



*Protect your values.*



Effective fire protection solutions up to EI 240

## PYRO-SAFE<sup>®</sup> Flammotect Penetration Sealing Systems

Penetration seals made from mineral fibre wool or mineral fibre boards with fire-resistant ablative coating for a wide variety of different media lines



## Penetration Seals – for Safe Separation of Fire Compartments

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Penetration seals fulfil an important function in almost all modern buildings: They prevent fire jumping from one fire compartment to the next. As a result of the multitude of electrical conduits and pipes that pass through a building, open penetrations are created that also cross through fire-protection walls and floors and pose a high risk for the spread of fire and smoke. In order to guarantee long-term safety, these openings must be professionally sealed with high-quality fire protection products.



# PYRO-SAFE® Flammotect Penetration Seals

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Passive structural fire protection as well as the requirements for the construction of penetration seals are diverse and complex. With PYRO-SAFE® Flammotect penetration sealing systems you have a wide range of applications with just a few products and you always have the right fire protection solution. The different designs, from an easy sealing system for single installations to 4-layer system, allow you the best fire protection solution every time.

## Overview of the Penetration Sealing Systems

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- **PYRO-SAFE® ES**  
Fire resistance class: **Up to max. EI 120** according to EN-13501-2
- **PYRO-SAFE® Flammotect OSI**  
Fire resistance class: **Up to max. EI 120** according to EN-13501-2
- **PYRO-SAFE® Flammotect 1-layer**  
Fire resistance class: **Up to max. EI 90** according to EN-13501-2
- **PYRO-SAFE® Flammotect 2-layer**  
Fire resistance class: **Up to max. EI 120** according to EN-13501-2
- **PYRO-SAFE® Flammotect 4-layer**  
Fire resistance class: **Up to max. EI 240** according to EN-13501-2

## The svt Product Guide

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Find the right fire protection solution quickly and directly online. With the svt Product Guide, we offer you a practical tool to simplify the complex decision-making process relating to passive structural fire protection and guide you step by step to the right fire protection system for your individual requirements.

You can find the svt Product Guide at: [www.svt-global.com/productguide](http://www.svt-global.com/productguide)



# PYRO-SAFE® ES

Single penetrations in small openings can be sealed with the PYRO-SAFE® ES penetration sealing system, the opening is simply closed with loose mineral wool and sealed with PYRO-SAFE® FLAMMOTECT-A.

## Penetration of Electrical Installations

**Fire Resistance Class:**  
Up to max. EI 120 per EN-13501-2



### System Data

Certificate of usability	ETA-14/0418	
	Wall	Floor
Component thickness	≥ 100	≥ 125
Penetration seal thickness	≥ 100	≥ 125
Penetration seal size	500 x 200 (rectangular) or Ø 350 (round)	350 x 150 (rectangular) or Ø 160 (round)

All measurements in mm

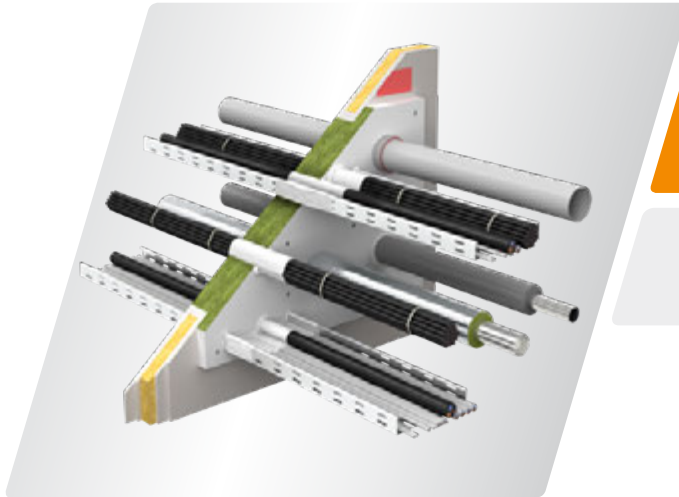
### Penetration of Electrical Installations

Media lines		Diameter (max.)	Measure	Fire resistance class (max.)		
				Wall	Floor	
	Cables Cable bundles Cable support structures	≤ 21 (cable)	–	EI 90	EI 90	
		≤ 100 / 21 (cable bundles)	–	EI 60	EI 90	
	EIC	≤ 32 / 21	PYRO-SAFE® DG-CR 1.5 fire protection wrap	EI 120 U/U	EI 90 U/U	
		≤ 50 / 21	PYRO-SAFE® DG-CR 1.5 fire protection wrap	EI 120 U/U	–	
	EIC	Bundle	≤ 100 / 32 / 21	PYRO-SAFE® DG-CR 1.5 fire protection wrap	EI 120 U/U	EI 90 U/U
	EIC	Steel	≤ 16 / 14	–	EI 120	–
			≤ 50 / 21	PYRO-SAFE® DG-CR 1.5 fire protection wrap	EI 120	–
	HVAC split line combinations	✓	PYRO-SAFE® DG-CR 1.5 fire protection wrap	EI 90	EI 90	

All measurements in mm

# PYRO-SAFE® Flammotect OSI

If the structural situation requires a single-sided installation (e.g. in shaft walls), the PYRO-SAFE® Flammotect OSI is ideal because it has been specially developed for this purpose.



**Installation in Shaft Walls,  
Floors, Solid Walls and  
Light Partition Walls**

**Fire Resistance Class:  
Up to max. EI 120 per EN-13501-2**

## System Data

Certificate of usability	ETA-14/0418	
	Wall	Floor
Component thickness	≥ 40 (shaft wall) / ≥ 100 (light partition wall)	≥ 150
Penetration seal thickness	≥ 100	≥ 100
Penetration seal size	450 x 370 (shaft wall) / 1175 x 800 (light partition wall)	1300 x 1100

All measurements in mm

## Example Penetrations

Media lines		Diameter (max.)	Measure	Fire resistance class (max.)		
				Wall	Floor	
	Cables Cable bundles Cable support structures	≤ 21 (cable)	PYRO-SAFE® FLAMMOTECT-A coating or PYRO-SAFE® DG-CR 1.5 fire protection wrap	EI 120	EI 120	
		≤ 80 (cable)		EI 90	EI 90	
		≤ 100 / 21 (cable bundles)		EI 120	EI 120	
	Wave guide	≤ 90 / 14	PYRO-SAFE® FLAMMOTECT-A coating	EI 120 U/U	EI 120 U/U	
	EIC	Single	≤ 32 / 21	PYRO-SAFE® DG-CR 1.5 fire protection wrap	EI 120 U/U	EI 120 U/U
	EIC	Bundle	≤ 100 / 32 / 21	PYRO-SAFE® DG-CR 1.5 fire protection wrap	EI 120 U/U	EI 120 U/U
	PE lines, "speed pipes"	max. 24 pcs., pipe outer ≤ 7 max. 7 pcs., pipe outer ≤ 10 max. 5 pcs., pipe outer ≤ 12	PYRO-SAFE® DG-CR 1.5 fire protection wrap	EI 120 U/U	EI 120 U/U	
	Combustible pipes	≤ 160	PYRO-SAFE® DG-CR BS fire protection wrap	EI 120 U/U	EI 120 U/U	
	Multilayer composite pipes	≤ 63	"Armaflex Protect" protective insulation	EI 120 U/C	EI 120 U/C	
	Non-combustible pipes with mineral fibre insulation	≤ 42 (copper)	Lamella mat protective insulation	EI 120 C/U	EI 120 C/U	
		≤ 114.3 (steel)		EI 120 C/U	EI 120 C/U	
		≤ 88.9 (copper)	–	–	EI 120 C/U	
		≤ 170 (steel)	–	–	EI 120 C/U	
	Non-combustible pipes with FEF insulation	≤ 88.9	PYRO-SAFE® DG-CR 1.5 fire protection wrap + lamella mat protective insulation	EI 120 C/U	EI 120 C/U	
	HVAC split line combinations	✓	PYRO-SAFE® DG-CR 1.5 fire protection wrap + lamella mat protective insulation	–	EI 120 U/U	

All measurements in mm

For further information on the PYRO-SAFE® Flammotect OSI please request our separate brochure.

# PYRO-SAFE® Flammotect 1-layer

With a fire resistance class up to max. EI 90, our PYRO-SAFE® Flammotect 1-layer penetration seal is suitable for large openings and complex penetrations. It consists of only one coated mineral-fibre board with a thickness of  $\geq 60$  mm. All media lines can be combined and fed through the same opening.

## Penetration of Electrical Installations and Combustible/ Non-Combustible Pipes

Fire Resistance Class:  
Up to max. EI 90 per EN-13501-2








### System Data

Certificate of usability	ETA-14/0418	
	Wall	Floor
Component thickness	$\geq 100$	$\geq 125$
Penetration seal thickness	$\geq 60$	$\geq 60$
Penetration seal size	1175 x 1200	1200 x 2400 or 800 x $\infty$

All measurements in mm











## Penetration of Electrical Installations

Media lines		Diameter (max.)	Measure	Fire resistance class (max.)		
				Wall	Floor	
	Cables Cable bundles Cable support structures	≤ 80 (cable)	PYRO-SAFE® FLAMMOTECT-A coating	EI 60	EI 60	
		≤ 100 (cable bundles)		EI 90	EI 60	
		≤ 80 (cable)	PYRO-SAFE® DG-CR 1.5 fire protection wrap	EI 60	EI 60	
		≤ 100 (cable bundles)		EI 60	EI 60	
	EIC	Single	≤ 32	PYRO-SAFE® DG-CR 1.5 fire protection wrap	EI 60 U/U	
	EIC	Bundle	≤ 100			EI 90 U/U
	PE lines, "speed pipes"		max. 24 pcs., pipe outer ≤ 7 max. 7 pcs., pipe outer ≤ 10 max. 5 pcs., pipe outer ≤ 12	PYRO-SAFE® DG-CR 1.5 fire protection wrap	EI 60 U/U	EI 60 U/U
	Wave guide / coaxial cable		≤ 51.1	Protective insulation made from lamella mat	EI 60 U/C	EI 60 U/C

All measurements in mm

## Penetration of Combustible/Non-Combustible Pipes

Media lines		Diameter (max.)	Measure	Fire resistance class (max.)	
				Wall	Floor
	Combustible pipes	≤ 50	PYRO-SAFE® DG-CR BS fire protection wrap	EI 90 U/U	EI 90 U/U
		≤ 110		EI 60 U/U	EI 60 U/U
	"HENCO" multilayer composite pipes	≤ 63	Protective insulation made from lamella mat or "Armaflex Protect"	–	EI 90 U/C
	"Uponor MLC pipe white S" multilayer composite pipes	≤ 110	Protective insulation made from lamella mat or "Armaflex Protect"	–	EI 60 U/C
	Non-combustible pipes (copper, steel, stainless steel, cast iron) with mineral fibre insulation	≤ 88.9 (copper)	–	EI 60 C/U	EI 60 C/U
		≤ 219.1 (steel, stainless steel, cast iron)	Lamella mat protective insulation	EI 60 C/U	EI 60 C/U
	Non-combustible pipes (copper, steel, stainless steel, cast iron) with FEF "NH/Armaflex" insulation	≤ 42 (copper)	PYRO-SAFE® DG-CR 1.5 fire protection wrap	EI 90 C/U	EI 90 C/U
		≤ 108 (copper)	PYRO-SAFE® DG-CR 1.5 fire protection wrap + lamella mat protective insulation	EI 90 C/U	EI 90 C/U
		≤ 170 (steel, stainless steel, cast iron)	PYRO-SAFE® DG-CR 1.5 fire protection wrap + lamella mat protective insulation	EI 60 C/U	EI 90 C/U
	Non-combustible pipes (copper, steel, stainless steel, cast iron) with FEF "Armaflex Protect" insulation	≤ 88.9 (copper)	–	EI 60 C/U	EI 60 C/U
		≤ 170 (steel, stainless steel, cast iron)	–	EI 90 C/U	EI 60 C/U
	HVAC split line combinations	✓	PYRO-SAFE® DG-CR 1.5 fire protection wrap + lamella mat protective insulation in floors	EI 60	EI 90
	"NanoSUN <sup>2</sup> " double solar pipes	DN 16	PYRO-SAFE® DG-CR 1.5 fire protection wrap	EI 90 U/U	EI 60 U/U
		DN 40	–	–	EI 60 U/U

All measurements in mm

# PYRO-SAFE® Flammotect 2-layer

With a fire resistance class up to max. EI 120, our PYRO-SAFE® Flammotect 2-layer penetration seal is suitable for large openings and complex penetrations. It consists of two coated mineral-fibre boards with a thickness of  $\geq 60$  mm. All media lines can be combined and fed through the same opening.

## Penetration of Electrical Installations and Combustible/ Non-Combustible Pipes

Fire Resistance Class:  
Up to max. EI 120 per EN-13501-2



### System Data






Certificate of usability	ETA-14/0418	
	Wall	Floor
Component thickness	$\geq 100$	$\geq 150$
Penetration seal thickness	$\geq 120$	$\geq 150$
Penetration seal size	1400 x 2000	1400 x 2000

All measurements in mm












## Penetration of Electrical Installations

Media lines		Diameter (max.)	Measure	Fire resistance class (max.)		
				Wall	Floor	
	Cables Cable bundles Cable support structures	≤ 80 (cable)	PYRO-SAFE® FLAMMOTECT-A coating	EI 120	EI 120	
		≤ 100 (cable bundles)				
		≤ 80 (cable)	PYRO-SAFE® DG-CR 1.5 fire protection wrap	EI 120	EI 120	
		≤ 100 (cable bundles)				
	EIC	Single	≤ 32	PYRO-SAFE® DG-CR 1.5 fire protection wrap	EI 120 U/U	EI 90 U/U
	EIC	Bundle	≤ 100			
	PE lines, "speed pipes"		max. 24 pcs., pipe outer ≤ 7 max. 7 pcs., pipe outer ≤ 10 max. 5 pcs., pipe outer ≤ 12	PYRO-SAFE® DG-CR 1.5 fire protection wrap	EI 120 U/C	–
	Wave guide / coaxial cable		≤ 51.1	PYRO-SAFE® FLAMMOTECT-A coating	EI 120 U/C	EI 120 U/C

All measurements in mm

## Penetration of Combustible/Non-Combustible Pipes

Media lines		Diameter (max.)	Measure	Fire resistance class (max.)	
				Wall	Floor
	Combustible pipes	≤ 110	PYRO-SAFE® DG-CR BS fire protection wrap	EI 120 U/U	EI 120 U/U
		≤ 160			
	"HENCO" multilayer composite pipes	≤ 63	Protective insulation made from lamella mat or "Armaflex Protect"	EI 120 U/C	EI 120 U/C
	Non-combustible pipes (copper, steel, stainless steel, cast iron) with mineral fibre insulation	≤ 42 (copper)	–	EI 120 C/U	EI 120 C/U
		≤ 108 (copper)	Lamella mat protective insulation	EI 120 C/U	EI 120 C/U
		≤ 323.9 (steel, stainless steel, cast iron)	Lamella mat protective insulation	–	EI 120 C/U
	Non-combustible pipes (copper, steel, stainless steel, cast iron) with FEF "NH/Armaflex" insulation	≤ 54 (copper)	PYRO-SAFE® DG-CR 1.5 fire protection wrap + lamella mat protective insulation	EI 120 C/U	EI 120 C/U
		≤ 88.9 (copper)	PYRO-SAFE® DG-CR 1.5 fire protection wrap + lamella mat protective insulation	EI 120 C/U	EI 90 C/U
		≤ 108 (copper)	PYRO-SAFE® DG-CR 1.5 fire protection wrap + lamella mat protective insulation	EI 90 C/U	EI 90 C/U
		≤ 170 (steel, stainless steel, cast iron)	PYRO-SAFE® DG-CR 1.5 fire protection wrap + lamella mat protective insulation	EI 120 C/U	EI 90 C/U
	Non-combustible pipes (copper, steel, stainless steel, cast iron) with FEF "Kaiflex ST" insulation	≤ 88.9 (copper)	PYRO-SAFE® DG-CR 1.5 fire protection wrap + lamella mat protective insulation	EI 120 C/U	EI 120 C/U
		≤ 170 (steel, stainless steel, cast iron)	PYRO-SAFE® DG-CR 1.5 fire protection wrap + lamella mat protective insulation	EI 90 C/U	EI 90 C/U
	HVAC split line combinations	✓	PYRO-SAFE® DG-CR 1.5 fire protection wrap + lamella mat protective insulation	EI 120 U/U	EI 90 C/U
	"NanoSUN" double solar pipes	DN 25	PYRO-SAFE® DG-CR 1.5 fire protection wrap	EI 120 C/U	–
		DN 25	–	–	EI 120 C/U
		DN 40	PYRO-SAFE® DG-CR 1.5 fire protection wrap	EI 120 C/U	–
		DN 40	–	–	EI 120 C/U

All measurements in mm

# PYRO-SAFE® Flammotect 4-layer

Particularly high fire protection requirements can be fulfilled with the 4-layer PYRO-SAFE® Flammotect 4-layer, which prevents flame penetration and temperature rise at electrical installations for a period of four hours.

## Penetration of Electrical Installations

**Fire Resistance Class:**  
Up to max. EI 240 per EN-13501-2




### System Data

Certificate of usability	ETA-14/0418	
	Wall	Floor
Component thickness	≥ 240	≥ 200
Penetration seal thickness	≥ 240	≥ 240
Penetration seal size	600 x 600	600 x ∞

All measurements in mm

### Penetration of Electrical Installations

Media lines	Diameter (max.)	Measure	Fire resistance class (max.)	
			Wall	Floor
 Cables Cable bundles Cable support structures	≤ 80 (cable)	PYRO-SAFE® DG-CR 1.5 fire protection wrap	EI 240	EI 240
	≤ 100 (cable bundles)			

All measurements in mm

# Further Requirements

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In addition to the high requirements for passive structural fire protection, our products and systems also fulfil a large number of other requirements, e. g. resistance to weathering (moisture, UV radiation, freeze-thaw cycles, salt-water exposure), short-term and long-term contact with various chemicals or sound insulation.

## Your Benefits

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### Comprehensive Application Solutions

- ✓ Classified fire penetration seals according to EN 13501-2 to EI 240
- ✓ Multi-combination configurations and use in floors, shaft walls, solid walls and light partition walls
- ✓ Numerous approved penetrations and design variants

### Proven in Practice Throughout the World

- ✓ Use in building construction – residential/office buildings, hospitals, department stores, airports
- ✓ Proven in industrial buildings – production facilities, heavy industry, power stations and sub-stations, nuclear facilities

### High-Quality Fire Protection Products

- ✓ Fire protection products Made in Germany – solvent and halogen free
- ✓ Resistant to external influences, e. g. permanent moisture, UV radiation, freeze-thaw cycles or salt water
- ✓ Resistant to a multitude of chemicals



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