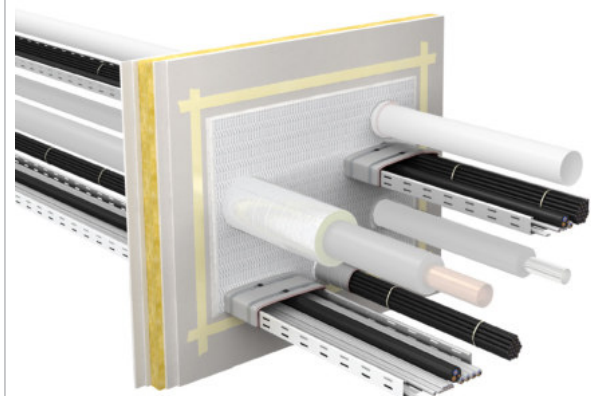
7. Seal residual opening/joint gaps with mineral fibre or fill with PYRO-SAFE® FLAMMOTECT-A.



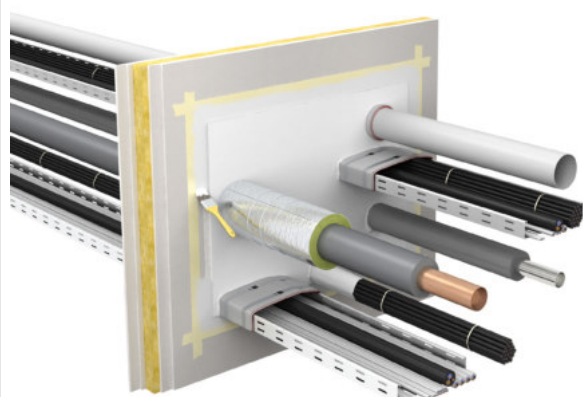
8. If necessary, additionally provide pipes with protective insulation „Lamella mat“.



9. Alternative to cable coating: wrap cables, cable bundles, cable trays with PYRO-SAFE® DG-CR 1.5.



10. Top coat using PYRO-SAFE® FLAMMOTECT-A.



11. If required or mandatory, fill the identification label and apply it next to / above (not on!) the penetration seal for permanent marking.





Declaration of Performance

No. 01155-PYRO-SAFE-FLAMMOTECT-A
PYRO-SAFE® FLAMMOTECT-A

Date: 25.09.2018
Rev.: 04
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Unique identification code of the product type

PYRO-SAFE® FLAMMOTECT-A

Intended use

- A) Ablative fire stopping product used in penetration seals
- B) Fire stopping product used for linear joint and gap sealing

Manufacturer

svt Brandschutz Vertriebsgesellschaft mbH International,
Gluesinger Strasse 86, D - 21217 Seevetal

System for assessing and verifying constancy of performance

A) + B) System 1

European Assessment Document

- A) ETAG 026-2:2011
- B) EAD 350141-00-1106

European Technical Assessment

- A) ETA-14/0418 dated 04.12.2014
- B) ETA-18/0237 dated 16.05.2018

Certificate of constancy of performance

- A) 0761-CPR-0426
- B) 0761-CPR-0726

Technical Assessment Body

- A) Deutsches Institut für Bautechnik (DIBt), Berlin
- B) ETA-Danmark A/S

The notified body

A) + B) Civil Engineering Materials Testing Institute (MPA BS) in Braunschweig, code number 0761

Declared performance

	Essential characteristics	Performance	Harmonised technical specifications
A) + B)	Reaction to fire	Class E	EN 13501-1
A)	Fire resistance	Class EI 30 - Class EI 240 For details check ETA-14/0418	EN 13501-2
B)		Maximum Class EI 120-H-X-B-W-00 up to 200 Class EI 120-V-X-B-W-00 up to 200 for details check ETA-18/0237	
A)	Emission of dangerous substances	No dangerous substances	ETAG 018-2
A) + B)	Durability and serviceability	Use category type X	ETAG 026-2

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

Signed for and on behalf of the manufacturer by:

p.p. Christian Meyer-Korte
Head of Product Management / Private Label

p.p. Andree Schober
Head of chemical department



Fire protection worldwide



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