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appointed according to Article 29 of Construction Products Regulation 2011 as amended by the Construction Products (Amendment etc.) (EU Exit) Regulations 2019 and the Construction Products (Amendment etc.) (EU Exit) Regulations 2020

UK Technical Assessment

0843-UKTA-22/0055
of 29/05/2024

Technical Assessment Body Issuing the UKTA:

UL International (UK) Ltd

Trade name of the construction product

Hilti Firestop Plug CFS-PL

Product family to which the construction product belongs

Fire Stopping and Fire Sealing Products - Penetration Seals

Manufacturer

Hilti Corporation
Feldkircherstrasse 100
9494 Schaan
LIECHTENSTEIN

Manufacturing plant(s)

HILTI production plant 4a

This UK Technical Assessment contains

18 pages including Annexes A to C which form an integral part of this assessment

This UK Technical Assessment* is issued, on the basis of

EAD 350454-00-1104, September 2017

Translations of this UK Technical Assessment in other languages shall fully correspond to the original issued document and should be identified as such.

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* in accordance with Construction Products Regulation 2011 as amended by the Construction Products (Amendment etc.) (EU Exit) Regulations 2019 and the Construction Products (Amendment etc.) (EU Exit) Regulations 2020

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SPECIFIC PARTS OF THE UK TECHNICAL ASSESSMENT

1 Technical description of the product

“Hilti Firestop Plug CFS-PL” is used as a mixed penetration seal together with “Hilti Firestop Filler CFS-FIL” and in some cases with “Hilti Firestop Putty Bandage CFS-P BA”.

Components	Characteristics
Hilti Firestop Plug CFS-PL	Plug-shaped product based on a pre-cured, pre-formed PU-based firestop material according to Annex B.1 of the UKTA.
Hilti Firestop Filler CFS-FIL	Acrylic based firestop filler mastic according to Annex B.2 of the UKTA.
Hilti Firestop Putty Bandage CFS-P BA	Graphite based pipe wrap according to Annex B.3 of the UKTA.

2 Specification of the intended use(s) in accordance with the applicable UK Assessment Document (Pre-Exit European Assessment Document): EAD 350454-00-1104

2.1 Intended use

“Hilti Firestop Plug CFS-PL” is intended to be used as a mixed penetration seal to temporarily or permanently reinstate the fire resistance performance of flexible wall constructions, rigid wall constructions and rigid floor constructions where they have been provided with apertures which are penetrated by various cables, conduits and plastic pipes.

The maximum opening size of the penetration seal in wall and floor constructions is Ø 250 mm. For more details see Annex C of the UKTA.

“Hilti Firestop Plug CFS-PL” can only be used as penetration seal for cables, conduits, plastic pipes or for mixed penetration (combination). Further details are given in Annex C of the UKTA. Other parts or service support constructions shall not penetrate the penetration seal.

“Hilti Firestop Plug CFS-PL” can be installed only in types of separating elements as specified in following table. For further details see Annex C of the UKTA.

Separating element	Construction	Maximum opening size of the penetration seal (diameter)
Flexible walls	> Steel studs or timber studs lined on both faces with minimum 2 layers of boards (minimum thickness 12,5 mm) according to EN 520 type F > For steel stud walls the space between lining must not be completely filled with insulation material, especially in the adjacent area of the penetration seal > For timber studs walls there must be a minimum distance of 100 mm of the penetration seal to any timber stud. The cavity between the penetration seal and stud has to be closed with minimum of 100 mm of insulation with classification A1 or A2 according to EN 13501-1 > Minimum thickness 100 mm	Ø 250 mm For details see Annex C of the UKTA

Separating element	Construction	Maximum opening size of the penetration seal (diameter)
Rigid walls	> Aerated concrete, concrete, masonry > Minimum density 600 kg/m³ > Minimum thickness 100 mm > The rigid wall shall be classified in accordance with EN 13501-2 for the required fire resistance period	Ø 250 mm For details see Annex C of the UKTA
Rigid floors	> Aerated concrete, concrete > Minimum density 600 kg/m³ > Minimum thickness 150 mm > The rigid floor shall be classified in accordance with EN 13501-2 for the required fire resistance period	Ø 250 mm For details see Annex C of the UKTA

2.2 Use condition

“Hilti Firestop Plug CFS-PL is intended for use at temperatures below 0°C with exposure to UV, but with no exposure to rain and can therefore – according to EAD 350454-00-1104 clause 2.2.9.3.1 – be categorized as Type Y₁. Since the requirements for Type Y₁ are met, also the requirements for Type Y₂, Z₁ and Z₂ are fulfilled.

2.3 Working life

The provisions made in this UK Technical Assessment are based on an assumed working life of “Hilti Firestop Plug CFS-PL” of 10 years, provided the conditions laid down in the technical literature of the manufacturer relating to packaging, transport, storage, installation, use and repair are met.

The indications given on the intended working life cannot be interpreted as a guarantee given by the producer or the Technical Assessment Body, but are to be regarded only as a means for selecting the appropriate product in relation to the expected economically reasonable working life of the works.

The real working life might be, in normal use conditions, considerably longer without major degradation affecting the Basic requirements for construction works.

2.4 General assumptions

It is assumed that:

- > damages to the penetration seal are repaired accordingly,
- > the installation of the penetration seal does not affect the stability of the adjacent building element – even in case of fire,
- > the lintel or floor above the penetration seal is designed structurally and in terms of fire protection such that no additional mechanical load (other than its own weight) is imposed on the penetration seal,
- > the installations are fixed to the adjacent building element in accordance with the relevant regulations in such a way that, in case of fire, no additional mechanical load is imposed to the penetration seal,
- > the support of the installations is maintained for the required period of fire resistance and
- > pneumatic dispatch systems, compressed air systems, etc. are switched off by additional means in case of fire.

2.5 Manufacturing

The UK Technical Assessment is issued for the product on the basis of agreed data / information, deposited with UL International (UK) Ltd, which identifies the product that has been assessed and judged. Changes to the product or production process, which could result in this deposited data / information being incorrect, should be notified to UL International (UK) Ltd before the changes are introduced.

UL International (UK) Ltd will decide whether or not such changes affect the UK Technical Assessment and consequently the validity of the UKCA marking on the basis of the UK Technical Assessment and if so whether further assessment or alterations to the UK Technical Assessment, shall be necessary.

Performance of the product and references to the methods used for its assessment

Essential characteristics, method of verification and their performance

Basic requirements for construction works	Essential characteristic	Method of Verification	Performance
BWR 2	Reaction to fire	EN 13501-1	Clause 3.1.1
	Resistance to fire	EN 13501-2	Clause 3.1.2 and Annex C.1 to C.3
BWR 3	Air permeability	No performance assessed	
	Water permeability	No performance assessed	
	Content and/or release of dangerous substances	Declaration of conformity by the manufacturer	Clause 3.2.3
BWR 4	Mechanical resistance and stability	No performance assessed	
	Resistance to impact/movement	No performance assessed	
	Adhesion	No performance assessed	
	Durability	EAD 350454-00-1104 clause 2.2.9	Clause 3.3.4
BWR 5	Airborne sound insulation	EN ISO 10140-1, EN ISO 10140-2 / EN ISO 717-1	Clause 3.4.1
BWR 6	Thermal properties	EN 12667	Clause 3.5.1
	Water vapour permeability	No performance assessed	

3.1 Safety in case of fire (BWR 2)

3.1.1 Reaction to fire

The components of “Hilti Firestop Plug CFS-PL” were assessed according to EAD 350454-00-1104 clause 2.2.1 and classified according to EN 13501-1.

Component	Classification according to EN 13501-1
Hilti Firestop Plug CFS-PL	E
Hilti Firestop Filler CFS-FIL	E
Hilti Firestop Putty Bandage CFS-P BA	E

3.1.2 Resistance to fire

“Hilti Firestop Plug CFS-PL” was tested according to EAD 350454-00-1104 clause 2.2.2, EN 1363-1 and EN 1366-3:2009.

Based upon the gained test results and the field of application specified within EN 1363-1 and EN 1366-3:2009 the penetration seal “Hilti Firestop Plug CFS-PL” has been classified according to EN 13501-2. The individual fire resistance classes are listed in Annex C.1 to C.3 of the UKTA.

The maximum fire resistance class of the penetration seal in vertical or horizontal separating element depends on the fire resistance class of the penetrating elements. The fire resistance class of the penetration seal is reduced to the fire resistance class of the penetrating element with the lowest fire resistance classification.

The classifications are not valid for sandwich panel constructions.

3.2 Hygiene, health and environment (BWR 3)

3.2.1 Air permeability

No performance assessed.

3.2.2 Water permeability

No performance assessed.

3.2.3 Content, emission and/or release of dangerous substances.

The manufacturer has provided a declaration on the content, emission and/or release of dangerous substances in relation to their products with the title “Statement on Product Regulatory Compliance: Version 1.3 October 2023).

In addition to the specific clauses relating to dangerous substances contained in this UK Technical Assessment, there may be other requirements applicable to the products falling within its scope (e.g. transposed UK legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the Construction Products Regulation, these requirements need also to be complied with, when and where they apply.

3.3 Safety and accessibility in use (BWR 4)

3.3.1 Mechanical resistance and stability

No performance assessed.

3.3.2 Resistance to impact and movement

No performance assessed. Provisions shall be taken to prevent a person from stepping onto a horizontal penetration seal or falling against a vertical penetration seal (e.g. by covering with a wire mesh).

3.3.3 Adhesion

No performance assessed.

3.3.4 Durability

All components of “Hilti Firestop Plug CFS-PL” fulfil the requirements for the intended use condition.

“Hilti Firestop Plug CFS-PL” is therefore appropriate for use at temperatures below 0°C with exposure to UV, but with no exposure to rain and can therefore – according to EAD 350454-00-1104 clause 2.2.9.3.1 – be categorized as Type Y₁. Since the requirements for Type Y₁ are met, also the requirements for Type Y₂, Z₁ and Z₂ are fulfilled.

3.4 Protection against noise (BWR 5)

3.4.1 Airborne sound insulation

The airborne sound insulation of “Hilti Firestop Plug CFS-PL” was tested according to ISO 140-3. The rating of the sound insulation properties has been calculated in accordance with ISO 717-1.

The acoustic testing was performed in a flexible wall element. The wall element was constructed from 92 mm wide metal (0.36 mm thick galvanised steel) studs spaced at 610 mm centres. The wall was clad on each side with a double layer of 16 mm thick gypsum wallboard and filled with 100 mm thick “Thermafiber” mineral wool insulation. The wall element had an area of 6.8 m². “Hilti Firestop Plug CFS-PL” was tested as a blank seal without services.

The reached values for the airborne sound insulation in accordance with EN ISO 717-1 are as follows:

Component	R (C; Ctr)
Hilti Firestop Plug CFS-PL	54 (0; -6)

3.5 Energy economy and heat retention (BWR 6)

3.5.1 Thermal properties

The thermal properties of “Hilti Firestop Plug CFS-PL” were tested according to EN 12667:2001.

Component	λ_{10} in W/(m.K)
Hilti Firestop Plug CFS-PL	0.089

3.5.2 Water vapour permeability

No performance assessed.

Assessment and verification of constancy of performance (hereinafter AVCP) system applied, with reference to its legal base

According to the Statutory Instrument 2019 No. 465 – made 5th March 2019 and cited as the Construction Products (Amendment etc.) (EU Exit) Regulations 2019 and coming into force on exit day and Statutory Instrument 2020 No. 1359 – made 26th November 2020 and cited as the Construction Products (Amendment etc.) (EU Exit) Regulations 2020 and coming into force immediately before the 2019 Regulations come into force, on the procedure for attesting the conformity of construction products as regards fire stopping, fire sealing and fire protective products, published as ‘Pre-Exit’ European Assessment Documents, (see <https://www.gov.uk/guidance/pre-exit-european-assessment-documents-construction-products>), the system of assessment and verification of constancy of performance (see Annex V to Construction Products Regulation 2011 as amended by the Construction Products (Amendment etc.) (EU Exit) Regulations 2019 and the Construction Products (Amendment etc.) (EU Exit) Regulations 2020) given in the following table(s) apply.

Product(s)	Intended use(s)	Level(s) or class(es)	System
Fire Stopping and Fire Sealing Products	For fire compartmentation and/or fire protection or fire performance	any	1

Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

Tasks of the manufacturer:

Factory production control

The manufacturer shall exercise permanent internal control of production. All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures, including records of results performed. This production control system shall ensure that the product is in conformity with this UK Technical Assessment.

The manufacturer may only use initial / raw / constituent materials stated in the technical documentation of this UK Technical Assessment.

The factory production control shall be in accordance with the Control Plan of 03/12/2021 relating to the UK Technical Assessment 0843-UKTA-22/0055 issued on 29/05/2024 which is part of the technical documentation of this UK technical Assessment. The "Control Plan" is laid down in the context of the factory production control system operated by the manufacturer and deposited at UL International (UK) Ltd.

The results of factory production control shall be recorded and evaluated in accordance with the provisions of the Control Plan.

Other tasks of the manufacturer

Additional information

The manufacturer shall provide a technical data sheet and an installation instruction with the following minimum information:

(a) Technical data sheet:

- Field of application:
- Building elements for which the penetration seal is suitable, type and properties of the building elements like minimum thickness, density, and - in case of lightweight constructions – the construction requirements.
- Limits in size, minimum thickness etc. of the penetration seal
- Construction of the penetration seal including the necessary components and additional products (e.g. backfilling material) with clear indication whether they are generic or specific.
- Services which the penetration seal is suitable, type and properties of the services like material, diameter, thickness etc. in case of pipes including insulation materials; necessary/allowed supports/fixings (e.g. pipe trays)

(b) Installation instruction:

- Steps to be followed
- Procedure in case of retrofitting
- Stipulations on maintenance, repair and replacement

Issued on: 29th May 2024

Report by:



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Project Engineer
Built Environment

For and on behalf of UL International (UK) Ltd.

Reviewed by:



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ANNEX A REFERENCE DOCUMENTS and LIST OF ABBREVIATIONS

A.1 References to standards mentioned in the UKTA

EN 1026	Windows and doors – Air permeability – Test method
EN 1366-3	Fire resistance tests for service installations - Part 3: Penetration seals
EN 12667	Thermal performance of building materials and products - Determination of thermal resistance by means of guarded hot plate and heat flow meter methods - Products of high and medium thermal resistance
EN 13501-1	Fire classification of construction products and building elements – Part 1: Classification using test data from reaction to fire tests
EN 13501-2	Fire classification of construction products and building elements – Part 2: Classification using test data from fire resistance tests
EN ISO 10140-1	Acoustics; Acoustics - Laboratory measurement of sound insulation of building elements - Part 1: Application rules for specific products
EN ISO 10140-2	Acoustics; Acoustics - Laboratory measurement of sound insulation of building elements - Part 2: Measurement of airborne sound insulation
EN ISO 717-1	Acoustics - Rating of sound insulation in buildings and of building elements - Part 1: Airborne sound insulation

A.2 Other reference documents

EOTA TR 024	Characterisation, Aspects of Durability and Factory Production Control for Reactive Materials, Components and Products
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A.3 Abbreviations used in drawings

Abbreviation	Description
A, A ₁ , A ₂ ,..	Hilti firestop products
C, C ₁ , C ₂ ,..	Penetrating services
E, E ₁ , E ₂ ,..	Separating elements (wall, floor)
w	Diameter of penetration seal
S ₁ , S ₂ , S _n ,..	Distances
t _A	Thickness of penetration seal
t _E	Thickness of the separating element

ANNEX B DESCRIPTION OF PRODUCT(S) & PRODUCT LITERATURE

B.1 Hilti Firestop Plug CFS-PL

Plug-shaped product based on a pre-cured, pre-formed PU-based firestop material, available in different diameters. The Control Plan is defined in document "Control Plan relating to the UK Technical Assessment UKTA-22/0055 – Hilti Firestop Plug CFS-PL", which is a non-public part of this UKTA.

B.2 Hilti Firestop Filler CFS-FIL

"Hilti Firestop Filler CFS-FIL" is available as a cartridge of 310 ml or as a foil pack of 580 ml. The Control Plan is defined in document "Control Plan relating to the UK Technical Assessment UKTA-22/0049 – Hilti Firestop Filler CFS-FIL", which is a non-public part of the UKTA.

Suitable dispensers:

"Hilti CFS-DISP / CS 201-P1" (for 310 ml cartridge)

"Hilti CS 270-P1" (for 580 ml foil pack)

B.3 Hilti Firestop Putty Bandage CFS-P BA

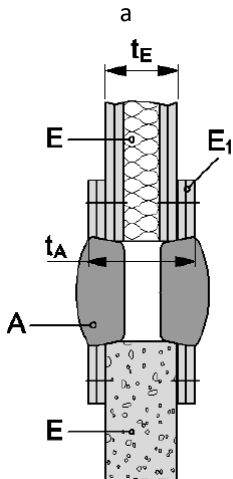
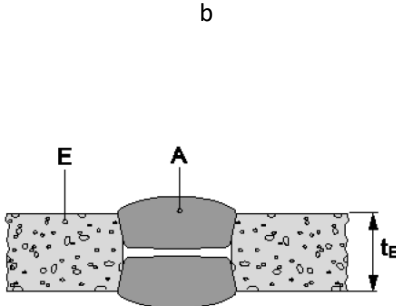
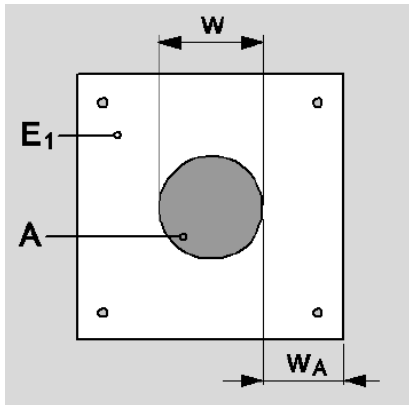
"Hilti Firestop Putty Bandage CFS-P BA" is delivered 100 mm in width, 3 mm in height and 5 m in length on a roll. The control plan is defined in document "Control Plan relating to the UK Technical Assessment UKTA-22/0040 – Hilti Firestop Putty Disc CFS-D 25", which is a non-public part of that UKTA.

B.4 Technical product literature

Technical data sheet "Hilti Firestop Plug CFS-PL" (including all ancillary products).

ANNEX C RESISTANCE TO FIRE CLASSIFICATION OF PENETRATION SEALS MADE OF HILTI FIRESTOP PLUG CFS-PL

C.1	General Information
C.1.1	Wall/floor constructions
a)	Flexible wall: The wall must have a minimum thickness of 100 mm and comprise timber or steel studs lined on both faces with minimum 2 layers of 12.5 mm thick boards according to EN 520 type F. For timber stud wall constructions there must be a minimum distance of 100 mm of the penetration seal to any stud. The cavity between stud and penetration seal must be closed and a minimum of 100 mm insulation (classification A1 or A2 in accordance with EN 13501-1).
b)	Rigid wall: The wall must have a minimum thickness of 100 mm and comprise concrete, aerated concrete or masonry, with a minimum density of 600 kg/m³.
c)	Rigid floor: The floor must have a minimum thickness of 150 mm and comprise aerated concrete or concrete with a minimum density of 600 kg/m³.
The walls / floors must be classified in accordance with EN 13501-2 for the required fire resistance period or fulfil the requirements of the relevant Eurocode.	
This UKTA does not cover use of the product as a penetration seal in sandwich panel constructions.	
Maximum distance of the first service support: 250 mm	

C.1.2	Beading		
The penetration seal depth is minimum 150 mm (figure 1a, 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 has to be used. Beading: square plates made of gypsum or calcium silicate boards at a size of 2x W_A (100 mm) plus W (figure 1c, diameter of plug), are installed around the opening with the necessary number of layers. Two frames of the same height on both sides of a wall (figure 1a) have to be installed.			
			
Figure 1: beading and position of the seal in wall / floors			
A	Hilti Firestop Plug CFS-PL	t _E	Thickness of the separating element
E	Separating element (rigid or flexible wall / floor construction)	w	Diameter of the penetration seal
E ₁	Beading	w _A	Width of the beading frame, 100 mm
t _A	Thickness of the penetration seal		

C.1.3 Penetration seal types

C.1.3.1 Penetration seal type: Filler

- Gaps between services and Hilti Firestop Plug CFS-PL (A) are filled with Hilti Firestop Filler CFS-FIL (A₁), depth 20 mm.

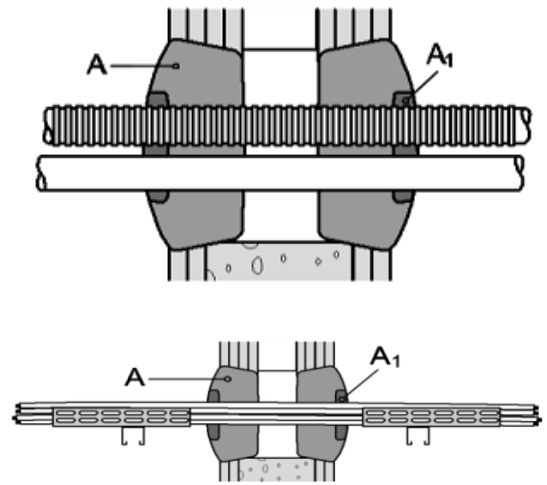


Figure 2: penetration seal type A1

C.1.3.2 Penetration seal type: Filler plus 2 layers of putty bandage

- Gaps between services and Hilti Firestop Plug CFS-PL (A) are filled with Hilti Firestop Filler CFS-FIL (A₁), depth 20 mm.
- Two layers of Hilti Firestop Putty Bandage CFS-P BA (A₂) are wrapped around the services or group of services.

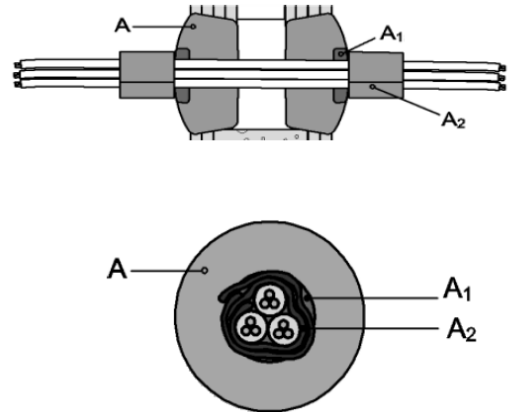


Figure 2: penetration seal type A1

Hilti Firestop Putty Bandage CFS-P BA must be installed with the mesh outside/upside.

For floor applications, Hilti Firestop Putty Bandage CFS-P BA is required on the top side, only.

C.1.4 Distance requirements

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

Minimum distances in mm (see illustration):

$s_1 = 0$ (distance between cables and seal edge)

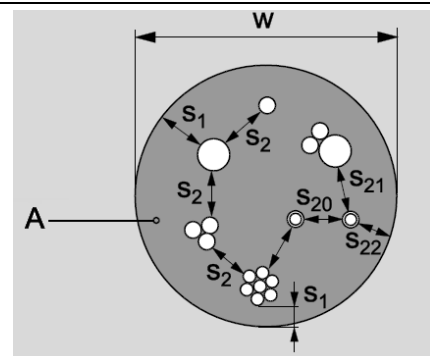
$s_2 = 0$ (distance between cables)

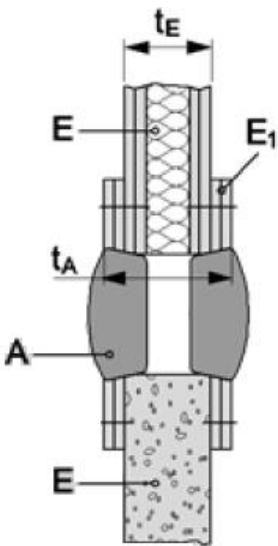
$s_{20,21,22} = 0 \text{ } \varnothing \leq 16 \text{ mm}$

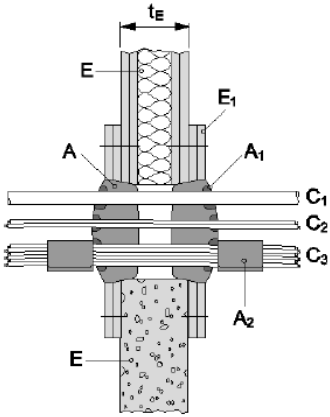
$s_{20} = 0 \text{ } \varnothing > 16 \text{ mm}$ (distance between conduits to each other)

$s_{21,22} = 20 \text{ } \varnothing > 16 \text{ mm}$

(distance between conduits and other services or seal edges)



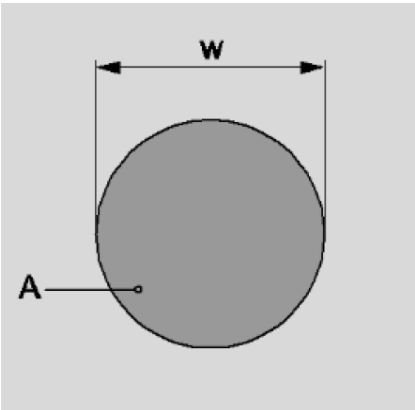
C.2 Flexible or rigid walls according to Annex C.1.1 of the UKTA – minimum wall thickness 100 mm	
C.2.1 Blank seal (no services)*	
Construction details (for symbols and abbreviations see figure 1 and Annex A.3 of the UKTA): Hilti Firestop Plug CFS-PL (A) of seal thickness $t_A \geq 150$ mm, centered regarding the thickness of the wall (E); beading (E₁) according to Annex C.1.2 of the UKTA. Hilti Firestop Plug CFS-PL can be installed in the round opening directly or alternatively in a fitted plastic sleeve (PVC, 2 mm wall thickness, 150mm length, flush to wall).	 Figure 4: blank seal Classification EI 120
Seal size diameter: 52 to 250 mm	
* If services are added later on in a blank seal, only the services that fulfill the required classification, listed in the tables below, may be added.	

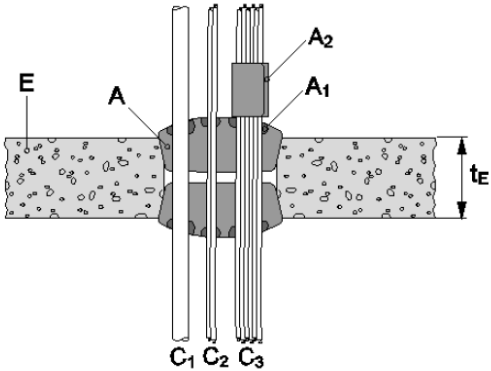
C.2.2 Penetrating services in walls											
- Seal size diameter: 52 to 250 mm - Hilti Firestop Plug CFS-PL (A), thickness $t_A \geq 150$ mm; - centered regarding the thickness of the wall (E); - beading (E₁) according to Annex C.1.2 of the UKTA. Maximum distance of first service support ≤ 250 mm (measured from the beading).											
<table border="1"> <thead> <tr> <th>Abbreviation</th><th>Description</th></tr> </thead> <tbody> <tr> <td>A, A₁, A₂,...</td><td>Firestop products: A Hilti Firestop Plug CFS-PL A₁ Hilti Firestop Filler CFS-FIL A₂ Hilti Firestop Putty Bandage CFS-P BA</td></tr> <tr> <td>C₁, C₂, C₃,...</td><td>C₁ Conduits C₂ Single cables C₃ Cable bundle</td></tr> <tr> <td>E, E₁, E₂,...</td><td>Separating elements</td></tr> <tr> <td>t_E</td><td>Thickness of the separating element</td></tr> </tbody> </table>	Abbreviation	Description	A, A ₁ , A ₂ ,...	Firestop products: A Hilti Firestop Plug CFS-PL A ₁ Hilti Firestop Filler CFS-FIL A ₂ Hilti Firestop Putty Bandage CFS-P BA	C ₁ , C ₂ , C ₃ ,...	C ₁ Conduits C ₂ Single cables C ₃ Cable bundle	E, E ₁ , E ₂ ,...	Separating elements	t_E	Thickness of the separating element	 Figure 5: wall penetration
Abbreviation	Description										
A, A ₁ , A ₂ ,...	Firestop products: A Hilti Firestop Plug CFS-PL A ₁ Hilti Firestop Filler CFS-FIL A ₂ Hilti Firestop Putty Bandage CFS-P BA										
C ₁ , C ₂ , C ₃ ,...	C ₁ Conduits C ₂ Single cables C ₃ Cable bundle										
E, E ₁ , E ₂ ,...	Separating elements										
t_E	Thickness of the separating element										

C.2.2a) Cables		
Construction according to Annex C.2.2 of the UKTA Penetrating services C ₂ , C ₃ according to Annex C.2.2 of the UKTA For cable penetrations the following penetration seal types apply: • Filler (A₁) according to Annex C.1.3.1 of the UKTA • Filler plus 2 layers putty bandage Putty (A₂) according to Annex C.1.3.2 of the UKTA		
All cable types currently and commonly used in building practice in Europe (e.g. power, control, signal, telecommunication, data, optical fibre cables, with or without cable supports)		
Penetration seal type:	Filler	Filler + 2x Putty Bandage
Sheathed cables:	Classification	
Ø ≤ 21 mm	EI 120	-
Tied cable bundle ≤ Ø 100 mm; Ø single cable ≤ 21 mm	EI 120	-
21 < Ø ≤ 50 mm	EI 90	EI 120
50 < Ø ≤ 80 mm	EI 90 / E 120	-
Non-sheathed cables (wires): Ø ≤ 24 mm	EI 60 / E 120	-

C.2.2b) Small conduits and tubes		
Construction according to Annex C.2.2 of the UKTA Penetrating services C ₁ according to Annex C.2.2 of the UKTA Penetration seal type: • Filler (A₁) according to Annex C.1.3.1 of the UKTA		
Penetration seal type:	Filler	Filler + 2x Putty Bandage
Ø ≤ 16 mm, wall thickness ≥ 1 mm, arranged linear, with or without cables, with or without cable supports, minimum distance to each other = 0 mm	Classification	
Plastic conduits and tubes	EI 120 U/U	-
Steel conduits and tubes	EI 120 C/U	-

C.2.2c) Conduits				
Construction according to Annex C.2.2 of the UKTA Penetrating services C ₁ according to Annex C.2.2 of the UKTA, with and without cables Penetration seal type: • Filler (A₁) according to Annex C.1.3.1 of the UKTA				
Penetration seal type:			Filler	Filler + 2x Putty Bandage
	Diameter (mm)		Classification	
	*PO	*PVC		
Flexible conduits	16 - 40	16 – 32	EI 120 U/U	-
Rigid conduits • Wall thickness: PO:1.55 to 2.30 mm PVC:1.90 to 2.80 mm	16 - 40	16 – 40		
Bundle of rigid or flexible conduits, single conduits: Ø ≤ 20 mm	≤ 100			
*PO: Polyolefin (PE, PP, PPE, PPO); *PVC: Polyvinylchloride				

C.3 Rigid floor according to Annex C.1.1 of the UKTA - minimum floor thickness 150 mm	
C.3.1 Blank seal (no services)*	
Construction details (for symbols and abbreviations see figure 1 and Annex A.3 of the UKTA): Hilti Firestop Plug CFS-PL (A) of seal thickness $t_A \geq 150$ mm, centered regarding the thickness of the floor (E); beading (E₁) according to Annex C.1.2 of the UKTA.	 Figure 6: blank seal in floors
	Classification
Seal size Ø: 52 to 250 mm	EI 120
* If services are added later on in a blank seal only the services listed in the tables below may be added that fulfill the required classification.	

C.3.2 Penetrating services in floors	
- Seal size diameter: 52 to 250 mm - Hilti Firestop Plug CFS-PL (A), thickness $t_A \geq 150$ mm; - centered regarding the thickness of the floor (E); - beading (E₁) according to Annex C.1.2 of the UKTA.	
Abbreviation	Description
A, A ₁ , A ₂ ,...	Firestop products: A Hilti Firestop Plug CFS-PL A ₁ Hilti Firestop Filler CFS-FIL A ₂ Hilti Firestop Putty Bandage CFS-P BA
C ₁ , C ₂ , C ₃ ,...	C ₁ Conduits C ₂ Single cables C ₃ Cable bundle
E, E ₁ , E ₂ ,...	Separating elements
t _E	Thickness of the separating element
 Figure 7: floor penetration	

C.3.2a) Cables		
Construction according to Annex C.3.2 of the UKTA Penetrating services C ₂ , C ₃ according to Annex C.3.2 of the UKTA For cable penetrations the following penetration seal types apply: • Filler (A₁) according to Annex C.1.3.1 of the UKTA • Filler plus 2 layers putty bandage Putty (A₂) according to Annex C.1.3.2 of the UKTA		
All cable types currently and commonly used in building practice in Europe (e.g. power, control, signal, telecommunication, data, optical fibre cables, with or without cable supports)		
Penetration seal type:	Filler	Filler + 2x Putty Bandage
Sheathed cables:	Classification	
Ø ≤ 21 mm	EI 120	-
Tied cable bundle ≤ Ø 100 mm; Ø single cable ≤ 21 mm	EI 120	-
21 < Ø ≤ 50 mm	EI 120	-
50 < Ø ≤ 80 mm	EI 90 / E 120	-
Non-sheathed cables (wires): Ø ≤ 24 mm	EI 30 / E 120	EI 30 / E 120

C.3.2b) Small conduits and tubes		
Construction according to Annex C.3.2 of the UKTA Penetrating services C ₁ according to Annex C.3.2 of the UKTA Penetration seal type: • Filler (A₁) according to Annex C.1.3.1 of the UKTA		
Penetration seal type:	Filler	Filler + 2x Putty Bandage
Ø ≤ 16 mm, wall thickness ≥ 1 mm, arranged linear, with or without cables, with or without cable supports, minimum distance to each other = 0 mm	Classification	
Plastic conduits and tubes	EI 120 U/U	-
Steel conduits and tubes	EI 120 C/U	-

C.3.2c) Conduits				
Construction according to Annex C.3.2 of the UKTA				
Penetrating services C ₁ according to Annex C.3.2 of the UKTA, with and without cables				
Penetration seal type:				
• Filler (A ₁) according to Annex C.1.3.1 of the UKTA				
Penetration seal type:			Filler	Filler + 2x Putty Bandage
	Diameter (mm)		Classification	
	*PO	*PVC		
Flexible conduits	16 - 40	16 – 32	EI 120 U/U	-
Rigid conduits	16 - 40	16 – 40		
• Wall thickness: PO:1.55 to 2.30 mm PVC:1.90 to 2.80 mm				
Bundle of rigid or flexible conduits, single conduits: Ø ≤ 20 mm	≤ 100			
*PO: Polyolefin (PE, PP, PPE, PPO); *PVC: Polyvinylchloride				