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## European Technical Assessment

**ETA-10/0389**  
of 17.07.2023

General part

**Technical Assessment Body issuing the European Technical Assessment**

Österreichisches Institut für Bautechnik (OIB)  
Austrian Institute of Construction Engineering

**Trade name of the construction product**

Hilti Firestop Acrylic Sealant CFS-S ACR

**Product family to which the construction product belongs**

Fire Stopping and Fire Sealing Products:  
Linear Joint and Gap Seals

**Manufacturer**

Hilti AG  
Feldkircherstrasse 100  
9494 Schaan  
LIECHTENSTEIN

**Manufacturing plant**

Hilti production plant 4a

**This European Technical Assessment contains**

31 pages including Annexes A to E which form an integral part of this assessment.

**This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of**

European Assessment Document  
EAD 350141-00-1106 "Fire stopping and fire sealing products – Linear joint and gap seals"

**This European Technical Assessment replaces**

European Technical Assessment ETA-10/0389 of  
04.09.2017

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# 1 Technical Description of the Product

## 1.1 Definition of the Construction Product

“Hilti Firestop Acrylic Sealant CFS-S ACR” is a sealant used to form a linear joint or gap seal with mineral wool, “Hilti Firestop Round Cord CFS-CO” or combustible material as backfilling material. For details of the seal design depending on orientation, building elements forming the joint/gap or backfilling material and the related classifications see Annex B of the ETA.

For further details on “Hilti Firestop Acrylic Sealant CFS-S ACR”, “Hilti Firestop Round Cord CFS-CO” and for a specification of suitable backfilling material see Annex B clause 7.2 of the ETA.

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The Österreichisches Institut für Bautechnik will decide whether or not such changes affect the European Technical Assessment and consequently the validity of the CE marking on the basis of the European Technical Assessment and if so whether further assessment or alterations to the European Technical Assessment, shall be necessary.

## 2.6 Installation

The product shall be installed and used as described in this European Technical Assessment. Additional marking of the linear joint or gap seal shall be done in case of national requirements.

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

Basic requirements for construction works	Essential characteristic	Method of verification	Performance
<b>BWR 2</b>	Reaction to fire	EN 13501-1:2018	clause 3.1
	Resistance to fire	EN 13501-2:2016	clause 0
<b>BWR 3</b>	Content, emission and/or release of dangerous substances	EN 16516	clause 3.3
	Air permeability (material property)	EN 1026:2000	clause 3.4
	Water permeability (material property)	EAD 350141-00-1106, Annex C	clause 3.5
<b>BWR 4</b>	Mechanical resistance and stability	No performance assessed	
	Resistance to impact / movement	No performance assessed	
	Adhesion	EN ISO 11600:2011	clause 3.8
	Durability	EAD 350141-00-1106	clause 3.12
	Movement capability	EN ISO 11600	clause 3.13
	Cycling of perimeter seals for curtain walls	No performance assessed	
	Compression set	No performance assessed	
	Linear expansion on setting	No performance assessed	
<b>BWR 5</b>	Airborne sound insulation	EN ISO 10140-1:2010	clause 0
<b>BWR 6</b>	Thermal properties	No performance assessed	
	Water vapour permeability	No performance assessed	

#### 3.1 Reaction to fire

“Hilti Firestop Acrylic Sealant CFS-S ACR” was assessed according to EAD 350141-00-1106 and classified according to EN 13501-1:2018.

Component	Class according to EN 13501-1
Hilti Firestop Acrylic Sealant CFS-S ACR	<b>D</b>
Hilti Firestop Round Cord CFS-CO	<b>A1</b>
Backfilling mineral wool	<b>A1</b>
Backfilling material, combustible, based on PE or PU	<b>F</b>
Backfilling precompressed PU sealing tape	<b>E</b>



### 3.9 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 1200 mm, depth 100 mm, width 25 mm) in a rigid wall backfilled with compressed mineral wool. Installation depth of “Hilti Firestop Acrylic Sealant CFS-S ACR” was 12 mm on both sides of the wall.

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

<b>R<sub>s,w</sub> in dB</b>	<b>C in dB</b>	<b>C<sub>tr</sub> in dB</b>
64	-2	-7

### 3.10 Thermal properties

No performance assessed.

### 3.11 Water vapour permeability

No performance assessed.

### 3.12 Durability

All components of “Hilti Firestop Acrylic Sealant CFS-S ACR” fulfil the requirements for the intended use category.

“Hilti Firestop Acrylic Sealant CFS-S ACR” is therefore appropriate for use at temperatures below 0°C, but with no exposure to rain or UV and can therefore – according to EAD 350141-00-1106 – be categorized as Type Y<sub>2</sub>. Since the requirements for Type Y<sub>2</sub> are met, also the requirements for Type Z<sub>1</sub> and Z<sub>2</sub> are fulfilled.

### 3.13 Movement capability

The movement capability was assessed according to EN ISO 11600. “Hilti Firestop Acrylic Sealant CFS-S ACR” meets the requirements for class F-12,5P-M<sub>1</sub>uP.

### 3.14 Cycling of perimeter seals for curtain walls

No performance assessed.

### 3.15 Compression set

No performance assessed.

### 3.16 Linear expansion on setting

No performance assessed.

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

According to the Decision 1999/454/EC<sup>1</sup>, amended by Decision 2001/596/EC<sup>2</sup> of the European Commission the system(s) of assessment and verification of constancy of performance (see Annex V of Regulation (EU) No 305/2011) is given in the following table.

Product(s)	Intended use(s)	Level(s) or class(es) (resistance to fire)	System of assessment and verification of constancy of performance
Fire Stopping and Fire Sealing Products	for fire compartmentation and/or fire protection or fire performance	any	1

In addition, according to the Decision 1999/454/EC, amended by Decision 2001/596/EC of the European Commission the system(s) of assessment and verification of constancy of performance, with regard to reaction to fire, is 3.

Product(s)	Intended use(s)	Level(s) or class(es) (reaction to fire)	System of assessment and verification of constancy of performance
Fire Stopping and Fire Sealing Products	For uses subject to regulations on reaction to fire	A1*, A2*, B*, C*	1
		A1**, A2**, B**, C**, D, E	3
		(A1 to E)***, F	4
<p>* Products/materials for which a clearly identifiable stage in the production process results in an improvement of the reaction to fire classification (e.g. an addition of fire retardants or a limiting of organic material)</p> <p>** Products/materials not covered by footnote (*)</p> <p>*** Products/materials that do not require to be tested for reaction to fire (e.g. products/materials of class A1 according to Commission Decision 96/603/EC, as amended)</p>			

<sup>1</sup> Official Journal of the European Communities no. L 178, 14.7.1999, p. 52

<sup>2</sup> Official Journal of the European Communities no. L 209, 2.8.2001, p. 33

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

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with the Technical Assessment Body Österreichisches Institut für Bautechnik.

The notified product certification body shall visit the factory at least twice a year for surveillance of the manufacturer.

Issued in Vienna on 17.07.2023  
by Österreichisches Institut für Bautechnik

The original document is signed by:

Georg Kohlmaier  
Deputy Managing Director

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## 6 Annex A

### Reference documents

#### 6.1 Reference to standards mentioned in the ETA

EN 1026	Windows and doors – Air permeability – Test method
EN 1366-4	Fire resistance tests for service installations - Part 4: Linear joint seals
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 16516	Construction products: Assessment of release of dangerous substances - Determination of emissions into indoor air
EN ISO 717-1	Acoustics – Rating of sound insulation of buildings and of building elements – Part 1: Airborne sound insulation
EN ISO 10140	Acoustics – Laboratory measurement of sound insulation of building elements Part 2: Measurement of airborne sound insulation Part 3: Measurement of impact sound insulation
EN ISO 11600	Building construction — Jointing products — Classification and requirements for sealants
EN 312	Particleboards - Specifications
EN 16351	Timber structures - Cross laminated timber - Requirements
EN 14081	Timber structures - Strength graded structural timber with rectangular cross section - Part 1: General requirements
EN 338	Structural timber - Strength classes
EN 13986	Wood-based panels for use in construction - Characteristics, evaluation of conformity and marking

#### 6.2 Other reference documents

EOTA TR 001	Determination of impact resistance of panels and panel assemblies
EOTA TR 024	Characterisation, Aspects of Durability and Factory Production Control for Reactive Materials, Components and Products
	Safety Data Sheet according to 1907/2006/EC, Article 31, for “Hilti Firestop Acrylic Sealant CFS-S ACR”

## 7 Annex B

Description of Product(s) & Product Literature – see also [www.hilti.group](http://www.hilti.group) and choose your local country

### 7.1 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.

### 7.2 Ancillary products

#### 7.2.1 Mineral wool

Mineral wool products suitable for being used as backfilling material

Characteristics	Specification
Stone wool	EN 13162 or EN 14303
Density	$\geq 40 \text{ kg/m}^3$ till $\leq 100 \text{ kg/m}^3$
Facing	No Al-facing, no other facing
Combustibility class	A1 according EN 13501-1
Melting point	$\geq 1000^\circ\text{C}$

#### 7.2.2 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 the document “Evaluation Report 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.

#### 7.2.3 Combustible backfilling material

Characteristics	Specification	
Material	Polyethylen (PE)	Polyurethan (PU)
Density	$\geq 19,5 \text{ kg/m}^3$	$\geq 18 \text{ kg/m}^3$
Combustibility class	F, E, D, C, B according EN 13501-1	F, E, D, C, B according EN 13501-1
<b>Alternative backfilling material for PU/PE</b>		
glass wool, slag/clinker wool, mineral, stone or ceramic wool class A1 according to EN 13501-1.		

#### 7.2.4 Combustible sealing tape as backfilling material

Characteristics	Specification
Material	Polyurethan (PU) precompressed sealing tape; width $\geq 56 \text{ mm}$ .
Density	$\geq 100 \text{ kg/m}^3$
Combustibility class	E, D, C, B according EN 13501-1
<b>Alternative backfilling material for PU</b>	
glass wool, slag/clinker wool, mineral, stone or ceramic wool class A1 according to EN 13501-1.	

## 8 ANNEX C – resistance to fire

### 8.1 Intended use of joints and reference to relevant sections

(list not exhaustive, other uses of pipes may be possible)			
joint orientation	backfilling material	supporting construction	Affected clause ANNEX C
wall to wall - vertical	mineral wool	rigid wall	8.3.2
wall to wall - vertical	mineral wool	rigid wall and/or flexible wall	8.3.3
top of wall - horizontal	mineral wool	rigid floor and rigid wall	8.3.4
wall to wall - vertical	mineral wool	steel elements in rigid wall	8.3.5.1
floor to floor - horizontal	mineral wool	steel elements in rigid floor	8.3.5.2
wall to wall - vertical	mineral wool	rigid wall and/or flexible wall	8.3.6
top of wall - horizontal	mineral wool	rigid floor and flexible wall	8.3.7
floor to floor - horizontal	mineral wool	rigid floor	8.3.8
wall to wall - vertical	CFS-CO	rigid wall	8.4.2
floor to floor - horizontal	CFS-CO	rigid floor	8.4.3
top of wall - horizontal	CFS-CO	rigid floor and rigid wall	8.4.4
wall to wall - vertical	combustible B <sub>1</sub>	rigid wall	8.5.2
floor to floor - horizontal	combustible B <sub>1</sub>	rigid floor	8.5.3
top of wall - horizontal	combustible B <sub>1</sub>	rigid floor and flexible wall	8.5.4
floor to floor - horizontal	combustible B <sub>1</sub>	rigid floor	8.5.5
top of wall - horizontal	combustible B <sub>1</sub>	CLT timber	8.6.2
floor to floor - horizontal	combustible B <sub>2</sub>	rigid floor, timber CLT, solid timber, timber frame	8.6.3
floor to wall - horizontal	combustible B <sub>2</sub>	rigid floor, timber CLT	8.6.4
floor to wall - horizontal	combustible B <sub>2</sub>	rigid floor, solid timber, timber frame	8.6.5

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.



## 8.2 General Information

### 8.2.1 Wall / Floor constructions covered

a) Flexible wall	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 wall	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/m <sup>3</sup> .
c) Rigid wall	The wall must have a minimum thickness of 150 mm and comprise concrete or masonry, with a minimum density of 2400 kg/m <sup>3</sup> .
d) Rigid floor	The floor must have a minimum thickness of 150 mm and comprise concrete with a minimum density of 2400 kg/m <sup>3</sup> .
e) Rigid floor	The floor must have a minimum thickness of 100 mm and comprise aerated concrete or comprise concrete with a minimum density of 550 kg/m <sup>3</sup> .
f) Steel construction	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.
g) CLT timber wall/floor	ZUBLIN Timber, Leno cross laminated timber ETA-10/0241; CLT Types classified according EN 16351; minimum element thickness 100 mm, minimum layer thickness 20 mm, shall comprise Polyurethane and MUF based adhesives; valid only for softwood CLT types such as: spruce/fir, pine, larch, stone pine
h) Solid timber/timber frame	Solid timber or timber frame EN 14081, strength class C 24 acc. EN 338, joint side covered with 18 mm OSB board acc. EN 13986, EN 312 "LivingBoard face contiprotect P5"

### 8.2.2 Joint position and basement preparation

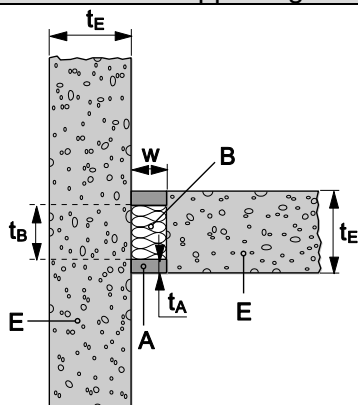
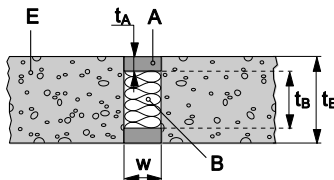
In rigid and flexible wall constructions the joint has to be sealed symmetrically on both sides of the wall. In floor constructions the joint has to be sealed from the top side only.

### 8.3 Joint in rigid and/or flexible supporting construction with non-combustible backfilling material

#### 8.3.1 Application range

between	ANNEX C clause
rigid wall construction	8.2.1 c)
flexible and rigid wall construction	8.2.1 a) and 8.2.1 b)
rigid wall and rigid floor construction (top of wall)	8.2.1 c) and 8.2.1 d)
rigid wall constructions with steel element	8.2.1 c) and 8.2.1 f)
rigid floor constructions with steel element	8.2.1 d) and 8.2.1 f)
flexible wall and rigid wall construction	8.2.1 a) and 8.2.1 c)
flexible wall and rigid floor (top of wall)	8.2.1 a) and 8.2.1 e)
rigid floor construction	8.2.1 d)

#### 8.3.2 Rigid wall (wall to wall - vertical)

supporting construction clause 8.2.1 c) (top view)			
 <p>Figure 8.3.2. A</p>		 <p>Figure 8.3.2. B</p>	
<p><math>t_E \geq 150</math> mm (except: <math>t_E \geq 100</math> mm for the heading wall + <math>t_B \geq 80</math> mm)  <math>t_B \geq 100</math> mm (or 50mm backfilling each side)  <b>A</b> = CFS-S ACR  <b>B</b> = mineral wool (see clause 7.2.1)                      maximum movement capability: <math>\pm 12,5\%</math>                      splice distance of backfilling minimum: 1250 mm</p>			
joint width (w) (mm)	sealant depth ( $t_A$ ) (mm)	mineral wool backfilling compression by (%)	classification
6 – 20	$\geq 6$	$\geq 60^3$	EI 180-V-M 12,5-F-W 6 to 20 E 240-V-M 12,5-F-W 6 to 20
20 – 100	$\geq 10$	$\geq 50^4$	EI 180-V-M 12,5-F-W 20 to 100 E 240-V-M 12,5-F-W 20 to 100

<sup>3</sup> Mineral wool must be pressed into the joint taking into consideration, that the uncompressed thickness of the mineral wool board before installation must be at least 15mm (for 6mm joint) up to 50mm (for a 20mm joint).

<sup>4</sup> Mineral wool must be pressed into the joint taking into consideration, that the uncompressed thickness of the mineral wool board before installation must be at least 40mm (for 20mm joint) up to 200mm (for a 100mm joint).

### 8.3.3 Flexible and rigid wall (wall to wall - vertical)

supporting construction clause 8.2.1 a) and 8.2.1 b)			
<p>(front view) Figure 8.3.3.A</p>		<p>(top view) Figure 8.3.3. B and Figure 8.3.3. C</p>	
$t_E \geq 100$ mm flexible wall (covers also rigid walls) $t_B \geq 80$ mm or remaining depth <b>A</b> = CFS-S ACR <b>B</b> = mineral wool (see clause 7.2.1) maximum movement capability: $\pm 7,5\%$ (non-movement joint) splice distance of backfilling minimum: 1250 mm			
joint width (w) (mm)	sealant depth ( $t_A$ ) (mm)	mineral wool backfilling compression by (%)	classification
10 – 30	$\geq 10$	$\geq 50^5$	EI 120-V-X-F-W 10 to 30

### 8.3.4 Rigid wall abutting a rigid floor (top of wall - horizontal)

supporting construction clause 8.2.1 c) and d) (sectional view)			
<p>Figure 8.3.4</p>			
$t_E \geq 150$ mm; $t_B \geq 100$ mm (or 50mm backfilling each side) <b>A</b> = CFS-S ACR <b>B</b> = mineral wool (see clause 7.2.1) maximum movement capability: $\pm 12,5\%$ splice distance of backfilling minimum: 1250 mm			
joint width (w) (mm)	sealant depth ( $t_A$ ) (mm)	mineral wool backfilling compression by (%)	classification
6 – 20	$\geq 6$	$\geq 60^6$	EI 180-T-M 12,5-F-W 6 to 20
20 – 100	$\geq 10$	$\geq 50^7$	EI 120-T-M 12,5-F-W 20 to 100 E 180-T-M 12,5-F-W 20 to 100

<sup>5</sup> Mineral wool must 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).  
<sup>6</sup> Mineral wool must be pressed into the joint taking into consideration, that the uncompressed thickness of the mineral wool board before installation must be at least 15mm (for 6mm joint) up to 50mm (for a 20mm joint).  
<sup>7</sup> Mineral wool must be pressed into the joint taking into consideration, that the uncompressed thickness of the mineral wool board before installation must be at least 40mm (for 20mm joint) up to 200mm (for a 100mm joint).

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### 8.3.5 Rigid construction with steel elements

#### 8.3.5.1 Steel elements in rigid walls (wall to wall - vertical)

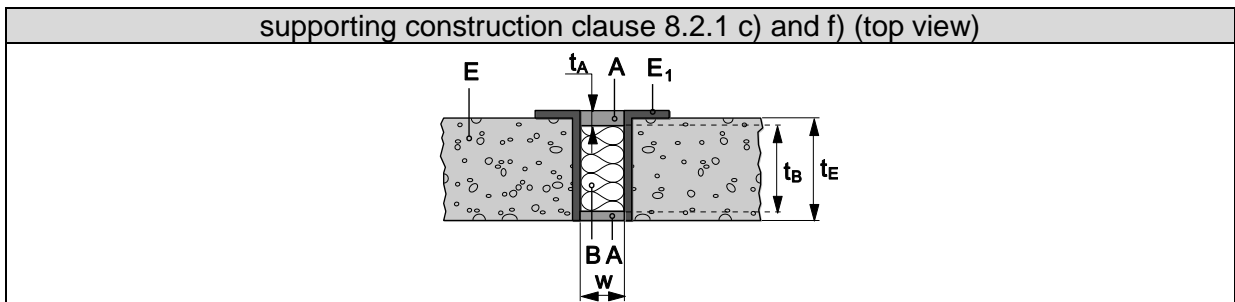


Figure 8.3.5.1

$t_E \geq 150$  mm  
 $t_B \geq 100$  mm (or 50mm backfilling each side)  
**A** = CFS-S ACR  
**B** = mineral wool (see clause 7.2.1)  
 maximum movement capability:  $\pm 7,5\%$  (non-movement joints)  
 splice distance of backfilling minimum: 1250 mm

joint width (w) (mm)	sealant depth ( $t_A$ ) (mm)	mineral wool backfilling compression by (%)	classification
6 – 20	$\geq 6$	$\geq 60^8$	EI 60-V-X-F-W 6 to 20 E 240-V-X-F-W 6 to 20
20 – 100	$\geq 10$	$\geq 50^9$	EI 60-V-X-F-W 20 to 100 E 240-V-X-F-W 20 to 100

#### 8.3.5.2 Steel elements in rigid floors (floor to floor - horizontal)

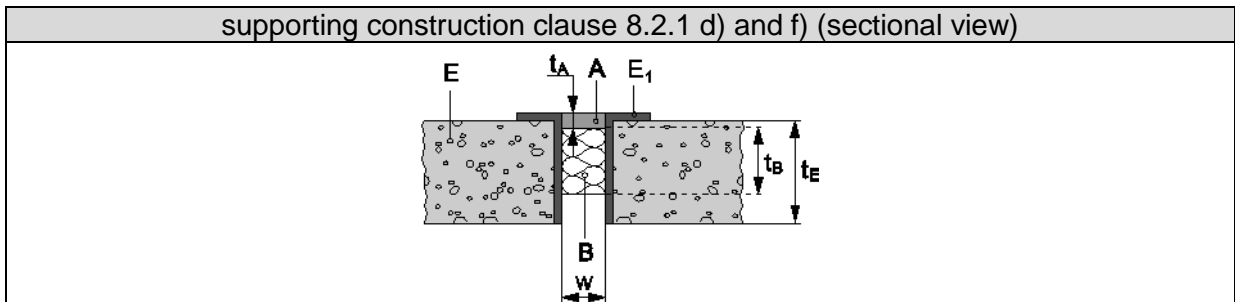


Figure 8.3.5.2

$t_E \geq 150$  mm  
 $t_B \geq 100$  mm  
**A** = CFS-S ACR  
**B** = mineral wool (see clause 7.2.1)  
 maximum movement capability:  $\pm 7,5\%$  (non-movement joints)  
 splice distance of backfilling minimum: 1250 mm

joint width (w) (mm)	sealant depth ( $t_A$ ) (mm)	mineral wool backfilling compression by (%)	classification
6 – 20	$\geq 6$	$\geq 60^{10}$	EI 120-H-X-F-W 6 to 20
20 – 100	$\geq 10$	$\geq 50^{11}$	EI 60-H-X-F-W 20 to 100 E 240-H-X-F-W 20 to 100

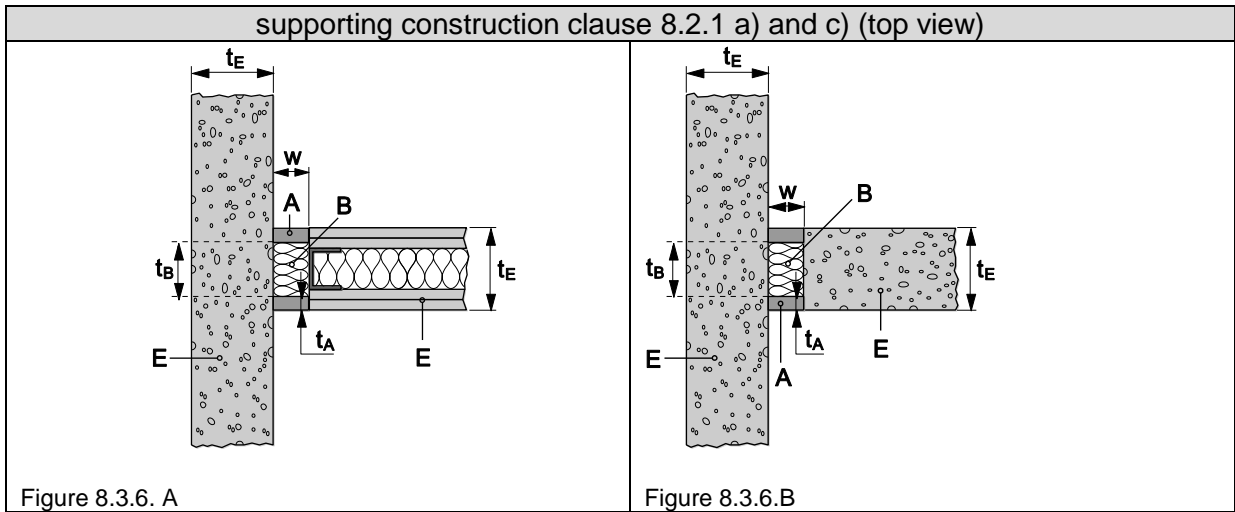
<sup>8</sup> Mineral wool must be pressed into the joint taking into consideration, that the uncompressed thickness of the mineral wool board before installation must be at least 15mm (for 6mm joint) up to 50mm (for a 20mm joint).

<sup>9</sup> Mineral wool must be pressed into the joint taking into consideration, that the uncompressed thickness of the mineral wool board before installation must be at least 40mm (for 20mm joint) up to 200mm (for a 100mm joint).

<sup>10</sup> Mineral wool must be pressed into the joint taking into consideration, that the uncompressed thickness of the mineral wool board before installation must be at least 15mm (for 6mm joint) up to 50mm (for a 20mm joint).

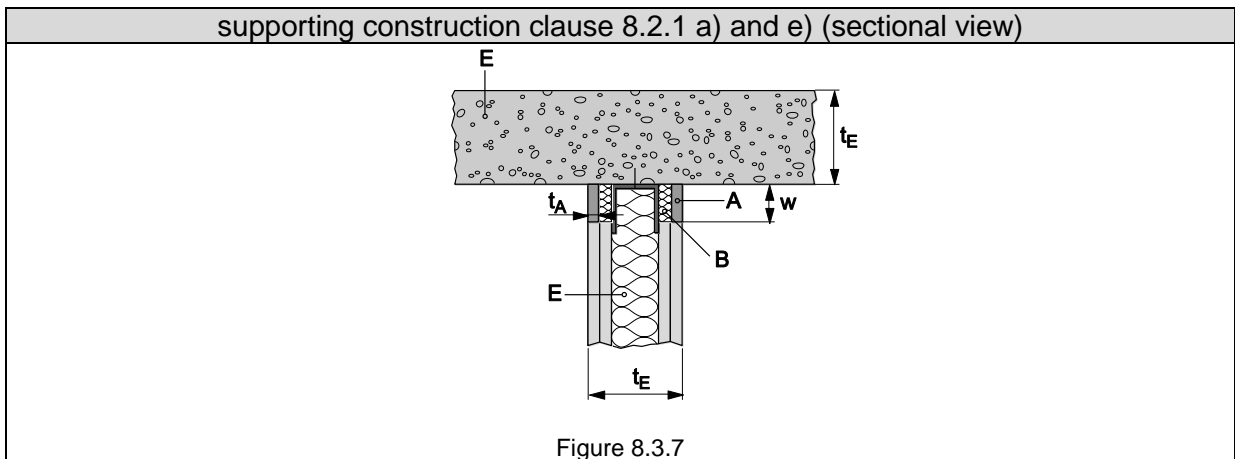
<sup>11</sup> Mineral wool must be pressed into the joint taking into consideration, that the uncompressed thickness of the mineral wool board before installation must be at least 40mm (for 20mm joint) up to 200mm (for a 100mm joint).

### 8.3.6 Flexible wall abutting a rigid wall (wall to wall - vertical)



$t_E \geq 150$ mm rigid wall $t_E \geq 100$ mm flexible wall or the heading wall $t_B \geq 80$ mm (or 40mm backfilling each side) <b>A</b> = CFS-S ACR <b>B</b> = mineral wool (see clause 7.2.1) maximum movement capability: $\pm 7,5\%$ (non-movement joint) splice distance of backfilling minimum: 1250 mm			
joint width (w) (mm)	sealant depth ( $t_A$ ) (mm)	mineral wool backfilling compression by (%)	classification
10 – 20	$\geq 10$	$\geq 60^{12}$	EI 120-V-X-F-W 10 to 20

### 8.3.7 Flexible wall abutting a rigid floor (top of wall - horizontal)

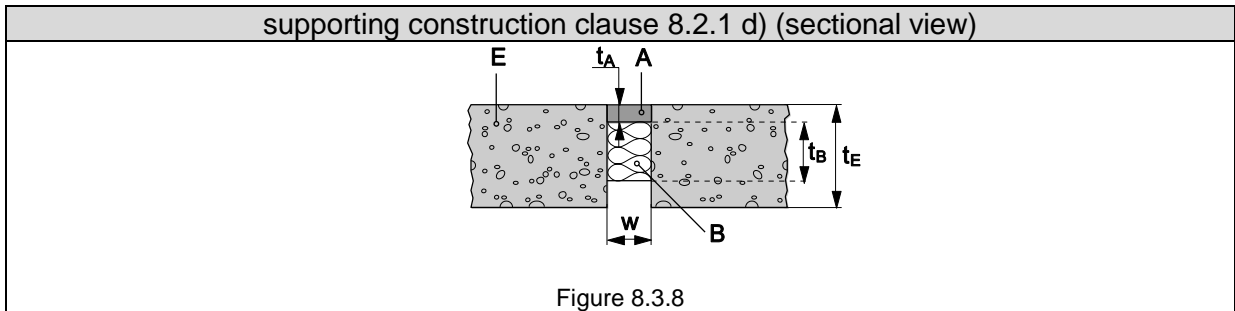


$t_E \geq 150$ mm rigid floor $t_E \geq 100$ mm flexible wall <b>A</b> = CFS-S ACR <b>B</b> = mineral wool (see clause 7.2.1) maximum movement capability: $\pm 12,5\%$ splice distance of backfilling minimum: 625 mm			
joint width (w) (mm)	sealant depth ( $t_A$ ) (mm)	mineral wool backfilling compression by (%)	classification
6 – 30	$\geq 6$	$\geq 60^{13}$	EI 120-T-M 12,5-F-W 6 to 30

<sup>12</sup> Mineral wool must 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).

<sup>13</sup> 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).

### 8.3.8 Rigid floor (floor to floor - horizontal)



$t_E \geq 150$  mm  
 $t_B \geq 100$  mm  
**A** = CFS-S ACR  
**B** = mineral wool (see clause 7.2.1)  
 maximum movement capability:  $\pm 12,5\%$   
 splice distance of backfilling minimum: 1250 mm

joint width (w) (mm)	sealant depth ( $t_A$ ) (mm)	mineral wool backfilling compression by (%)	classification
6 – 20	$\geq 6$	$\geq 60^{14}$	EI 180-H-M 12,5-F-W 6 to 20
20 – 100	$\geq 10$	$\geq 50^{15}$	EI 120-H-M 12,5-F-W 20 to 100 E 180-H-M 12,5-F-W 20 to 100

<sup>14</sup> Mineral wool must be pressed into the joint taking into consideration, that the uncompressed thickness of the mineral wool board before installation must be at least 15mm (for 6mm joint) up to 50mm (for a 20mm joint).

<sup>15</sup> Mineral wool must be pressed into the joint taking into consideration, that the uncompressed thickness of the mineral wool board before installation must be at least 40mm (for 20mm joint) up to 200mm (for a 100mm joint).

## 8.4 Joint in combination with “Hilti Firestop Round Cord CFS-CO” as backfilling material

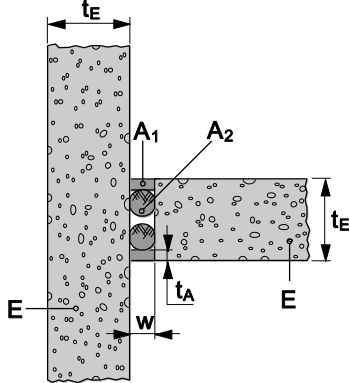
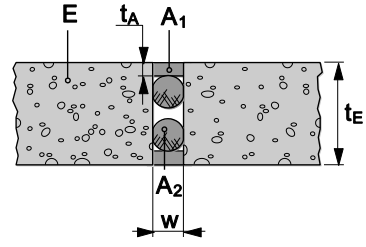
### 8.4.1 Application range

between	ANNEX C clause
rigid wall constructions	8.2.1 c)
rigid floor constructions	8.2.1 d)
rigid floor and rigid wall constructions (top of wall)	8.2.1 c) and 8.2.1 d)

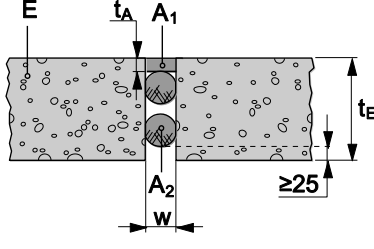
Joint width (w) (mm)	Nominal size of “Hilti Firestop Round Cord CFS-CO”	Distance of splices in the two “Hilti Firestop Round Cord CFS-CO” rod layers (mm)	
		Vertical joints	Horizontal joints
12 - 17	20	140	645
17 - 27	30	450	645
27 - 37	40	450	645
37 - 47	50	450	645
47 - 55	60	450	645

Vertical Joints within or between rigid walls according to 8.2.1 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.

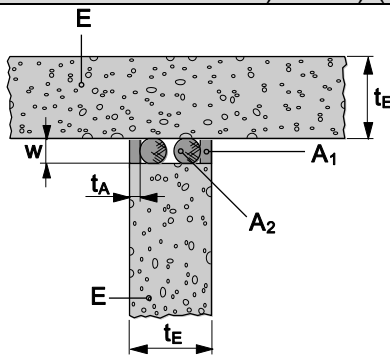
### 8.4.2 Rigid wall (wall to wall - vertical)

supporting construction clause 8.2.1 c) (top view)		
 <p>Figure 8.4.2. A</p>		 <p>Figure 8.4.2. B</p>
$t_E \geq 150$ mm <b>A<sub>1</sub></b> = CFS-S ACR <b>A<sub>2</sub></b> = Hilti Firestop Round Cord CFS-CO (see clause 7.2.2) maximum movement capability: $\pm 7,5\%$ (non-movement joint)		
joint width (w) (mm)	sealant depth (t <sub>A</sub> ) (mm)	classification
12 – 17	$\geq 6$	EI 180-V-X-F-W 12 to 20 E 240-V-X-F-W 12 to 20
217 – 55	$\geq 10$	EI 180-V-X-F-W 20 to 55 E 240-V-X-W 20 to 55

### 8.4.3 Rigid floor (floor to floor - horizontal)

supporting construction clause 8.2.1 d) (sectional view, measures in mm)		
		
Figure 8.4.3		
$t_E \geq 150$ mm <b>A<sub>1</sub></b> = CFS-S ACR <b>A<sub>2</sub></b> = Hilti Firestop Round Cord CFS-CO (see clause 7.2.2) maximum movement capability: $\pm 7,5\%$ (non-movement joint)		
joint width ( <b>w</b> ) (mm)	sealant depth ( <b>t<sub>A</sub></b> ) (mm)	classification
12 – 17	$\geq 6$	EI 180-H-X-F-W 12 to 17
17 – 55	$\geq 10$	EI 180-H-X-F-W 17 to 55

### 8.4.4 Rigid wall abutting a rigid floor (top of wall - horizontal)

supporting construction clause 8.2.1 c) and d) (sectional view)		
		
Figure 8.4.4		
$t_E \geq 150$ mm <b>A<sub>1</sub></b> = CFS-S ACR <b>A<sub>2</sub></b> = Hilti Firestop Round Cord CFS-CO (see clause 7.2.2) maximum movement capability: $\pm 7,5\%$ (non-movement joint)		
joint width ( <b>w</b> ) (mm)	sealant depth ( <b>t<sub>A</sub></b> ) (mm)	classification
12 – 17	$\geq 6$	EI 180-T-X-F-W 12 to 17
17 – 55	$\geq 10$	EI 180-T-X-F-W 17 to 55

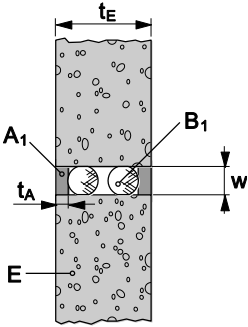


## 8.5 Joint in rigid and/or flexible supporting construction with combustible backfilling material

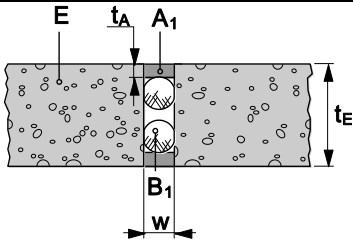
### 8.5.1 Application range

between	ANNEX C
rigid wall constructions	clause 8.2.1 b) and 8.2.1 c)
rigid floor constructions	clause 8.2.1 d) and 8.2.1 e)
rigid floor and flexible wall constructions (top of wall)	clause 8.2.1 a) and 8.2.1 e)

### 8.5.2 Rigid wall construction (wall to wall - vertical)

supporting construction clause 8.2.1 b) and c) (top view)			
			
Figure 8.5.2			
$t_E \geq 150$ mm <b>A<sub>1</sub></b> = CFS-S ACR <b>B<sub>1</sub></b> = combustible backfilling material (see clause 7.2.3) splice distance minimum 100 mm			
joint width ( <b>w</b> ) (mm)	sealant depth ( <b>t<sub>A</sub></b> ) (mm)	max. joint movement $\pm$ (%)	classification
6 – 20	$\geq 10$	12,5	EI 180-V-M 12,5-F-W 6 to 20
6 – 40	$\geq 15$	12,5	EI 180-V-M 12,5-F-W 6 to 40
6 – 35	$\geq 10$	7,5	EI 180-V-X-F-W 6 to 35
6 – 50	$\geq 15$	7,5	EI 180-V-X-F-W 6 to 50

### 8.5.3 Rigid floor construction (floor to floor - horizontal)

supporting construction clause 8.2.1 d) and e) (sectional view)		
		
Figure 8.5.3		
$t_E \geq 150$ mm <b>A<sub>1</sub></b> = CFS-S ACR <b>B<sub>1</sub></b> = combustible backfilling material (see clause 7.2.3) maximum movement capability: $\pm 12,5\%$ splice distance minimum 100mm		
joint width ( <b>w</b> ) (mm)	sealant depth ( <b>t<sub>A</sub></b> ) (mm)	classification
6 – 20	$\geq 10$	EI 180-H-M 12,5-F-W 6 to 20
6 – 40	$\geq 15$	EI 180-H-M 12,5-F-W 6 to 40

### 8.5.4 Rigid floor construction and flexible wall construction (top of wall - horizontal)

supporting construction clause 8.2.1 a) und e) (sectional view)		
<p style="text-align: center;">Figure 8.5.4</p>		
$t_E \geq 150$ mm (rigid floor) $t_E \geq 100$ mm (flexible wall) <b>A</b> = CFS-S ACR <b>B<sub>1</sub></b> = combustible backfilling material, only PE (see clause 7.2.3) maximum movement capability: $\pm 12,5\%$ splice distance minimum 200 mm		
joint width ( <b>w</b> ) (mm)	sealant depth ( <b>t<sub>A</sub></b> ) (mm)	classification
6 – 20	$\geq 10$	EI 90-T-M 12,5-F-W 6 to 20 E 120-T-M 12,5-F-W 6 to 20

### 8.5.5 Rigid floor (floor to floor - horizontal)

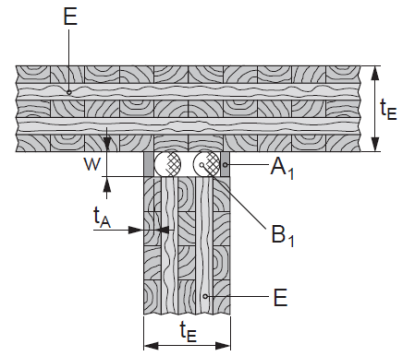
supporting construction clause 8.2.1 d) and e) (sectional view)				
asymmetric <b>top</b> application		asymmetric <b>below</b> application		
<p style="text-align: center;">Figure 8.5.5 A</p>		<p style="text-align: center;">Figure 8.5.5 B</p>		
$t_E \geq 150$ mm (rigid floor) <b>A<sub>1</sub></b> = CFS-S ACR <b>B<sub>1</sub></b> = combustible backfilling material (see clause 7.2.3) maximum movement capability: $\pm 7,5\%$ (non-movement joint) splice distance minimum 200 mm				
joint orientation	joint width ( <b>w</b> ) (mm)	sealant depth ( <b>t<sub>A</sub></b> ) (mm)	backfilling material <b>B<sub>1</sub></b>	classification
top	6 – 25	15	PE	EI 120-H-X-F-W 6 to 25 E 180-H-X-F-W 6 to 25
below	6 – 25	15	PE	EI 45-H-X-F-W 6 to 25 E 120-H-X-F-W 6 to 25
top	6 – 25	15	PU	EI 120-H-X-F-W 6 to 25 E 180-H-X-F-W 6 to 25
below	6 – 25	15	PU	EI 30-H-X-F-W 6 to 25 E 120-H-X-F-W 6 to 25

## 8.6 Joint in timber construction with combustible backfilling material

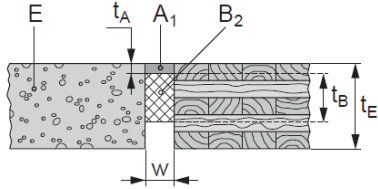
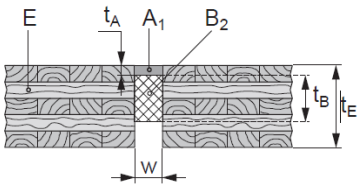
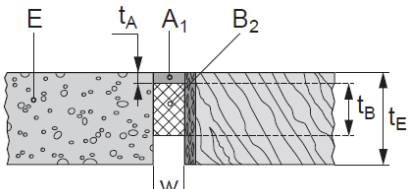
### 8.6.1 Application range

between	ANNEX C clause
timber wall and floor (CLT) constructions (top of wall)	8.2.1 g)
rigid floor and timber floor constructions (CLT)	8.2.1 e) and 8.2.1 g)
rigid floor and solid floor/timber frame constructions	8.2.1 e) and 8.2.1 h)
timber floor (CLT) constructions	8.2.1 g)
timber floor (CLT) and rigid wall constructions	8.2.1 b) and 8.2.1 g)
rigid floor and timber wall (CLT) constructions	8.2.1 g) and 8.2.1 e)
rigid floor and solid timber wall/timber frame constructions	8.2.1 e) and 8.2.1 h)
solid timber floor/timber frame floor and rigid wall constructions	8.2.1 b) and 8.2.1 h)

### 8.6.2 Timber floor and timber wall (CLT) construction (top of wall - horizontal)

supporting construction clause 8.2.1 g) (sectional view)			
 <p>Figure 8.6.2</p>			
$t_E \geq 100$ mm (timber floor/wall) $A_1$ = CFS-S ACR $B_1$ = combustible backfilling material (see clause 7.2.3) maximum movement capability: $\pm 7,5\%$ (non-movement joint) splice distance minimum 100 mm			
joint width (w) (mm)	sealant depth ( $t_A$ ) (mm)	backfilling material $B_1$	classification
5 – 25	$\geq 25$	PE	EI 90-T-X-F-W 5 to 25

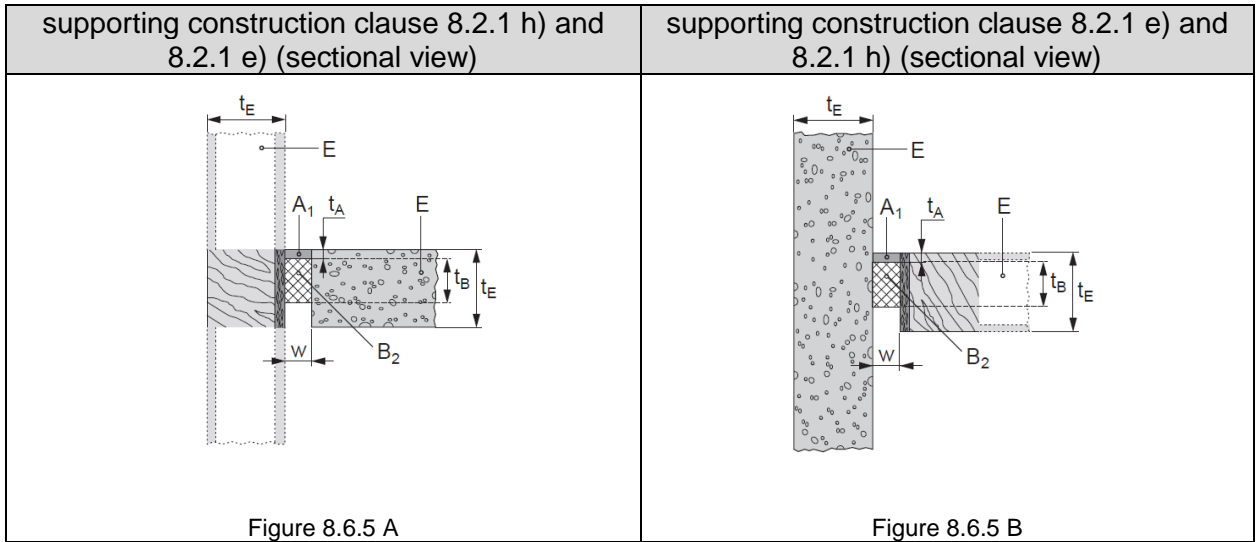
### 8.6.3 Rigid floor, timber floor (CLT) and solid timber/timber frame floor construction (floor to floor - horizontal)

supporting construction clause 8.2.1 e) and 8.2.1 g) (sectional view)		supporting construction clause 8.2.1 g) (sectional view)		
 <p>Figure 8.6.3 A</p>		 <p>Figure 8.6.3 B</p>		
supporting construction clause 8.2.1 e) and 8.2.1 h) (sectional view)		$t_E \geq 100 \text{ mm}$ $t_B \geq 56 \text{ mm}$ $A_1 = \text{CFS-S ACR}$ $B_2 = \text{combustible backfilling material (see clause 7.2.4)}$ maximum movement capability: $\pm 12,5\%$ splice distance minimum 100 mm		
 <p>Figure 8.6.3 C</p>				
supporting construction clause	joint width (w) (mm)	sealant depth (t <sub>A</sub> ) (mm)	backfilling material B <sub>2</sub>	classification
8.2.1 e) and 8.2.1 g)	5 – 25	≥ 25	<b>PU sealing-tape</b>	EI 90-H-M 12,5-F-W 5 to 25
8.2.1 e) and 8.2.1 h)	5 – 25	≥ 25	<b>PU sealing-tape</b>	EI 60-H-M 12,5-F-W 5 to 25
8.2.1 g)	5 – 15	≥ 15	<b>PU sealing-tape</b>	EI 90-H-M 12,5-F-W 5 to 15
8.2.1 g)	5 – 25	≥ 25	<b>PU sealing-tape</b>	EI 90-H-M 12,5-F-W 5 to 25

### 8.6.4 rigid and timber (CLT) construction (floor to wall - horizontal)

supporting construction clause 8.2.1 b) and 8.2.1 g) (sectional view)		supporting construction clause 8.2.1 g) (sectional view)		
<p>Figure 8.6.4 A</p>		<p>Figure 8.6.4 B</p>		
supporting construction clause 8.2.1 g) and 8.2.1 e) (sectional view)		$t_E \geq 100 \text{ mm}$ $t_B \geq 56 \text{ mm}$ $A_1 = \text{CFS-S ACR}$ $B_2 = \text{combustible backfilling material (see clause 7.2.4)}$ maximum movement capability: $\pm 12,5\%$ splice distance minimum 100 mm		
<p>Figure 8.6.4 C</p>				
supporting construction clause	joint width (w) (mm)	sealant depth (tA) (mm)	backfilling material B2	classification
8.2.1 b) and 8.2.1 g)	5 – 25	$\geq 25$	<b>PU sealing-tape</b>	EI 90-H-M 12,5-F-W 5 to 25
8.2.1 g) and 8.2.1 e)	5 – 25	$\geq 25$	<b>PU sealing-tape</b>	EI 90-H-M 12,5-F-W 5 to 25
8.2.1 g)	5 – 15	$\geq 15$	<b>PU sealing-tape</b>	EI 90-H-M 12,5-F-W 5 to 15
8.2.1 g)	5 – 25	$\geq 25$	<b>PU sealing-tape</b>	EI 90-H-M 12,5-F-W 5 to 25

### 8.6.5 rigid construction and solid timber/timber frame construction (floor to wall - horizontal)



$t_E \geq 100 \text{ mm}$   
 $t_B \geq 56 \text{ mm}$   
 $A_1 = \text{CFS-S ACR}$   
 $B_2 = \text{combustible backfilling material (see clause 7.2.4)}$   
 maximum movement capability:  $\pm 12,5\%$   
 splice distance minimum 100 mm

supporting construction clause	joint width (w) (mm)	sealant depth ( $t_A$ ) (mm)	backfilling material $B_2$	classification
8.2.1 h) and 8.2.1 e)	5 – 25	$\geq 25$	<b>PU sealing-tape</b>	EI 60-H-M 12,5-F-W 5 to 25
8.2.1 e) and 8.2.1 h)	5 – 25	$\geq 25$	<b>PU sealing-tape</b>	EI 60-H-M 12,5-F-W 5 to 25

## 9 Annex E – Abbreviations used in drawings

Abbreviation	Description
A, A <sub>1</sub> , ...	Hilti Firestop Acrylic Sealant CFS-S ACR
A <sub>2</sub>	Hilti Firestop Round Cord CFS-CO
B	Backfilling material, inorganic, incombustible
B <sub>1</sub>	Backfilling material, organic, combustible
B <sub>2</sub>	Backfilling material, PU sealing tape
E	Building element (wall, floor)
t <sub>A</sub>	Thickness of sealant
E	Building element (wall, floor)
E <sub>1</sub>	Steel elements as joint faces
t <sub>B</sub>	Thickness of backfilling material
t <sub>E</sub>	Thickness of the building element / joint depth
w	Joint width