

**Hilti Firestop
Plug Kit:**

**Hilti firestop plug
CFS-PL**

**Hilti firestop filler
CFS-FIL**

**Hilti firestop putty
bandage CFS-P BA**

European Technical
Approval
ETA N° 13/0125



Firestop plug CFS-PL

Applications

- Temporary or permanent sealing around cables and cable bundles in wall and floor openings
- Cables and cable bundles
- Conduits and conduit bundles
- Possible with a PVC sleeve for a cast-in concrete process
- Optimal for rooms with dust and fiber-free requirements and areas that often change services, such as server rooms, laboratories and hospitals

Advantages

- Easy to install, no electric tools required
- Very easy maintenance and retrofitting of cables
- Economical installation as the plug is pre-cured and ready-to-use
- Painting of cables with firestop coating is not required
- Ideal for the temporary closing of empty core holes
- Easiest and fastest firestop system for round holes between 107 and 202 mm in diameter



Technical data

	CFS-PL
Cable	Yes
Max. cable bundle diameter	100 mm
Cable tray	No
Plastic conduits	Yes
Steel conduits	Yes
Temporary closing	Yes
Mixed penetration seals	No
Fire resistance in concrete	EI60/90/120
Fire resistance in masonry	EI60/90/120
Fire resistance in drywalls	EI60/90/120



Ordering designation	Package content	Discount group	Minimum order quantity	Item number
Firestop plug CFS-PL 107	max. opening size Ø 107 mm		1 pc	02059530
Firestop plug CFS-PL 132	max. opening size Ø 132 mm		4 pc	02059531
Firestop plug CFS-PL 158	max. opening size Ø 158 mm		2 pc	02059532
Firestop plug CFS-PL 202	max. opening size Ø 202 mm		2 pc	02059533

Firestop filler mastic CFS-FIL

Applications

- For use with Hilti firestop plug CFS-PL

Advantages

- Can be used with Hilti dispenser CFS-DISP



Ordering designation	Package content	Discount group	Minimum order quantity	Item number
Firestop filler mastic CFS-FIL	310 ml		1 pc	02052899

Firestop putty bandage CFS-B PA

Applications

- For use with Hilti firestop plug CFS-PL
- For specific cable configurations, to achieve EI 120

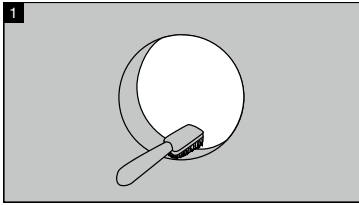
Advantages

- Easy to cut
- Self-adhesive

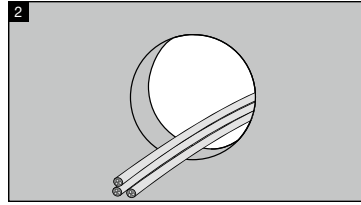


Ordering designation	Package content	Discount group	Minimum order quantity	Item number
Firestop putty bandage CFS-P BA	5 m		1 pc	02062876

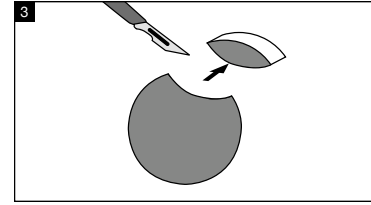
Installation instructions



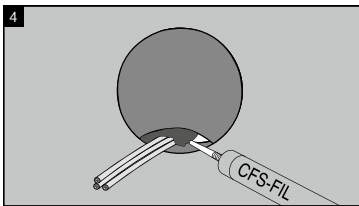
1 Clean the opening.



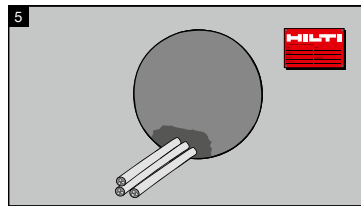
2 Cables can be placed in any part of the opening.



3 If cables are in place, cut the firestop plug CFS-PL as required.

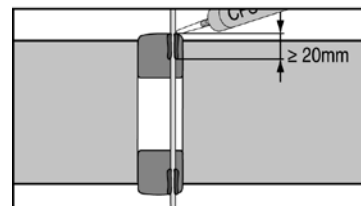
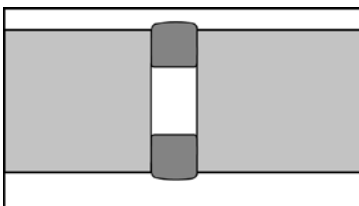
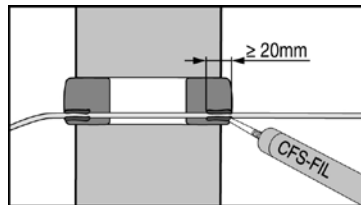
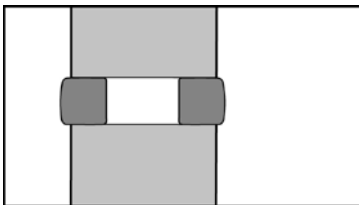


4 Fill gaps between cables and plug with firestop filler mastic CFS-FIL to a depth of at least 20 mm on both sides of the penetration.



5 Fasten an identification plate in place, if required.

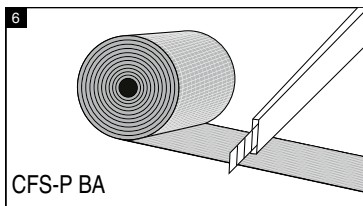
Use two plugs each for wall and floor application



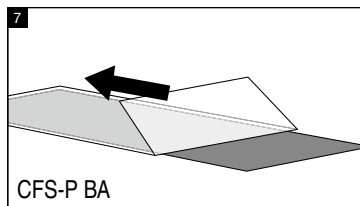
Note: From the firestop plugs that are offered, some smaller sizes of these plugs can be created by cutting out pieces of a larger plug.

EI 120 Classification

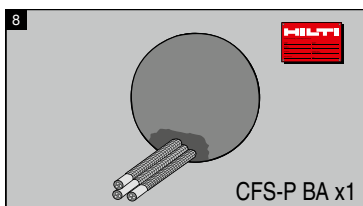
For some applications, firestop putty bandage CFS-P BA must be installed to upgrade the firestop classification to EI 120.



Cut lengths of firestop putty bandage CFS-P BA, as required, to cover all cables.

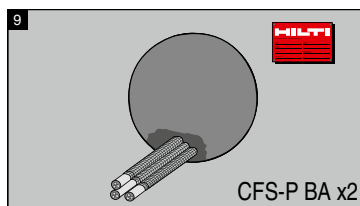


Remove the paper from the CFS-P BA firestop putty bandage.



Cover all cables with a single layer of the firestop putty bandage CFS-P BA. The firestop putty bandage CFS-P BA must extend to at least 100 mm from the surface of the opening.

There is a flexible mesh on one side of the firestop putty bandage CFS-P BA, which must face the outside of the penetration. When installed correctly, the flexible mesh will be visible from all sides of the penetration.



Cover the cables with a second layer of firestop putty bandage CFS-P BA. The firestop putty bandage CFS-P BA must extend to at least 100 mm from the surface of the opening.

There is a flexible mesh on one side of the firestop putty bandage CFS-P BA, which must face the outside of the penetration. When installed correctly, the flexible mesh will be visible from all sides of the penetration.

Distance Requirements

Distances valid for installations of services in wall and floor penetrations.

Minimum distances in mm (see Figure 1: Distance requirements)

- s1 = 0 (distance between cables and seal edge)
- s2 = 0 (distance between cables)
- s20, 21, 22 = 0 (conduits $\varnothing \leq 16$ mm)
- s20 = 0 (conduits $\varnothing > 16$ mm; distance between conduits to each other)
- s21, 22 = 20 (conduits $\varnothing > 16$ mm; distance between conduits and other services or seal edges)

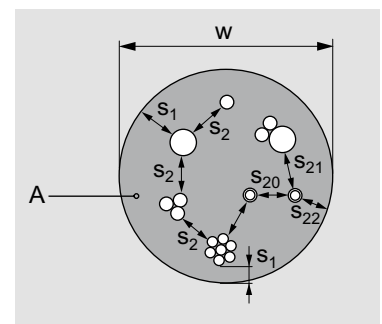


Figure 1: Distance requirements

Aperture framing/beading details for walls and floors

The minimum penetration seal depth is 150 mm (figure 2a, t_A) independent of the thickness of the wall or floor. In case of walls or floors with a thickness of less than 150 mm, a beading must be used (figure 2a, E1).

Aperture framing: Fire test results demonstrated that the aperture framing is not required.

Beading: Square plates made of gypsum or calcium silicate board with a size of $2 \times W_A$ (at least 100 mm wide) plus W (figure 2c, diameter of plug) are installed around the opening in the necessary number of layers. Two frames of the same height on both sides of the wall (figure 2a) have to be built.

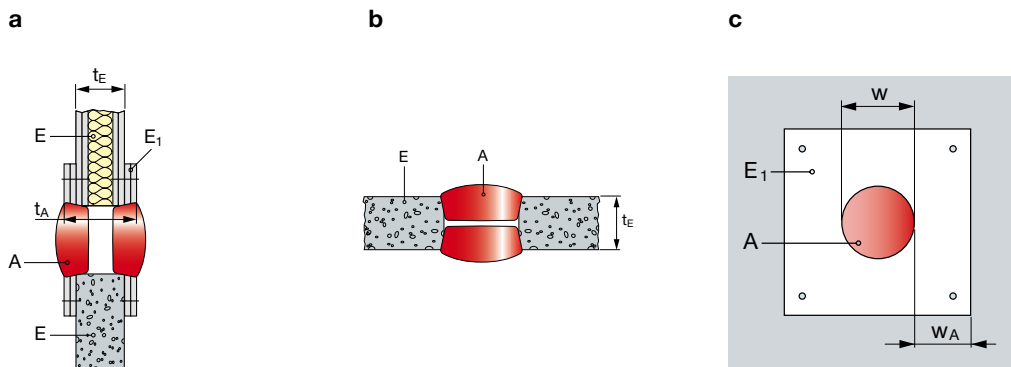


Figure 2: Aperture framing/beading and position of the seal in walls/floors

Abbreviations used in figure 2

Abbreviation	Description	Abbreviation	Description
A	Hilti firestop product	t_E	Thickness of the building element
E	Building element (rigid or flexible wall construction, floor)	w	Width of the seal
E_1	Beading	W_A	Width of the frame
t_A	Thickness of the seal		

Wall penetrations

The walls must be classified in accordance with EN 13501-2 for the required fire resistance period or fulfill the requirements of the relevant Eurocode. This ETA does not cover use of the product as a penetration seal in sandwich panel structures.

The intended use of Hilti firestop plug kit is to permanently or temporarily reinstate the fire resistance of:

Flexible wall, figure 3, top section (E)

The wall must have a minimum thickness of 100 mm (t_E) and comprise of timber or steel studs lined on both faces with minimum 2 layers of 12.5 mm thick boards. For timber stud walls there must be a minimum distance of 100 mm between the seal and any stud and the cavity between stud and seal must be filled. A minimum of 100 mm Class A1 or A2 insulation (in accordance with EN 13501-1) is necessary in the cavity between the stud and seal.

Rigid wall, figure 3, bottom section (E)

The wall must have a minimum thickness of 100 mm (t_E) and comprise of concrete, aerated concrete or masonry with a minimum density of 600 kg/m³.

Blank wall seal, no services, figure 3:

Maximum opening size 250 mm, and 60% of the seal area can be penetrated. Seal thickness ≥ 150 mm (t_A).

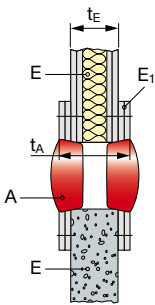


Figure 3: Blank wall seal, no services

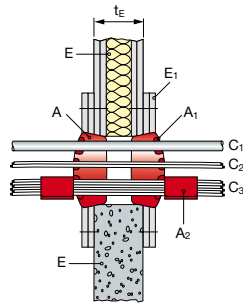


Figure 4: Details of filler (A_1) and 2 x putty (A_2)

Abbreviations used in figures 3, and 4

Abbreviation	Description	Abbreviation	Description
A, A ₁ , A ₂ ,...	Firestop products	A ₁	Hilti CFS-FIL firestop filler, to a depth of 20 mm
E, E ₁ , E ₂ ,...	Building elements (wall, floor)	A ₂	2 x Hilti CFS-P BA putty bandage
t _A	Thickness of penetration seal	t _E	Thickness of the building element
C, C ₁ , C ₂ ,...	Penetrating services		

Note: Gaps between services and Hilti firestop plugs CFS-PL (A) are filled with Hilti firestop filler CFS-FIL (A_1), depth 20 mm.

Cable penetrations, flexible/rigid wall, at least 100 mm thick

Description of services	Classification E=Integrity, I=Insulation	
Blank opening, from 52 mm to 250 mm in diameter, without filler and without putty	EI 120	
Standard cable services	Filler	Filler + 2 x putty
All sheathed cables up to 21 mm diameter	EI 120	-
Tied cable bundles up to 100 mm diameter, max. diameter of single cables 21 mm		
All sheathed cables from 21 mm diameter and up to 50 mm diameter	EI 90	EI 120
All sheathed cables from 50 mm diameter and up to 80 mm diameter	EI 90 / E 120	-
Non-sheathed electrical cables up to 24 mm diameter	EI 60 / E 120	-
Plastic conduits and tubes up to 16 mm with or without cables	EI 120-U/U	-
Steel conduits and tubes up to 16 mm with or without cables	EI 120-C/U	-
Small plastic conduits and tubes: PO: polyolefin (PE, PP, PPE, PPO, ...) PVC: polyvinyl chloride	Filler	
Flexible PO: 16 mm to 40 mm with or without cable	EI 120-U/U	
Flexible PVC: 16 mm to 32 mm with or without cable		
Rigid PO: 16 mm to 40 mm, with or without cable		
Rigid PVC: 16 mm to 40 mm, with or without cable		
Conduit bundles up to 100 mm diameter, max. diameter of single conduits 20 mm		

Note: Hilti firestop plug can be installed in the round opening directly or alternatively in a fitted plastic sleeve (PVC, 2mm wall thickness, 150mm length, flush to wall).

Floor penetrations

The floors must be classified in accordance with EN 13501-2 for the required fire resistance period or fulfill the requirements of the relevant Eurocode.

The intended use of Hilti firestop plug kit is to permanently or temporarily reinstate the fire resistance of:

Blank floor seal, no services, figure 5:

Maximum opening size 250 mm, and 60% of the seal area can be penetrated. Seal thickness ≥ 150 mm.

Rigid floor, figure 6, (E)

The floor must have a minimum thickness of 150 mm (t_E) and comprise of aerated concrete or concrete with a minimum density of 600 kg/m³.

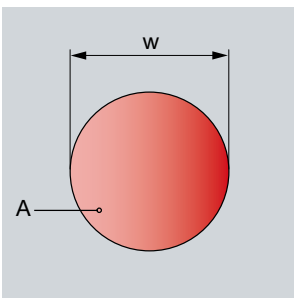


Figure 5: Blank floor seal, no services

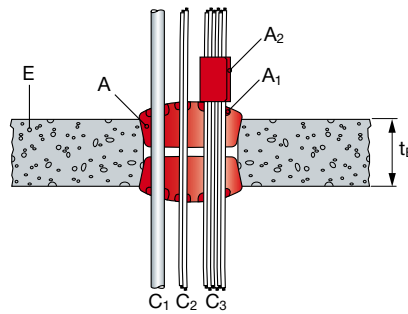


Figure 6: Details of filler (A_1) and 2 x putty (A_2)

Abbreviations used in figures 5 and 6

Abbreviation	Description	Abbreviation	Description
A, A_1 , A_2 ,...	Firestop products	t_A	Thickness of the building element
C, C_1 , C_2 ,...	Penetrating services	A_1	Hilti firestop filler CFS-FIL, at a depth of 20mm
W	Height of penetration seal	A_2	2 x Hilti putty bandage CFS-P BA
E, E_1 , E_2 ,...	Building elements (wall, floor)		

Cable penetrations, rigid floor, at least 150 mm thick

Description of services	Classification E=Integrity, I=Insulation
Blank opening, from 52 mm to 250 mm in diameter, without filler and without putty	EI 120
Standard cable services	Filler
All sheathed cables up to 21 mm diameter	EI 120
Tied cable bundles up to 100 mm diameter, max. diameter of single cables 21 mm	
All sheathed cables from 21 mm diameter and up to 50 mm diameter	EI 120
All sheathed cables from 50 mm diameter and up to 80 mm diameter	EI 90/E 120
Non-sheathed electrical cables up to 24 mm diameter	EI 30/E 120
Plastic conduits and tubes up to 16 mm with or without cables	EI 120-U/U
Steel conduits and tubes up to 16 mm with or without cables	EI 120-C/U
Small plastic conduits and tubes: PO: polyolefin (PE, PP, PPE, PPO, ...) PVC: polyvinyl chloride	Filler
Flexible PO: 16 mm to 40 mm with or without cable Flexible PVC: 16 mm to 32 mm with or without cable	EI 120-U/U
Rigid PO: 16 mm to 40 mm, with or without cable Rigid PVC: 16 mm to 40 mm, with or without cable	
Conduit bundles up to 100 mm diameter, max. diameter of single conduits 20 mm	

Note: Hilti firestop plug can be installed in the round opening directly or alternatively in a fitted plastic sleeve (PVC, 2 mm wall thickness, 150 mm length, flush to floor).

Characteristics of Hilti CFS-PL firestop plug

Additional Attributes

Hilti firestop products are comprehensively tested and individually tailored to the technical requirements of a building's mechanical and electrical installations. In addition to their superior behavior in passive fire protection, Hilti firestop products also meet the requirements in building technology that continue to gain significance and also help the designer and installer to meet these additional requirements. The assessment of fitness for use has been made in accordance with EOTA ETAG N° 026 – Part 2.



Characteristics	Assessment of Characteristics	Norm, standard, test
Health and the environment Dangerous substances	Clean-Tec Below any respective occupational exposure limits as far as such limits exist (compared with the list of dangerous substances of the European Commission)	Hilti Clean-Tec criteria Material safety data sheet
Protection against noise (air borne sound insulation)	Double plug CFS-PL=Rw (C; Ctr)=54 (-1; -7) dB	EN ISO 140-3
Thermal properties	Thermal conductivity $\lambda = 0.089 \text{ W/mK}$ and thermal resistance $R = 0.563 \text{ m}^2\text{K/W}$	EN 12667
Electrical properties	Electrical volume resistivity: $2.17\text{E}+9 (\pm 0.5)\Omega\text{cm}$ Electrical surface resistivity: $49.6\text{E}+9 (\pm 10)\Omega$	DIN IEC 60093 (VDE 0303 Part 30):1993-12
Durability and servicability	Category Y ₁ (Products intended for use at temperatures between -5 °C and +70°C with exposure to UV but without exposure to rain.)	EOTA Technical Report TR 024 ETAG 026-2
Reaction to Fire	Class E	EN 13501-1

Service

With more than 20 years of experience worldwide, Hilti is one of the leading suppliers of firestop systems. We actively help you manage your firestop projects better by providing:

- Quick engineering judgments
- Extensive technical literature
- On-site training and demonstration
- Sophisticated jobsite logistics
- Assurance of conformity with specific application requirements
- International network of Hilti firestop specialists

Our network of experienced sales representatives, field engineers, firestop specialists and customer service representatives is just a phone call away (use the local toll-free Hilti number).

Hilti. Outperform. Outlast.

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