

PRESTATIEVERKLARING

overeenkomstig Bijlage III van de Verordening (EU) nr. 305/2011 (Verordening betreffende bouwproducten)

Hilti brandwerende acrylkit CFS-S ACR

Nr. Hilti CFS-S ACR Nr. "0761-CPD-0178"

1. Unieke identificatiecode van het producttype:

Hilti brandwerende acrylkit CFS-S ACR

2. Beoogd gebruik:

Brandwerend en afdichtend product voor lineaire voeg- en spleetafdichtingen, zie ETA-10/0389 (04-09-2017)

Brandwerende en brandafdichtende producten: Lineaire voeg- en spleetafdichting	Het toepassingsgebied dient in overeenstemming te zijn met de inhoud van de desbetreffende ETA-10/0389
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3. Fabrikant:

HILTI Corporation, Feldkircherstrasse 100, 9494 Schaan, Vorstendom Liechtenstein

4. Systeem voor de beoordeling en verificatie van de prestatiebestendigheid:

Stelsel 1

5. Europees beoordelingsdocument:

ETAG 026 Deel 3: "Lineaire voeg- en spleetafdichtingen", editie augustus 2011, gebruikt als Europees beoordelingsdocument (EAD)
Europese technische beoordeling:

ETA-10/0389 (04-09-2017)

Technische beoordelingsinstantie:

OIB Oostenrijkse Instituut voor Bouwtechniek

Aangewezen instantie(s):

MPA Braunschweig, nr. 0761

6. Aangegeven prestaties:

Essentiële kenmerken	Aangegeven prestaties/geharmoniseerde technische specificaties
Reactie bij brand	Klasse E volgens EN 13501-1
Brandwerendheid	Brandwerendheidsprestaties en toepassingsgebied volgens EN 13501-2. Zie bijlage
Luchtdoorlatendheid	Getest overeenkomstig EN 1026. Tot een drukverschil van 9700 PA is geen luchtdoorlatendheid gemeten.
Waterdoorlatendheid	Getest volgens bijlage C van EAD 350454-00-1104. Waterdicht tot een waterkolom van 1000 mm.
Gevaarlijke stoffen	Europese richtlijn 67/548/EEC en richtlijn (EC) Nr. 1272/2008 evenals EOTA TR 034, editie oktober 2015
Bescherming tegen geluidshinder	Getest overeenkomstig EN ISO 10140-1:2010+A1:2012+A2:2014, EN ISO 10140-2:2010 en EN ISO 717-1:2013. Zie bijlage
Duurzaamheid en bruikbaarheid	Y ₂ , (-5/+70)°C overeenkomstig EOTA Technisch rapport - TR024.

De prestaties van het hierboven omschreven product zijn conform de aangegeven prestaties. Deze prestatieverklaring wordt in overeenstemming met verordening (EU) 305/2011 en onder de exclusieve verantwoordelijkheid van de hierboven vermelde fabrikant verstrekt.

Ondertekend voor en namens de fabrikant door:



 Gemeente Breda

Bijlage bij besluit
Productmanager
Afdeling voor brandwerende producten
© Hilti Corporation
2020-000974 -V01

19-06-2020 V en L


Kwaliteitsverantwoordelijke
Afdeling voor brandwerende producten
Hilti Corporation

DoP_nl_03-02_00000003077_Hilti CFS-S ACR

Annex

3.2.1 Protection against noise (BWR 5)

Airborne sound insulation

Test reports from noise reduction according to EN ISO 10140-1:2010+A1:2012+A2:2014, EN ISO 10140-2:2010 and EN ISO 717-1:2013 have been provided. The tests were performed in a joint (length 1200mm, depth 100mm, width 25mm) in a rigid wall backfilled with compressed mineral wool. Installation depth of "Hilti Firestop Acrylic Sealant CFS-S ACR" was 12mm on both sides of the wall.

The reached values for the airborne sound insulation are given in the following table.

R_w in dB	C in dB	C_{tr} in dB
64	-2	-7

1.3 Abbreviations used in drawings

Abbreviation	Description
A, A ₁ , ...	Firestop product CFS-S ACR
B	Backfilling material, inorganic, incombustible
B ₁	Backfilling material, organic, combustible
E	Building element (wall, floor)
t _A	Thickness of sealant
E ₁	steel elements as joint faces
t _B	Thickness of backfilling material
t _E	Thickness of the building element / joint depth
w	Joint width

ANNEX 2
DESCRIPTION OF PRODUCT(S) & PRODUCT LITERATURE

2.1 Hilti Firestop Acrylic Sealant CFS-S ACR

“Hilti Firestop Acrylic Sealant CFS-S ACR” is a 1-component product and is composed essentially of filling substances and an acrylic binder. It is delivered in various colours.

“Hilti Firestop Acrylic Sealant CFS-S ACR” is supplied in 310 ml cartridges, 580 ml foil packs, 5 Liter buckets and 19 Liter buckets.

2.2 Ancillary products

2.2.1 Mineral wool

Mineral wool products suitable for being used as backfilling material

Characteristics	Specification
Stone wool	EN 13162 or EN 14303
Density	39,4 to 100 kg/m ³
Facing	No Al-facing, no other facing
Combustibility class	A1 according EN 13501-1
Melting point	≥ 1000°C

2.3 Hilti Firestop Round Cord CFS-CO

“Hilti Firestop Round Cord CFS-CO” is a rod made from stone wool weaved in glass fibre. It is provided in diameters of 20, 30, 40, 50 and 60 mm to accommodate various joint widths.

A detailed specification of the product is contained in document “Identification / Product Specification and Control Plan of 30.03.2010 relating to the European technical approval ETA-10/0292 and ETA-10/0389 issued on 22.11.2010 Hilti Firestop Round Cord CFS-CO” which is a non-public part of this ETA.

2.4 Combustible backfilling material

Any Polyethylen or Polyurethan based product may be used as backfilling material, covered with “Hilti Firestop Acrylic Sealant CFS-S ACR”. For a more detailed description see Annex 3, clause 3.4.2 of this ETA.

2.5 Technical product literature:

Technical Datasheet and Instructions for Use Hilti Firestop Acrylic Sealant CFS-S ACR (including Hilti Firestop Round Cord CFS-CO)

ANNEX 3

RESISTANCE TO FIRE CLASSIFICATION OF LINEAR JOINT/GAP SEALS MADE FROM "HILTI FIRESTOP ACRYLIC SEALANT CFS-S ACR"

3.1 GENERAL INFORMATION FOR WALL AND FLOOR DESIGN:

3.1.1 Wall / Floor constructions covered:

- a) Flexible walls: The flexible wall construction must be classified in accordance with EN 13501-2 for the required fire resistance period and must have a minimum thickness of 100 mm. The flexible wall construction comprise steel or timber studs lined on both faces with minimum 2 layers of minimum 12.5 mm thick boards.
For timber stud walls there must be a minimum distance of 100 mm of the seal to any stud. The cavity between stud and seal must be closed with an insulation of Class A1 (in accordance with EN 13501-1) for at least 100 mm distance. No joint is closer than 100 mm to next stud.
- b) Rigid walls: The rigid wall must have a minimum thickness of 100 mm and comprise concrete, aerated concrete or masonry, with a minimum density of 550 kg/m³.
- c) Rigid walls: The wall must have a minimum thickness of 150 mm and comprise concrete or masonry, with a minimum density of 2400 kg/m³.
- d) Rigid floors: The floor must have a minimum thickness of 150 mm and comprise aerated concrete or concrete with a minimum density of 2400 kg/m³.
- e) Rigid floors: The floor must have a minimum thickness of 150 mm and comprise aerated concrete with a minimum density of 550 kg/m³.
- f) Steel constructions: The constructions, e.g. columns, beams or joint edges protected by steel angles, must form a minimum seal depth of 150 mm. The steel construction should be made from steel alloys or iron with a melting point higher than 1000°C.

The walls / floors must be classified in accordance with EN 13501-2 for the required fire resistance period.

3.1.2 Joint position and basement preparation

In rigid and flexible wall constructions the joint has to be sealed symmetrically on both sides of the wall. In floor constructions the joint has to be sealed from the top side only.

The following table shows the assessed joint types and the related test and application orientations according to EN 1366-4, Figure 12.

Joint types	Affected clause in the ETA	Tests and application orientation of joint seals
Type IA joint	Annex 3, clause 3.2.1.1	B; vertical linear joint in a vertical test construction
Type IB joint	Annex 3, clause 3.2.1.1	B; vertical linear joint in a vertical test construction
Type II joint	Annex 3, clause 3.2.1.2	A; linear joint in a horizontal test construction
Type III joint	Annex 3, clause 3.2.1.3	D; horizontal wall joint abutting a floor, ceiling or roof
Type IV joint	Annex 3, clause 3.2.2.1	B; vertical linear joint in a vertical test construction
Type V joint	Annex 3, clause 3.2.2.2	A; linear joint in a horizontal test construction
Type VI joint	Annex 3, clause 3.2.3.1	D; horizontal wall joint abutting a floor, ceiling or roof
Type VII joint	Annex 3, clause 3.2.3.2	B; vertical linear joint in a vertical test construction
Type VIII joint	Annex 3, clause 3.2.3.3	B; vertical linear joint in a vertical test construction
Type IX joint	Annex 3, clause 3.3.2.1	B; vertical linear joint in a vertical test construction
Type X joints	Annex 3, clause 3.3.2.2	A; linear joint in a horizontal test construction
Type XI joints	Annex 3, clause 3.3.2.3	D; horizontal wall joint abutting a floor, ceiling or roof
Type XII joint	Annex 3, clause 3.4.3.1	B; vertical linear joint in a vertical test construction
Type XIII joint	Annex 3, clause 3.4.3.2	A; linear joint in a horizontal test construction
Type XIV joint	Annex 3, clause 3.4.3.3	D; horizontal wall joint abutting a floor, ceiling or roof
Type XV joint	Annex 3, clause 3.4.4	A; linear joint in a horizontal test construction
Type XVI joint	Annex 3, clause 3.4.4	A; linear joint in a horizontal test construction

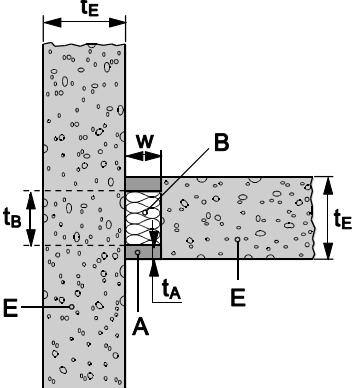
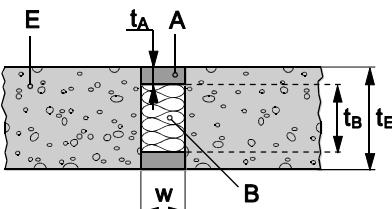
Very porous joint edges have to be cleaned from dust and brittle material first and then pre-treated with "Hilti Firestop Acrylic Sealant CFS-S ACR", diluted with water, to achieve better adhesion. After a short drying time the sealant should be installed wet-in-wet.

**3.2 RESISTANCE TO FIRE CLASSIFICATION OF LINEAR JOINT/GAP SEALS MADE FROM
“HILTI FIRESTOP ACRYLIC SEALANT CFS-S ACR” WITH MINERAL WOOL BACKFILLING MATERIAL**

3.2.1 “Hilti Firestop Acrylic Sealant CFS-S ACR” in combination with mineral wool products as backfilling material in rigid construction

3.2.1.1

“Hilti Firestop Acrylic Sealant CFS-S ACR” within or between rigid walls

<p style="text-align: center;">Type I</p> <p style="text-align: center;">Vertical joints in between rigid wall constructions (according to Annex 3, clause 3.1.1.c of this ETA)</p>	
 <p>Type IA (top view)</p>	 <p>Type IB (top view)</p>
<ul style="list-style-type: none"> • A = Hilti Firestop Acrylic Sealant CFS-S ACR • B = mineral wool product (see Annex 2, clause 2.2.1 of this ETA) • $t_E \geq 150 \text{ mm}$, $t_B \geq 100 \text{ mm}$ • maximum movement capability: $\pm 12,5\%$ • splice distance of insulation minimum 1250 mm 	

For symbols and abbreviations see Annex 1, clause 1.3 of the ETA

For **type IA** and **type IB** joints:

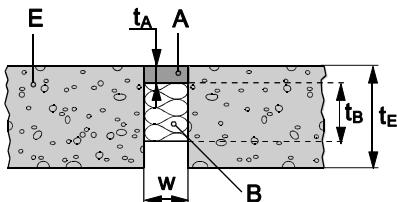
Joint Width (w) (mm)	Joint Depth (t_A) (mm)	Mineral wool Backfilling Compression by (%)	Classification
6 – 20	≥ 6	$\geq 60^a$	EI 180-V-M 12,5-F-W 6 to 20 E 240-V-M 12,5-F-W 6 to 20
20 – 100	≥ 10	$\geq 50^b$	EI 180-V-M 12,5-F-W 20 to 100 E 240-V-M 12,5-F-W 20 to 100

^a Mineral wool has to be pressed into the joint taking into consideration, that the uncompressed thickness of the mineral wool board before installation has to be at least 15mm (for 6mm joint) up to 50mm (for a 20mm joint).

^b Mineral wool has to be pressed into the joint taking into consideration, that the uncompressed thickness of the mineral wool board before installation has to be at least 40mm (for 20mm joint) up to 200mm (for a 100mm joint).

3.2.1.2

“Hilti Firestop Acrylic Sealant CFS-S ACR” within or between rigid floors according to Annex 3, clause 3.1.1 of this ETA

Type II Joints in rigid floor constructions	
 <p>(sectional view)</p>	
<ul style="list-style-type: none"> • A = Hilti Firestop Acrylic Sealant CFS-S ACR • B = mineral wool products (see Annex 2, clause 2.2.1 of this ETA) • $t_E \geq 150 \text{ mm}$, $t_B \geq 100 \text{ mm}$ • maximum $\pm 12,5\%$ movement • splice distance minimum 1250 mm 	

For symbols and abbreviations see Annex 1, clause 1.3 of the ETA

For **type II** joints:

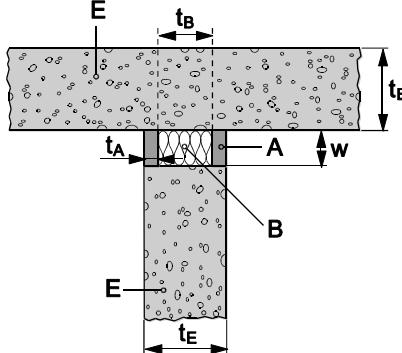
Joint Width (w) (mm)	Joint Depth (t_A) (mm)	Mineral wool Backfilling Compression by (%)	Classification
6 – 20	≥ 6	$\geq 60^a$	EI 180-H-M 12,5-F-W 6 to 20 E 180-H-M 12,5-F-W 6 to 20
20 – 100	≥ 10	$\geq 50^b$	EI 120-H-M 12,5-F-W 20 to 100 E 180-H-M 12,5-F-W 20 to 100

^a Mineral wool has to be pressed into the joint taking into consideration, that the uncompressed thickness of the mineral wool board before installation has to be at least 15mm (for 6mm joint) up to 50mm (for a 20mm joint).

^b Mineral wool has to be pressed into the joint taking into consideration, that the uncompressed thickness of the mineral wool board before installation has to be at least 40mm (for 20mm joint) up to 200mm (for a 100mm joint).

3.2.1.3

"Hilti Firestop Acrylic Sealant CFS-S ACR" in combination with mineral wool products in horizontal joints between a rigid wall abutting a floor ceiling or roof

Type III	
Horizontal joints in between a rigid wall, abutting a rigid floor (according to Annex 3, clause 3.1.1.c and 3.1.1.d of this ETA) ceiling or roof	
 (sectional view)	
<ul style="list-style-type: none"> • A = Hilti Firestop Acrylic Sealant CFS-S ACR • B = mineral wool products (see Annex 2, clause 2.2.1 of this ETA) • $t_E \geq 150$ mm (wall and floor), $t_B \geq 100$ mm • maximum movement capability = $\pm 12,5\%$ • splice distance minimum 1250 mm 	

For symbols and abbreviations see Annex 1, clause 1.3 of the ETA

For **type III** joints:

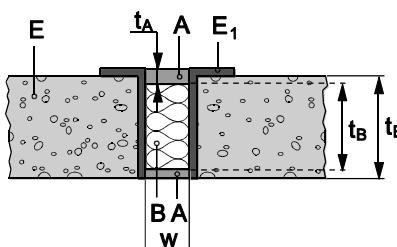
Joint Width (w) (mm)	Joint Depth (t _A) (mm)	Mineral wool Backfilling Compression by (%)	Classification
6 – 20	≥ 6	$\geq 60^a$	EI 180-T-M 12,5-F-W 6 to 20 E 180-T-M 12,5-F-W 6 to 20
20 – 100	≥ 10	$\geq 50^b$	EI 120-T-M 12,5-F-W 20 to 100 E 180-T-M 12,5-F-W 20 to 100

^a Mineral wool has to be pressed into the joint taking into consideration, that the uncompressed thickness of the mineral wool board before installation has to be at least 15mm (for 6mm joint) up to 50mm (for a 20mm joint).

^b Mineral wool has to be pressed into the joint taking into consideration, that the uncompressed thickness of the mineral wool board before installation has to be at least 40mm (for 20mm joint) up to 200mm (for a 100mm joint).

3.2.2 "Hilti Firestop Acrylic Sealant CFS-S ACR" in combination with mineral wool products as backfilling material in rigid construction with steel elements as joint faces

3.2.2.1 Steel elements as joint faces in linear joints in rigid walls

Type IV	
Vertical joints in / between rigid wall constructions (according to Annex 3, clause 3.1.1.c and 3.1.1.f of this ETA)	
 <p>(top view)</p>	<ul style="list-style-type: none"> • A = Hilti Firestop Acrylic Sealant CFS-S ACR • B = mineral wool products (see Annex 2, clause 2.2.1 of this ETA) • $t_E \geq 150$ mm, $t_B \geq 100$ mm • maximum $\pm 7,5\%$ movement (non-movement joints) • maximum splice distance minimum 1250 mm

For symbols and abbreviations see Annex 1, clause 1.3 of the ETA

For **Type IV** joints:

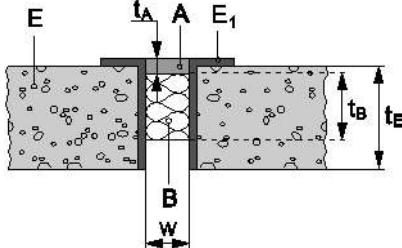
Joint Width (w) (mm)	Joint Depth (t_A) (mm)	Mineral wool Backfilling Compression by (%)	Classification
6 – 20	≥ 6	$\geq 60^a$	EI 60-V-X-F-W 6 to 20 E 240-V-X-F-W 6 to 20
20 – 100	≥ 10	$\geq 50^b$	EI 60-V-X-F-W 20 to 100 E 240-V-X-F-W 20 to 100

^a Mineral wool has to be pressed into the joint taking into consideration, that the uncompressed thickness of the mineral wool board before installation has to be at least 15mm (for 6mm joint) up to 50mm (for a 20mm joint).

^b Mineral wool has to be pressed into the joint taking into consideration, that the uncompressed thickness of the mineral wool board before installation has to be at least 40mm (for 20mm joint) up to 200mm (for a 100mm joint).

3.2.2.2

Steel elements as joint faces in horizontal joints in rigid floors

Type V	
Horizontal joints in rigid floor constructions (according to Annex 3, clause 3.1.1.d and 3.1.1.f of this ETA)	
 <p>(sectional view)</p>	<ul style="list-style-type: none"> • A = Hilti Firestop Acrylic Sealant CFS-S ACR • B = mineral wool products (see Annex 2, clause 2.2.1 of this ETA) • $t_B \geq 100$ mm, $t_E \geq 150$ mm • maximum $\pm 7,5\%$ movement (non-movement joints) • maximum splice distance minimum 1250 mm

For symbols and abbreviations see Annex 1, clause 1.3 of this ETA

For **type V** joints:

Joint Width (w) (mm)	Joint Depth (t_A) (mm)	Mineral wool Backfilling Compression by (%)	Classification
6 – 20	≥ 6	$\geq 60^a$	EI 120-H-X-F-W 6 to 20 E 120-H-X-F-W 6 to 20
20 – 100	≥ 10	$\geq 50^b$	EI 60- H-X-F-W 20 to 100 E 120-H-X-F-W 20 to 100

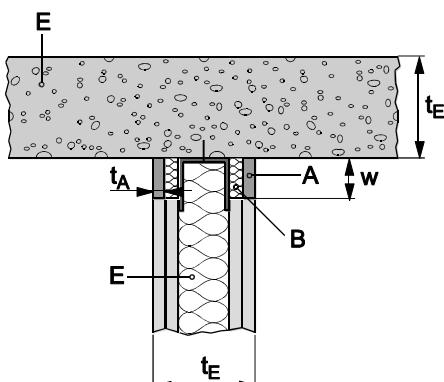
^a Mineral wool has to be pressed into the joint taking into consideration, that the uncompressed thickness of the mineral wool board before installation has to be at least 15mm (for 6mm joint) up to 50mm (for a 20mm joint).

^b Mineral wool has to be pressed into the joint taking into consideration, that the uncompressed thickness of the mineral wool board before installation has to be at least 40mm (for 20mm joint) up to 200mm (for a 100mm joint).

3.2.3 "Hilti Firestop Acrylic Sealant CFS-S ACR" in combination with mineral wool products as backfilling material in joints of flexible wall constructions or between flexible wall and rigid construction

3.2.3.1

"Hilti Firestop Acrylic Sealant CFS-S ACR" in combination with mineral wool products in joints between a flexible wall abutting a floor ceiling or roof

Type VI	
Horizontal joints in between the flexible wall (according to Annex 3, clause 3.1.1.a of the ETA), abutting a floor (according to Annex 3, clause 3.1.1.e of the ETA), ceiling or roof	
 <p>(sectional view)</p>	
<ul style="list-style-type: none"> • A = Hilti Firestop Acrylic Sealant CFS-S ACR • B = mineral wool products (see Annex 2, clause 2.2.1 of this ETA) • Floor: $t_E \geq 150$ mm • Flexible wall: $t_E \geq 100$ mm • Mineral wool E inside the flexible wall (density $\geq 100\text{kg/m}^3$, melting point $\geq 1000^\circ\text{C}$) • maximum joint movement capability: $\pm 12,5\%$ • splice distance minimum 625 mm 	

For symbols and abbreviations see Annex 1, clause 1.3 of the ETA

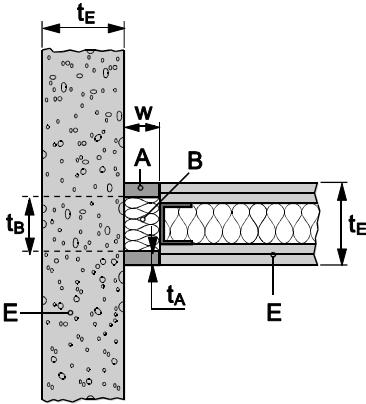
For **type VI** joints:

Joint Width (w) (mm)	Joint Depth (t _A) (mm)	Mineral wool Backfilling Compression by (%)	Classification
6 – 30	≥ 6	$\geq 60^c$	EI 120-T-M 12,5-F-W 6 to 30 E 120-T-M 12,5-F-W 6 to 30

^c Mineral wool has to be pressed into the joint taking into consideration, that the uncompressed thickness of the mineral wool board before installation has to be at least 15mm (for 6mm joint) up to 75mm (for a 30mm joint).

3.2.3.2

"Hilti Firestop Acrylic Sealant CFS-S ACR" in combination with mineral wool products in joints between a flexible wall abutting a rigid wall

Type VII	
Vertical joints between flexible and rigid wall constructions (according to Annex 3, clause 3.1.1.a and 3.1.1.c of the ETA)	
 <p>(top view)</p>	<ul style="list-style-type: none"> • A = Hilti Firestop Acrylic Sealant CFS-S ACR • B = mineral wool products (see Annex 2, clause 2.2.1 of the ETA) • Rigid wall: $t_E \geq 150$ mm • Flexible wall: $t_E \geq 100$ mm • Mineral wool E inside the flexible wall (density $\geq 100\text{kg/m}^3$, melting point $\geq 1000^\circ\text{C}$) • max. $\pm 7,5\%$ movement (non-movement joints) • splice distance minimum 1250 mm

For symbols and abbreviations see Annex 1, clause 1.3 of the ETA

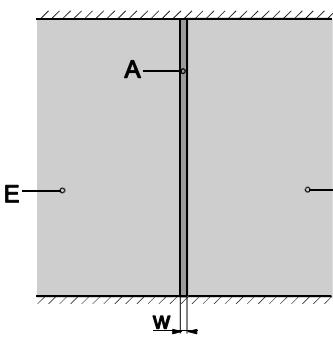
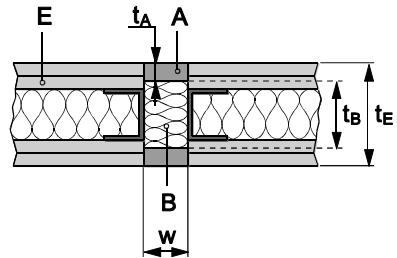
For **type VII** joints:

Joint Width (w) (mm)	Joint Depth (t_A) (mm)	Mineral wool Backfilling Compression by (%)	Classification
10 – 20	≥ 10	$\geq 60^d$	EI 120-V-X-F-W-F-W 10 to 20 E 120-V-X-F-W-F-W 10 to 20

^d Mineral wool has to be pressed into the joint taking into consideration, that the uncompressed thickness of the mineral wool board before installation has to be at least 25mm (for 10mm joint) up to 50mm (for a 20mm joint).

3.2.3.3

“Hilti Firestop Acrylic Sealant CFS-S ACR” in combination with mineral wool backfilling between flexible walls

<p style="text-align: center;">Type VIII</p> <p style="text-align: center;">Vertical joints between flexible wall constructions (according to Annex 3, clause 3.1.1.a of the ETA)</p>	
 <p>(front view)</p>	 <p>(top view)</p>
<ul style="list-style-type: none"> • A = Hilti Firestop Acrylic Sealant CFS-S ACR • B = mineral wool products (see Annex 2, clause 2.2.1 of the ETA) • $t_E \geq 100$ mm • Mineral wool E inside the flexible wall (density $\geq 100\text{kg/m}^3$, melting point $\geq 1000^\circ\text{C}$) • max.$\pm 7,5\%$ movement (non-movement joint) • splice distance minimum 1250 mm 	

For symbols and abbreviations see Annex 1, clause 1.3 of the ETA

For **Type VIII** joints:

Joint Width (w) (mm)	Joint Depth (t_A) (mm)	Mineral wool Backfilling Compression by (%)	Classification
10 – 30	≥ 10	$\geq 50^f$	EI 120-V-X-F-W 10 to 30 E 120-V-X-F-W 10 to 30

^f Mineral wool has to be pressed into the joint taking into consideration, that the uncompressed thickness of the mineral wool board before installation has to be at least 20mm (for 10mm joint) up to 60mm (for a 30mm joint).

3.3 RESISTANCE TO FIRE CLASSIFICATION OF LINEAR JOINTS AND GAP SEALS MADE FROM "HILTI FIRESTOP ACRYLIC SEALANT CFS-S ACR" IN COMBINATION WITH "HILTI FIRESTOP ROUND CORD CFS-CO" AS BACKFILLING MATERIAL

3.3.1 Selection of "Hilti Firestop Round Cord CFS-CO" for relevant joint width

The following table is valid identically for joints in/between

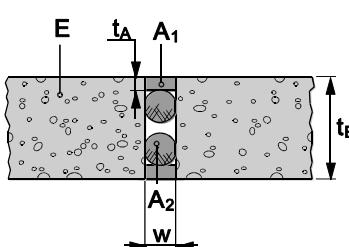
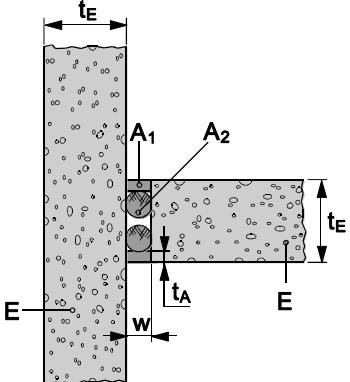
- rigid walls, see Annex 3, clause 3.1.1.c of the ETA
- rigid floors, see Annex 3, clause 3.1.1.d of the ETA
- rigid walls abutting a floor ceiling or roof (according Annex 3, clause 3.1.1.c and 3.1.1.d of the ETA)

Joint width (w) (mm)	Size of "Hilti Firestop Round Cord CFS-CO"	Distance of splices in the two "Hilti Firestop Round Cord CFS-CO" rod layers (mm)	
		Vertical joints	Horizontal joints
12 - 17	20	140	645
17 - 27	30	450	645
27 - 37	40	450	645
37 - 47	50	450	645
47 - 55	60	450	645

3.3.2 Joints in rigid walls and floors, backfilled with "Hilti Firestop Round Cord CFS-CO"

Vertical Joints within or between rigid walls according to 3.1.1.c have to be installed identical from both sides of the wall. At least two "Hilti Firestop Round Cords CFS-CO" have to be installed pre-compressed into the joint, running parallel. An air gap has to be maintained between the rods.

3.3.2.1 Joints in/between rigid wall construction, made from "Hilti Firestop Acrylic Sealant CFS-S ACR" with "Hilti Firestop Round Cord CFS-CO"

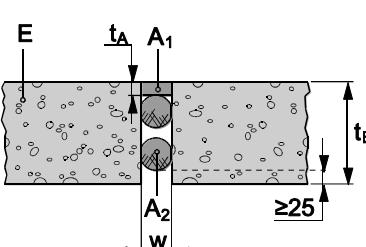
Type IX	
Vertical joints in / between rigid wall constructions (according to Annex 3, clause 3.1.1.c of the ETA)	
 <p>(top view)</p>	 <p>(top view)</p>
<ul style="list-style-type: none"> • A_1 = Hilti Firestop Acrylic Sealant CFS-S ACR, • A_2 = Hilti Firestop Round Cord CFS-CO, • $t_E \geq 150$ mm, max. $\pm 7,5\%$ movement (non-movement joint) 	

For symbols and abbreviations see Annex 1, clause 1.3 of the ETA

For **type IX** joints:

Joint Width (w) (mm)	Joint Depth (t _A) (mm)	Classification
12 – 20	≥ 6	EI 180-V-X-F-W 12 to 55
20 – 55	≥ 10	E 240-V-X-F-W 12 to 55

3.3.2.2 Joints in/between rigid floor construction, made from “Hilti Firestop Acrylic Sealant CFS-S ACR” with “Hilti Firestop Round Cord CFS-CO”

Type X	
Joints in floor constructions (according to Annex 3, clause 3.1.1.d of the ETA)	
	
(sectional view, all measures in mm)	
<ul style="list-style-type: none"> • A₁ = Hilti Firestop Acrylic Sealant CFS-S ACR • A₂ = Hilti Firestop Round Cord CFS-CO • t_E ≥ 150 mm, max. ± 7,5% movement (non-movement joint) 	

For symbols and abbreviations see Annex 1, clause 1.3 of the ETA

For **type X** joints:

Joint Width (w) (mm)	Joint Depth (t _A) (mm)	Classification
12 – 17	≥ 6	EI 180-H-X-F-W 12 to 55
17 – 55	≥ 10	E 180-H-X-F-W 12 to 55

3.3.2.3

Joints in/between rigid floor and wall construction, made from "Hilti Firestop Acrylic Sealant CFS-S ACR" with "Hilti Firestop Round Cord CFS-CO"

Type XI	
Horizontal joints between a rigid wall abutting a rigid floor, ceiling or roof (according to Annex 3, clause 3.1.1.c and 3.1.1.d of the ETA)	
<p>(sectional view)</p>	<ul style="list-style-type: none"> • A_1 = Hilti Firestop Acrylic Sealant CFS-S ACR • A_2 = Hilti Firestop Round Cord CFS-CO • $t_E \geq 150$ mm • max. $\pm 7,5\%$ movement (non-movement joint)

For symbols and abbreviations see Annex 1, clause 1.3 of the ETA

For **type XI** joints:

Joint Width(w) (mm)	Joint Depth (t _A) (mm)	Classification
12 – 17	≥ 6	EI 180-T-X-F-W 12 to 55
17 – 55	≥ 10	E 180-T-X-F-W 12 to 55

3.4 RESISTANCE TO FIRE CLASSIFICATION OF LINEAR JOINT/GAP SEALS MADE FROM "HILTI FIRESTOP ACRYLIC SEALANT CFS-S ACR" IN COMBINATION WITH COMBUSTIBLE BACKFILLING MATERIA

3.4.1 Application range for Joints, made from "Hilti Firestop Acrylic Sealant CFS-S ACR" and combustible backfilling material

Within or between:

- rigid wall constructions, see Annex 3, clause 3.1.1.b and 3.1.1.c of the ETA
- rigid floor constructions, see Annex 3, clause 3.1.1.d and 3.1.1.e of the ETA
- between floor and flexible wall constructions ("head of wall joint"), see Annex 3, clause 3.1.1.a and 3.1.1.d of the ETA

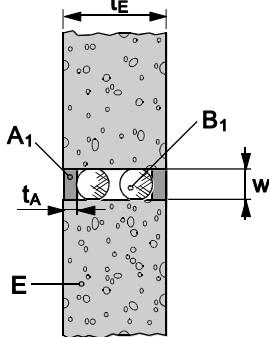
3.4.2 Backfilling material B_1 can be:

- any Polyethylene (PE) based material, density $\geq 19,5 \text{ kg/m}^3$ combustibility according to EN 13501-1 class F, E, D, C, B
- any Polyurethane (PU) based material, density $\geq 18,0 \text{ kg/m}^3$, combustibility according to EN 13501-1 class F, E, D, C, B
- alternative backfilling material (glass wool, slag/clinker wool, mineral or ceramic wool class A1 according to EN 13501-1

3.4.3 Symmetrical joints

Symmetrical joints show an identical set up (backfilling material and sealing) from both sides of the wall or both sides of the floor.

3.4.3.1 Joints in/between rigid wall construction, made from "Hilti Firestop Acrylic Sealant CFS-S ACR" with combustible backfilling material

Type XII
Vertical joints in / between rigid wall constructions (according to Annex 3, clause 3.1.1.b of the ETA)

<ul style="list-style-type: none">• A_1 = Hilti Firestop Acrylic Sealant CFS-S ACR• B_1 = combustible backfilling material (see Annex 3, clause 3.4.2 of the ETA)• $t_E \geq 150 \text{ mm}$, splice distance $\geq 100\text{mm}$

For symbols and abbreviations see Annex 1, clause 1.3 of the ETA

For **type XII** joints:

Joint Orientation	Joint width (w) (mm)	Sealant depth (t_A) (mm)	Max. Joint Movement \pm (%)	Classification
Vertical joints in / between walls ^g	6 – 20	10	12,5	EI 180-V-M 12,5-F-W 6 to 20 E 180-V-M 12,5-F-W 6 to 20
	6 – 40	15	12,5	EI 180-V-M 12,5-F-W 6 to 40 E 180-V-M 12,5-F-W 6 to 40
	6 – 35	10	7,5	EI 180-V-X-F-W 6 to 35 E 180-V-X-F-W 6 to 35
	6 – 50	15	7,5	EI 180-V-X-F-W 6 to 50 E 180-V-X-F-W 6 to 50

^g Backfilling material can be either PE material, PU material or other, see Annex 3, clause 3.4.2 of the ETA

3.4.3.2 Joints in/between rigid floor construction, made from "Hilti Firestop Acrylic Sealant CFS-S ACR" with combustible backfilling material

Type XIII Horizontal Joints in floor constructions according Annex 3, clause 3.1.1.e of the ETA	
<p>(sectional view)</p>	
<ul style="list-style-type: none"> • A = Hilti Firestop Acrylic Sealant CFS-S ACR • B₁ = combustible backfilling material (see Annex 3, clause 3.4.2 of the ETA) • t_E ≥ 150 mm, splice distance minimum 100mm 	

For symbols and abbreviations see Annex 1, clause 1.3 of the ETA

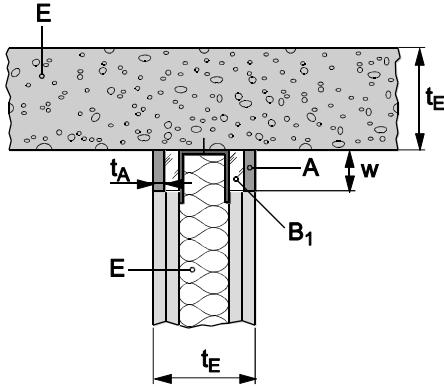
For **Type XIII** joints:

Joint Orientation	Joint width (w) (mm)	Sealant depth (t_A) (mm)	Max. Joint Movement \pm (%)	Classification
Joints in floor constructions ^g	6 – 20	10	12,5	EI 180-H-M 12,5-F-W 6 to 20 E 180-H-M 12,5-F-W 6 to 20
	6 – 40	15	12,5	EI 180-H-M 12,5-F-W 6 to 40 E 180-H-M 12,5-F-W 6 to 40

^g Backfilling material can be either PE material, PU material or other, see Annex 3, clause 3.4.2 of the ETA

3.4.3.3

Joints between rigid floor construction and flexible wall construction, made from "Hilti Firestop Acrylic Sealant CFS-S ACR" with combustible backfilling material

Type XIV	
Horizontal joints between a flexible wall, abutting a floor, ceiling or roof ("head of wall joint"), according to Annex 3, clause 3.1.1.a and 3.1.1.e of the ETA	
 (sectional view)	<ul style="list-style-type: none"> • A = Hilti Firestop Acrylic Sealant CFS-S ACR • B₁ = combustible backfilling material (see Annex 3, clause 3.4.2 of the ETA) • $t_E \geq 150$ mm (floor) • $t_E \geq 100$ mm (flexible wall) • maximum joint movement capability: $\pm 12,5\%$, • Mineral wool E inside the flexible wall (density $\geq 100\text{kg/m}^3$, melting point $\geq 1000^\circ\text{C}$) • splice distance minimum 200mm

For symbols and abbreviations see Annex 1, clause 1.3 of the ETA

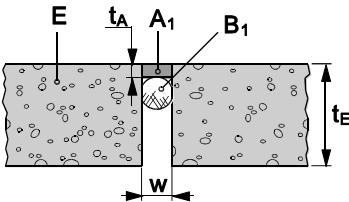
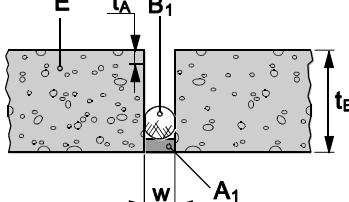
For **type XIV** joints:

Joint Orientation	Joint width (w) (mm)	Sealant depth (t _A) (mm)	Max. Joint Movement \pm (%)	Classification
Horizontal joints in a wall abutting a floor, ceiling or roof ^h	6 – 20	≥ 10	12,5	EI 90-T-M 12,5-F-W 6 to 20 E 120-T-M 12,5-F-W 6 to 20

^h Backfilling material has to be PE only, see Annex 3, clause 3.4.2 of the ETA

3.4.4 Non-symmetrical Joints

In floor application an asymmetrical joint set up may be chosen, see type XV and type XVI.
In wall application is no asymmetrical system approved.

Type XV	Type XVI
<p>Joints in rigid floor constructions, see Annex 3, clause 3.1.1.e of the ETA</p>  <p>(sectional view)</p> <ul style="list-style-type: none"> • $t_E \geq 150 \text{ mm}$ 	<p>Joints in rigid floor constructions, see Annex 3, clause 3.1.1.e of the ETA</p>  <p>(sectional view)</p> <ul style="list-style-type: none"> • $t_E \geq 150 \text{ mm}$

For symbols and abbreviations see Annex 1, clause 1.3 of the ETA

For type XV and type XVI joints:

Joint Orientation	Joint width (w) (mm)	Sealant depth (t_A) (mm)	Backfilling Material B ₁	Max. Joint Movement \pm (%)	Classification
Joints in floor constructions (type XV)	6 – 25	15	PE	7,5	EI 120-H-X-F-W 6 to 25 E 180-H-X-F-W 6 to 25
Joints in floor constructions (type XVI)	6 – 25	15	PE	7,5	EI 45-H-X-F-W 6 to 25 E 120-H-X-F-W 6 to 25
Joints in floor constructions (type XV)	6 – 25	15	PU	7,5	EI 120-H-X-F-W 6 to 25 E 180-H-X-F-W 6 to 25
Joints in floor constructions (type XVI)	6 – 25	15	PU	7,5	EI 30-H-X-F-W 6 to 25 E 120-H-X-F-W 6 to 25