KNAUF SYSTEM FIRESTOP-F

The Knauf Fire protection foam - FPF system restores the fire resistance in areas of walls and floors where cables and pipes penetrate the component.

Mixed penetration seal or cable penetration seal up to EI 120 for rigid walls, rigid floors and flexible walls. Through penetration firestop system for electrical, telecommunication and optical fibre cables, conduits, as well as flammable and non-flammable pipes.

Specially suited for:

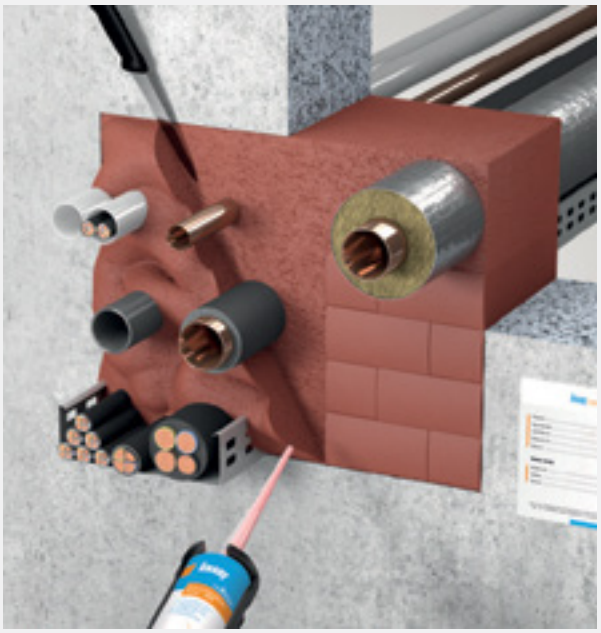
- Fast and easy sealing of component openings,
- Openings with many penetrating elements,
- Openings that are difficult to access or

Application:

- For mixed penetration seals up to EI 90
- For cable penetration seals up to EI 120
- For pipe penetration seals up to EI 120

General Instructions

- The cables, control lines, or conduits must be fastened on the cable trays and cable ladders or in support devices in accordance with the technical rules.
- The cable support systems (cable trays and ladders) and the associated supports or fastenings must be made of steel and fastened on both sides of the through penetration firestop systems in such a manner that in the event of fire, additional mechanical stress cannot act on the through penetration firestop systems over the period of time specified by the required fire resistance class. In this regard the technical rules and specifications provided by the manufacturer of the cable support system and of the fastening system must be complied with.
- The pipe support systems and their fastenings must be made of steel and fastened on both sides of the through penetration firestop systems in such a manner that in the event of fire, additional mechanical stress cannot act on the through penetration firestop systems over the period of time specified in the required fire resistance class. In this regard the technical rules and specifications provided by the manufacturer of the support system or of the fastening system must be complied with.
- Cable trays and ladders may optionally be routed through the through penetration firestop system.
- Conduits must be plugged with mineral wool on the ends so that it is smoke gas tight, or it must be sealed with Knauf Fire protection foam - FPF.



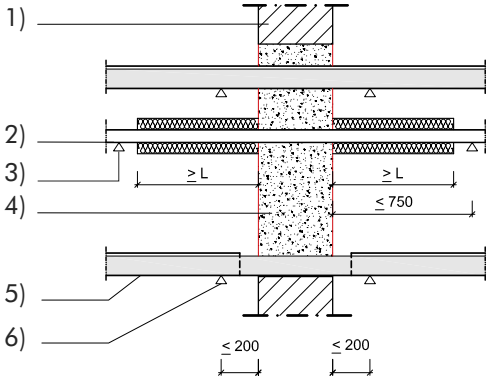
- The total cross section area of the penetrating elements based on the area of through penetration firestop system must not exceed 60 %.
- The first support of the cables, cable trays or ladders or conduits must be mounted maximum 200 mm in front of the through penetration firestop system for wall and floor installation (maximum distance in floors only required top-side).
- The first support of the pipes must be mounted maximum 750 mm in front of the through penetration firestop system for wall installation and 1200 mm for floor installation (maximum distance in floors only required top-side).

PENETRATION SEALS | KNAUF SYSTEM FIRESTOP-F

› Permissible install locations of the through penetration firestop system

Components	Rigid wall: Aerated concrete, concrete, reinforced concrete, masonry	Flexible wall: Timber or steel studs lined on both sides	Rigid floor: Aerated concrete, concrete, reinforced concrete
Minimum thickness	100 mm		150 mm
Classification of the component	EN 13501-2		
Fire resistance classification*	EI 60 EI 90		
Minimum seal thickness*	144 mm 200 mm		
Maximum opening size	W x H 450 x 500 [mm]		W x H 450 x 450 [mm]
Fire resistance classification*	EI 60 EI 90 EI 120		
Minimum seal thickness*	100 mm / 144 mm 144 mm / 200 mm 200 mm / 250 mm		
Maximum opening size	270 x 270 [mm] Ø 300 mm		

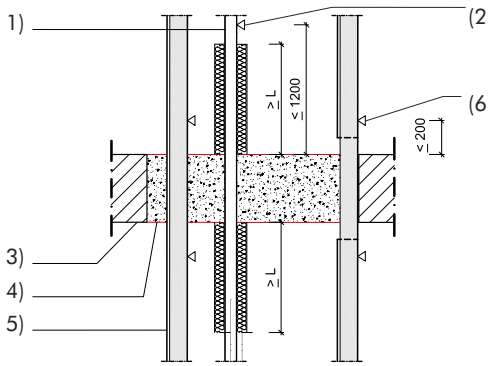
*The required seal thickness depending on the fire resistance classification and the penetrating element that is routed through is specified in the fire resistance classification tables.



Support of pipes and cables/cable support systems in walls

Legend

1. Rigid wall
2. Pipes
3. First support of pipes
4. Knauf Fire protection foam
5. Cables/cable support systems, conduits
6. First support of the cables/cable support systems, conduits



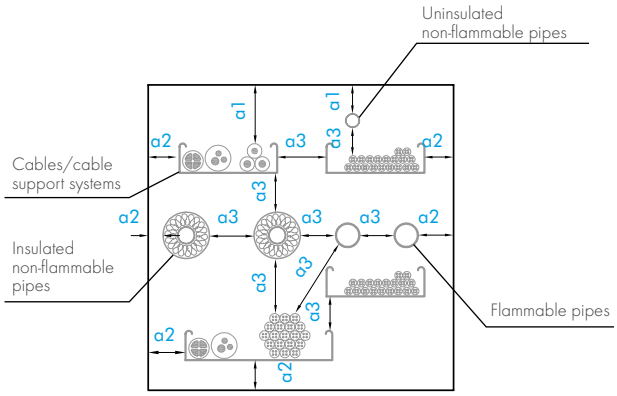
Support of pipes and cables/cable support systems in floors

Legend

1. Pipes
2. First support of pipes
3. Rigid floor
4. Knauf Fire protection foam - FPF
5. Cables/cable support systems, conduits
6. First support of the cables/cable support systems, conduits

Minimum working clearances mixed penetration seal

Penetrating elements	a1	a2	a3	
Cables, cable support systems and conduits	50 mm	0 mm	Cables / cable support systems and conduits, horizontal Cables / cable support systems and conduits, vertical Uninsulated non-flammable pipes Other penetrating elements	0 mm 50 mm 60 mm 50 mm
Non-flammable pipes insulated with mineral wool	0 mm	0 mm	Non-flammable pipes insulated with mineral wool Uninsulated non-flammable pipes Other penetrating elements	0 mm 60 mm 50 mm
Non-flammable pipes insulated with AF/Armaflex	35 mm	35 mm	Non-flammable pipes, insulated with AF/Armaflex (thickness > 9 mm) Non-flammable pipes, insulated with AF/Armaflex (thickness 9 mm) Uninsulated non-flammable pipes Other penetrating elements	35 mm 50 mm 60 mm 50 mm
Uninsulated non-flammable pipes	35 mm	35 mm	Uninsulated non-flammable pipes Other penetrating elements	60 mm 60 mm
Flammable pipes	50 mm	50 mm	Flammable pipes Uninsulated non-flammable pipes Other penetrating elements	50 mm 60 mm 50 mm
Between two through penetration firestop systems of this approval				100 mm



Legend

a1: Penetrating element - top edge of aperture

a2: Penetrating element - lower or lateral edge of aperture

a3: Penetrating element - penetrating element

Minimum working clearances cable penetration seal

Penetrating elements	a1	a2	a3	
Cables, cable support systems and conduits	0 mm	0 mm	Cables, cable support systems and conduits	0 mm
Between two through penetration firestop systems of this approval				100 mm

› Fire resistance classifications – mixed penetration seal

Max. dimensions (W x H) 450 x 500 [mm] in flexible wals or rigid walls with a thickness of ≥ 100 mm.
Max. dimensions (W x H) 450 x 450 [mm] in rigid floors with a thickness of ≥ 150 mm.

Penetrating elements		Minimum seal thickness of the mixed penetratio seal	
		144 mm	200 mm
Cables/ Cable trays and ladders	Sheathed electrical cables, telecommunication cables, optical fibre cables up to a maximum outer Ø of 80 mm Tied cable bundles up to a max. outer Ø of 100 mm consisting of sheathed electrical cables, telecommunication cables, optical fibre cables with a maximum outer Ø of 21 mm	Wall: E 120 / EI 60 Floor: E 60 / EI 60	Wall / floor: E 120 / EI 90
	Non-sheathed electrical cables up to a maximum outer Ø of 24 mm	Wall: E 120 / EI 45 Floor: E 60 / EI 30	Wall and floor: E 120 / EI 60
Conduits *	Conduits / pipes of steel up to a maximum outer Ø of 16 mm with or without cables	Wall: E 120-U/C / EI 60-U/C Floor: E 60-U/C / EI 60-U/C	Wall and floor: E 120-U/U EI 90-U/U
	Conduits / pipes of plastic up to a maximum outer Ø of 40 mm or bundles of plastic conduits with a maximum outer Ø of 80 mm (max. outer Ø of an individual conduit 40 mm), in each case with or without cables	Wall: E 120-U/C / EI 90-U/C Floor: E 60-U/C / EI 60-U/C	Wall and floor: E 120-U/U EI 120-U/U
Pipes **	Non-flammable pipes insulated with mineral wool up to a maximum outer Ø of 54 mm	Wall: E 120-C/U / EI 90-C/U Floor: E 60-C/U / EI 60-C/U	Wall and floor: E 120-C/U EI 90-C/U
	Uninsulated non-flammable pipes up to a maximum outer Ø of 28 mm	Wall: E 120-C/U / EI 60-C/U Floor: E 60-C/U / EI 60-C/U	Wall and floor: E 120-C/U EI 90-C/U
	Non-flammable pipes insulated with AF/Armaflex (insulation thickness > 9 mm) up to a maximum outer Ø of 88.9 mm	Wall: E 120-C/U / EI 90-C/U Floor: E 60-C/U / EI 60-C/U	Wall and floor: E 120-C/U EI 120-C/U
	Non-flammable pipes insulated with AF/Armaflex (insulation thickness 9 mm) up to a maximum outer Ø of 54 mm	Wall: E 120-C/U / EI 90-C/U Floor: E 60-C/U / EI 60-C/U	Wall and floor: E 120-C/U EI 90-C/U
	Flammable pipes up to a maximum outer Ø of 50 mm	Wall: E 120-U/C / EI 120-U/C Floor: E 60-U/C / EI 60-U/C	Wall and floor: E 120-U/U EI 120-U/U

* Beginning and end must be sealed smoke gas tight with Knauf Fire protection foam - FPF or mineral wool.
** See the pipe diagrams for the permissible insulation thicknesses.

› Fire resistance classifications – cable penetration seal

Max. dimensions (W x H) 270 x 270 [mm] or ≤Ø300 mm in flexible walls or rigid walls with a thickness ≥100 mm or in rigid floors with a thickness ≥150 mm.

Penetrating elements		Minimum seal thickness of the mixed penetratio seal			
		100 mm	144 mm	200 mm	250 mm
Cables/ Cable trays and ladders	Sheathed electrical cables, telecommunication cables, optical fibre cables up to a maximum outer diameter of 21 mm	E 120 EI 60	E 120 EI 90	E 120 Wall: EI 90 / EI 120 [2] Floor: EI 120	E 120 EI 120
	Sheathed electrical cables, telecommunication cables, optical fibre cables up to a maximum outer diameter of 21 mm < Ø ≤ 50 mm	Wall: E 120 / EI 45 EI 60 [1])	E 120 EI 60	E 120 EI 90 / EI 120 [2]	
	Sheathed electrical cables, telecommunication cables, optical fibre cables up to a maximum outer diameter of 50 mm < Ø ≤ 80 mm	-		E 120 EI 90 / EI 120 [2]	E 120 EI 90 / EI120 [2]
	Tied cable bundles up to a max. outer diameter of 100 mm consisting of sheathed electrical cables, telecommunication cables, optical fibre cables with a maximum outer diameter of 21 mm	-		E 120 Wall: EI 90 Floor: EI 90 / EI120 [2]	E 120 Wall: EI 90 Floor: EI 120
	Non-sheathed electrical cables up to a maximum outer diameter of 24 mm	-	E 120 Wall: EI 45 Floor: EI 30	E 120 Wall: EI 90 Floor: EI 60	E 120 Wall: EI 90 Floor: EI 60
Conduits *	Conduits / pipes of steel up to a maximum outer diameter of 16 mm with or without cables	-	E 120-U/C EI 60-U/C	E 120-U/U Wall: EI 120-U/U Floor: EI 90-U/U	E 120-U/U EI 120-U/U
	Conduits / pipes of plastic up to a maximum outer diameter of 40 mm or bundles of plastic conduits with a maximum outer diameter of 80 mm (max. outer diameter of an individual conduit 40 mm), in each case with or without cables	-	E 120-U/C EI 120-U/C	E 120-U/U EI 120-U/U	

* Beginning and end must be sealed smoke gas tight with Knauf Fire protection foam - FPF or mineral wool.
[1]) A minimum 20 mm thick bead of Knauf Fire protection foam - FPF over a length of at least 30 mm on both sides must be provided around the penetrating elements and cable support systems that are routed through.
[2]) The cables, cable bundles and cable support systems must be wrapped on both sides of the seal with Knauf Fire protection Wrap.