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Authorised and notified according to Article 10 of the Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products

Member of EOTA

European technical approval ETA-10/0389

(English language translation, the original version is in German language)

Handelsbezeichnung: *Trade name:*	**Hilti Firestop Acrylic Sealant CFS-S ACR**
Zulassungsinhaber: *Holder of approval:*	**Hilti AG** **Feldkircherstrasse 100** **9494 Schaan** **Liechtenstein**
Zulassungsgegenstand und Verwendungszweck: *Generic type and use of construction product:*	**Linienförmige Fugenabdichtungen und Brandsperren** *Linear Joint and Gap Seals*
Geltungsdauer vom: *Validity from:* bis: *to:*	**22.11.2010** **21.11.2015**
Herstellwerk: *Manufacturing plant:*	**Hilti Werk CP 606** **Hilti Werk 4a**
Diese Europäische technische Zulassung umfasst: *This European technical approval contains:*	**17 Seiten inklusive 3 Anhängen** *17 pages including 3 Annexes*

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I LEGAL BASES AND GENERAL CONDITIONS

1 This European technical approval is issued by Österreichisches Institut für Bautechnik in accordance with:

- Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products [1] modified by Council Directive 93/68/EEC [2] and Regulation (EC) N° 1882/2003 of the European Parliament and of the Council [3];
- Bauproduktegesetz. LGBl. V Nr. 33/1994;
- Common Procedural Rules for Requesting, Preparing and the Granting of European technical approvals set out in the Annex to Commission Decision 94/23/EC[4];
- Guideline for European technical approval of Fire Stopping and Fire Sealing Products: Part 3: Linear Joint and Gap Seals.

2 The Österreichisches Institut für Bautechnik is authorized to check whether the provisions of this European technical approval are met. Checking may take place in the manufacturing plant(s). Nevertheless, the responsibility for the conformity of the products to the European technical approval and for their fitness for the intended use remains with the holder of the European technical approval.

3 This European technical approval is not to be transferred to manufacturers or agents of manufacturers other than those indicated on page 1, or manufacturing plants other than those indicated on page 1 of this European technical approval.

4 This European technical approval may be withdrawn by Österreichisches Institut für Bautechnik, in particular pursuant to information by the Commission according to Article 5(1) of Council Directive 89/106/EEC.

5 Reproduction of this European technical approval including transmission by electronic means shall be in full. However, partial reproduction can be made with the written consent of Österreichisches Institut für Bautechnik. In this case partial reproduction has to be designated as such. Texts and drawings of advertising brochures shall not contradict or misuse the European technical approval.

6 The European technical approval is issued by the approval body in its official language. This version corresponds fully to the version circulated in EOTA. Translations into other languages have to be designated as such.

[1] Official Journal of the European Communities N° L 40, 11.2.1989, p. 12
[2] Official Journal of the European Communities N° L 220, 30.8.1993, p. 1
[3] Official Journal of the European Union N° L 284, 31.10.2003, p.1
[4] Official Journal of the European Communities N° L 17, 20.1.1994, p. 34

II SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL

1 Definition of product(s) and intended use

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 or Hilti Firestop Round Cord CFS-CO as backfilling material. In wall constructions the sealant is used on both sides, in floor constructions normally only on the top side. Very porous joint edges are treated with Hilti Firestop Acrylic Sealant CFS-S ACR, diluted with water, to achieve better adhesion. For details of the seal design depending on orientation, building elements forming the joint/gap or backfilling material and the related classifications see Annex C.

For further details on Hilti Firestop Acrylic Sealant CFS-S ACR and Hilti Firestop Round Cord CFS-CO see Annex B. For a specification of suitable mineral wool as backfilling material see Annex C.1.5.

For a description of the installation procedure see 4.2.

1.2 Intended use and use category

1.2.1 Intended use

The intended use of Hilti Firestop Acrylic Sealant CFS-S ACR is to reinstate the fire resistance performance of flexible wall constructions, rigid wall constructions, rigid floor constructions and horizontal and vertical steel constructions at linear gaps/joints within those constructions or where they are abutting another wall or floor construction.

The specific elements of construction between which Hilti Firestop Acrylic Sealant CFS-S ACR may be used to provide a linear joint seal, are as follows:

a) Flexible walls: 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. For timber stud walls there must be a minimum distance of 100 mm of the seal to any stud and the cavity between stud and seal must be closed and minimum 100 mm insulation of Class A1 or A2 (in accordance with EN 13501-1) in the cavity between stud and seal.

b) Rigid walls: The wall must have a minimum thickness of 100 mm and comprise concrete, aerated concrete or masonry, with a minimum density of 650 kg/m^3.

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/m^3.

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/m^3.

e) 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 supporting construction must be classified in accordance with EN 13501-2 for the required fire resistance period.

1.2.2 Working life

The provisions made in this European technical approval are based on an assumed working life of Hilti Firestop Acrylic Sealant CFS-S ACR of 10 years, provided that the conditions laid down in sections 4.2/5.1/5.2 for the packaging / transport / storage / installation / use / repair are met. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

The use category of Hilti Firestop Acrylic Sealant CFS-S ACR is Type $Y_{2, (-5/+70)°C}$. Since the requirements for type Y_2 are met, also the requirements for type Z_1 and Z_2 are fulfilled.

Type Y_2: Products intended for use at temperatures between -5 °C and + 70°C, but with no exposure to rain nor UV.

Type Z_1: Products intended for use at internal conditions with high humidity, excluding temperatures below 0°C.[5]

Type Z_2: Products intended for uses at internal conditions with humidity classes other than Z_1, excluding temperatures below 0°C.

2 Characteristics of the product and methods of verification

The identification tests and the assessment of the fitness for use according to the Essential Requirements were carried out in compliance with the "ETA Guidance no. 026-Part 3" concerning Linear Joint and Gap Seals – edition February 2008 (called ETAG 026-3 in this ETA) and with the "EOTA technical Report no. 024" concerning Characterisation, Aspects of Durability and Factory Production Control for Reactive Materials, Components and Products – edition November 2006 as amended July 2009 (called EOTA TR 024 in this ETA).

ETAG Clause No.	ETA Clause No.	Characteristic	Assessment of characteristic
Mechanical resistance and stability			
		None	Not relevant
Safety in case of fire			
2.4.1	2.1	Reaction to fire	Class D-s1 d0 according to EN 13501-1:2007
2.4.2	2.2	Resistance to fire	see clause 2.2
Hygiene, health and environment			
2.4.3	2.3	Air permeability (material property)	Flow rate per area
2.4.4	2.4	Water permeability (material property)	Water tight to 1000 mm head of water
2.4.5	2.4	Release of dangerous substances	Declaration of manufacturer
Safety in use			
2.4.6	2.6	Mechanical resistance and stability	No performance determined
2.4.7	2.7	Resistance to impact/movement	No performance determined
2.4.8	2.8	Adhesion	No performance determined
Protection against noise			
2.4.9	2.9	Airborne sound insulation	$R_{w(C;Ctr),}$ $D_{n,e,w}$
Energy economy and heat retention			
2.4.10	2.10	Thermal properties	No performance determined
2.4.11	2.11	Water vapour permeability	No performance determined
General aspects relating to fitness for use			
2.4.12	2.12	Durability and serviceability	$Y_{2, (-5/+70)°C}$ Movement capability class ISO 11600 - F- 12.5P Volume and surface resistivity

[5] These uses apply for internal humidity class 5 in accordance with EN ISO 13788

2.1 Reaction to fire

The reaction to fire classification for Hilti Firestop Acrylic Sealant CFS-S ACR is class 'D - s1 d0' in accordance with EN 13501-1.

The reaction to fire classification for Hilti Firestop Round Cord CFS-CO is class 'A1' in accordance with EN 13501-1.

2.2 Resistance to fire

Hilti Firestop Acrylic Sealant CFS-S ACR has been tested in accordance with EN 1366-4:2006, installed within linear joints in flexible and rigid walls, steel constructions and floors. As backfilling material mineral wool Rockwool RP-V and Termarock 40 has been used as well as Hilti Firestop Round Cord CFS-CO.

Based upon these test results and the field of direct application specified within EN 1366-4:2006, Hilti Firestop Acrylic Sealant CFS-S ACR has been classified in accordance with EN 13501-2, as shown in Annex C.

For details of suitable wall and floor constructions see 1.2.1.

2.3 Air permeability

The gas permeability regarding the gases air, nitrogen (N_2), carbon dioxide (CO_2) and CH_4 (methane) has been tested according to the principles of EN 1026 for an Acrylic Sealant thickness of 10 mm. The following flow rates per area (q/A) have been achieved for the given air pressure differences (Δp). The flow rate index indicates the type of gas:

Gas permeability of Hilti Firestop Acrylic Sealant CFS-S ACR

Δp [Pa]	**q/A air [$m^3/(h \cdot m^2)$]**	**q/A N_2 [$m^3/(h \cdot m^2)$]**	**q/A CO_2 [$m^3/(h*m^2)$]**	**q/A CH_4 [$m^3/(h*m^2)$]**
50	≤ 1,9E-06	≤ 1,1E-06	≤ 6,4E-05	≤ 4,3E-05
250	≤ 9,7E-06	≤ 5,5E-06	≤ 3,2E-04	≤ 2,1E-04

The declared values refer to a body of pure Hilti Firestop Acrylic Sealant CFS-S ACR without any penetrating installation.

2.4 Water permeability

The water permeability has been tested using the principles of the test procedure according to Annex C of ETAG 026-3. The specimen consisted of 2 mm Hilti Firestop Acrylic Sealant CFS-S ACR (dry film thickness) on mineral wool. Test result: Water tight to 1000 mm head of water or 9806 Pa.

2.5 Dangerous substances

Hilti AG have presented a Material Safety Data Sheet according to Regulation 1907/2006/EC, article 31 and a declaration that Hilti Firestop Acrylic Sealant CFS-S ACR is in compliance with Regulation 1907/2006/EC concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).
Confirmation has further been declared that toxic, carcinogenic, toxic for reproduction and mutagenic chemical substances of category 1 and 2 ≥ 0.1 % w/w (Status: Regulation 790/2009/EC - 1st ATP of the Regulation 1272/2008/EC) are not used for Hilti Firestop Acrylic Sealant CFS-S ACR and that all other dangerous chemical substances have been considered for the classification of the products according to the Regulation 1272/2008/EC (classification, labelling and packaging of substances and mixtures, including amendments).

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

2.6 Mechanical resistance and stability

Due to the maximum joint width of 100 mm impact tests are not necessary according to ETAG 026-3 and therefore no performance has been determined.

2.7 Resistance to impact/movement

See 2.6

2.8 Adhesion

Adhesion is covered by tests for determining movement capability according to ISO 11600. For the resulting classification see 2.12.2.2.

2.9 Airborne sound insulation

Test reports from noise reduction according to EN ISO 140-3, EN ISO 20140-10 and EN ISO 717-1 have been provided.
The acoustic tests were performed in a flexible wall and in a rigid wall. Hilti Firestop Acrylic Sealant CFS-S ACR was tested as seal around a steel pipe, filled with concrete. The seal was 50 mm wide (annular space) and consisted of 160 mm mineral wool, covered by 20 mm Hilti Firestop Acrylic Sealant CFS-S ACR on both sides (rigid wall) and 50 mm mineral wool covered by 25 mm on both sides (flexible wall). This set up simulates a linear joint as well as a single penetration seal. The area of Hilti Firestop Acrylic Sealant CFS-S ACR was 0,0236 m².The acoustic characteristics of the walls itself have not been measured. According to these tests reports the single number ratings are:

Flexible wall:
Weighted element-normalized level difference: $D_{n,w}$ = 60 dB
From this $D_{n,w}$ the weighted sound reduction index calculates to: R_w = 53 dB

Structure of the flexible wall: 2 x 12,5 mm plasterboard on both sides of a 50 mm metal stud frame. The void was filled with a 50 mm mineral wool slab.

Rigid wall:
Weighted element-normalized level difference: $D_{n,w}$ = 58 dB
From this $D_{n,w}$ the weighted sound reduction index calculates to: R_w = 51 dB

Structure of the rigid wall: 200 mm thick concrete wall with a density of 2000 kg/m³ which was plastered on both sides.

It should be noticed that both above mentioned results apply to the total wall construction of the size S = 1,25 m x 1,50 m (= 1,88 m²), i.e. the given wall with 0,0236 m² Hilti Firestop Acrylic Sealant CFS-S ACR.

2.10 Thermal properties

No performance determined.

2.11 Water vapour permeability

No performance determined.

2.12 Durability and serviceability

2.12.1 Durability

Hilti Firestop Acrylic Sealant CFS-S ACR has been tested in accordance with EOTA TR 024, Table 4.2 for the Y_2 use category specified in EOTA ETAG 026-3 and the results of the test have demonstrated suitability for linear joint and gap seals intended for use at temperatures between -5°C and +70°C but with no exposure to rain nor UV ($Y_{2,\,(-5/+70)°C}$).

2.12.2 Serviceability

2.12.2.2 Movement capability

Classification according to ISO 11600: ISO 11600-F-12.5P

2.12.2.3 Electrical properties

- Volume resistivity (according to DIN IEC 60093 (VDE 0303 Part 30):1993-12): 113E+10 ± 36E+10 Ω.cm
- Surface resistivity (according to DIN IEC 60093 (VDE 0303 Part 30):1993-12): 848E+06 ± 243E+06 Ω

3 Evaluation of Conformity and CE marking

3.1 Attestation of Conformity system

According to the decision 1999/454/EC of the European Commission[6] the system 1 of attestation of conformity applies.

This system of attestation of conformity is defined as follows:

System 1: Certification of the conformity of the product by a notified certification body on the basis of:

(a) Tasks for the manufacturer:
  (1) factory production control
  (2) further testing of samples taken at the factory by the manufacturer in accordance with a prescribed test plan

(b) Tasks for the notified body
  (3) initial type-testing of the product
  (4) initial inspection of factory and of factory production control
  (5) continuous surveillance, assessment and approval of factory production control

3.2 Responsibilities

3.2.1 Tasks of the Manufacturer

3.2.1.1 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 insure that the product is in conformity with this European technical approval.

The manufacturer shall draw up and keep up-to-date documents defining the factory production control that applies. The documentation to be carried out by the manufacturer and the applicable procedures shall be appropriate to the product and manufacturing process. The factory production control shall ensure the conformity of the product to an appropriate level. This involves:

a) the preparation of documented procedures and instructions relating to factory production control operations.
b) the effective implementation of these procedures and instructions.
c) the recording of these procedures and their results.
d) the use of these results to correct any deviations, repair the effects of such deviations, treat any resulting instances of non-conformity and, if necessary, revise the factory production control to rectify the cause of non-conformity.
e) a procedure to ensure that both the approval Body and the Notified (Certification) Bodies are advised before any significant change to the product, its components or manufacturing process, is made.

[6] Official Journal of the European Communities N° L 178, 14.7.1999, p. 52

f) a procedure to ensure that personnel involved in the production processes and the quality control procedures are qualified and adequately trained to carry out their required tasks.
g) that all testing and measuring equipment is maintained and up to date calibration records are documented.
h) maintenance of records to ensure every batch produced is clearly labelled with the batch number, which allows traceability to its production to be identified.

The manufacturer may only use components stated in the technical documentation of this European technical approval.
For the components which the ETA-holder does not manufacture by himself, he shall make sure that factory production control carried out by the other manufacturers gives the guaranty of the components compliance with the European technical approval.

The factory production control and the provisions taken by the ETA-holder for components not produced by himself shall be in accordance with the control plan[7] relating to this European technical approval which is part of the technical documentation of this European technical approval. The "Control Plan" is laid down in the context of the factory production control system operated by the manufacturer and deposited at the Österreichisches Institut für Bautechnik.

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

3.2.1.2 Other tasks of manufacturer

The manufacturer shall, on the basis of a contract, involve a body (bodies) which is (are) approved for the tasks referred to in section 3.1 in the field of penetration seals in order to undertake the actions laid down in section 3.3. For this purpose, the "control plan" referred to in sections 3.2.1.1 and 3.2.2 shall be handed over by the manufacturer to the approved body or bodies involved.

The manufacturer shall make a declaration of conformity, stating that the construction product is in conformity with the provisions of this European technical approval.

3.2.2 Tasks of Notified Bodies

The Notified Body (Bodies) shall perform the

- initial type-testing of the product (for system 1),
  The results of the tests performed as part of the assessment for the European technical approval may be used unless there are changes in the production line or plant. In such cases, the necessary initial type testing has to be agreed between the Österreichisches Institut für Bautechnik and the Notified Bodies involved.
- initial inspection of factory and of factory production control,
  The Notified Body (Bodies) shall ascertain that, in accordance with the control plan, the factory (in particular the employees and the equipment) and the factory production control are suitable to ensure continuous and orderly manufacturing of the components according to the specifications mentioned in clause 2 of this ETA.
- continuous surveillance, assessment and approval of factory production control,
  The Notified Body (Bodies) shall visit the factory at least twice a year or once a year for surveillance of this manufacturer having a FPC system complying with a quality management system covering the manufacturing of the approval product components. It has to be verified that the system of factory production control and the specified automated manufacturing process are maintained taking into account the control plan.

7 The control plan is a confidential part of the European technical approval and only handed over to the Notified Body or Bodies involved in the procedure of conformity.

These tasks shall be performed in accordance with the provisions laid down in the control plan of this European technical approval.

The Notified Body (Bodies) shall retain the essential points of its (their) actions referred to above and state the results obtained and conclusions drawn in a written report.

The Notified Body involved by the manufacturer shall issue an EC certificate of conformity of the product stating the conformity with the provisions of this European technical approval.

In cases where the provisions of the European technical approval and its control plan are no longer fulfilled the certification body shall withdraw the certificate of conformity and inform the Österreichisches Institut für Bautechnik without delay.

3.3 CE marking

The CE marking shall be affixed on the product itself, on a label attached to it, on its packaging or on the commercial documents accompanying the components of the product. The letters „CE“ shall be followed by the identification number of the Notified Body involved and be accompanied by the following additional information:

- the name or identifying mark and address of the ETA holder,
- the last two digits of the year in which the CE marking was affixed,
- the number of the EC certificate of conformity for the product,
- the number of the European technical approval,
- the number of the ETAG (ETAG N° 026 part 3)
- the designation of the product (trade name)
- the use category in accordance with the ETA section 1 and 2
- “see ETA-10/0389 for other relevant characteristics (e.g. resistance to fire)”

4 Assumptions under which the fitness of the product(s) for the intended use was favourably assessed

4.1 Manufacturing

The European technical approval is issued for the product on the basis of agreed data/information, deposited with Österreichisches Institut für Bautechnik, 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 Österreichisches Institut für Bautechnik before the changes are introduced. Österreichisches Institut für Bautechnik will decide whether or not such changes affect the ETA and consequently the validity of the CE marking on the basis of the ETA and if so whether further assessment or alterations to the ETA, shall be necessary.

4.2 Installation

Installation of the Hilti Firestop Acrylic Sealant CFS-S ACR should be conducted as follows:

- Clean joint faces. Surfaces to which Hilti Firestop Acrylic Sealant CFS-S ACR will be applied should be cleaned of loose debris, dirt, oil, wax and grease.
- Hilti Firestop Acrylic Sealant CFS-S ACR adheres to most substrates (concrete, masonry, drywall, plaster, etc.) without using a primer. For very porous substrates, a prior coating of Hilti Firestop Acrylic Sealant CFS-S ACR diluted with water is recommended as a primer. Other primers are not necessary.
- Insert backfilling material. Leave sufficient joint/gap depth for application of the Acrylic Sealant.
- Apply Hilti Firestop Acrylic Sealant CFS-S ACR using a manual dispenser (for 310 ml cartridges Hilti CB 200-P1, for 580 ml foil packs Hilti CS 270-P1).
- Smooth the Acrylic Sealant. Use either a diluted liquid soap or smoothing agent and carefully smooth using a finger or narrow spatula.
- Movement joints should never be designed smaller than 6 mm nominal width.
- Application temperature: +5°C to +40°C.

5 Indications to the manufacturer

5.1 Packaging, transport and storage

In the accompanying document and/or on the packaging the manufacturer shall give information as to transport and storage.

At least the following shall be indicated: storing temperature, type of storage, maximum duration of storage and required data related to minimum temperature for transport and storage.

5.2 Use, maintenance, repair

The Hilti Firestop Acrylic Sealant CFS-S ACR should be installed and used as described earlier in this document.

The assessment of the fitness for use is based on the assumption that damage, for example caused by accidental impact, is repaired. The relevant manufacturer instructions shall be followed.

On behalf of Österreichisches Institut für Bautechnik

Original document is signed by

Rainer Mikulits
Managing Director

ANNEX A

REFERENCE DOCUMENTS and LIST OF ABBREVIATIONS

A.1 References to standards mentioned in the ETA:

DIN IEC 60093 (VDE 0303 Part 30) Methods of test for insulating materials for electrical purposes: Volume resistivity and surface resistivity of solid electrical insulating materials

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 ISO 140-3 Acoustics – Measurement of sound insulation in buildings and of building elements – Part 3: Laboratory measurements of airborne sound insulation of building elements

EN ISO 140-10 Acoustics – Measurements of sound insulation in buildings and of building elements – Part 10: Laboratory measurement of airborne sound insulation of small building elements

EN ISO 717-1 Acoustics – Rating of sound insulation of buildings and of building elements – Part 1: Airborne sound insulation

ISO 11600 Building construction — Jointing products — Classification and requirements for sealants

A.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 acc. to 1907/2006/EC, Article 31, for Hilti Firestop Acrylic Sealant CFS-S ACR

A.3 Abbreviations used in drawings

Abbreviation	Description
A, A_1, A_2,..	Firestop product
B	Backfilling material
E	Building element (wall, floor)
t_A	Thickness of sealant
t_B	Thickness of backfilling material
t_E	Thickness of the building element / joint depth

ANNEX B

DESCRIPTION OF PRODUCT(S) & PRODUCT LITERATURE

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.

A detailed specification of the product is contained in document “Identification / Product Specification relating to the European technical approval ETA-10/0292 and ETA-10/0389 - Hilti Firestop Acrylic Sealant CFS-S ACR” which is a non-public part of this ETA.

The Control Plan is defined in document "Control Plan relating to the European technical approval ETA-10/0292 and ETA-10/0389 - Hilti Firestop Acrylic Sealant CFS-S ACR” which is a non-public part of this ETA.

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 relating to the European technical approval ETA-10/0291 and ETA-10/0389 - Hilti Firestop Round Cord CFS-CO” which is a non-public part of this ETA.

The Control Plan is defined in document "Control Plan relating to the European technical approval ETA-10/0291 and ETA-10/0389 - Hilti Firestop Round Cord CFS-CO” which is a non-public part of this ETA.

technical product literature:

- technical Data Sheet Hilti Firestop Acrylic Sealant CFS-S ACR (including Hilti Firestop Round Cord CFS-CO)

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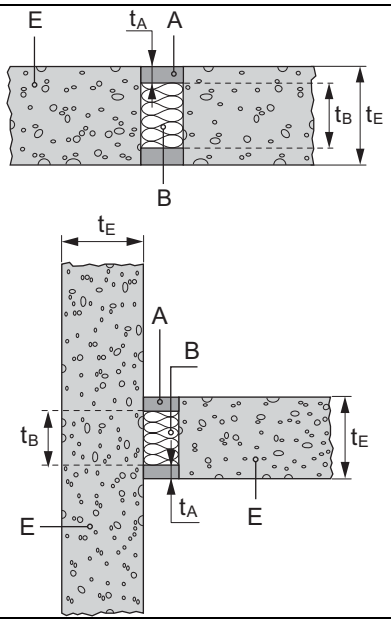
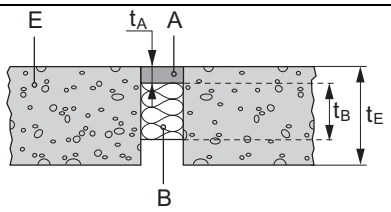
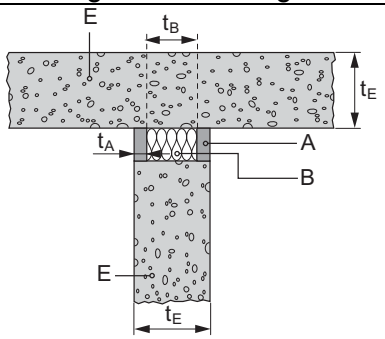
ANNEX C

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

C.1 Hilti Firestop Acrylic Sealant CFS-S ACR (A) together with **mineral wool products** (B) as specified in Table C.1.5 as backfilling material: $t_B \geq 100$ mm

C.1.1 Within or between **rigid constructions** (E) according to 1.2.1c) and d) of $t_E \geq 150$ mm in linear joints with maximum ± 12,5% movement, splice distance minimum 1250 mm:

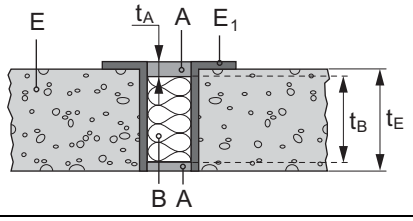
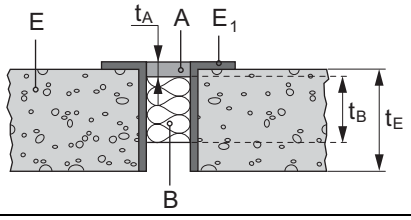
A	B	C
Vertical joints in / between wall constructions	Joints in floor constructions	Horizontal joints in a wall abutting a floor, ceiling or roof
		

Orientation	Joint width (mm)	Classification
Vertical joints in / between wall constructions (A)	6 to 20 [a]	EI 180-V-M 12,5-F-W 6 to 20 E 240-V-M 12,5-F-W 6 to 20
Joints in floor constructions (B) and Horizontal joints in a wall abutting a floor, ceiling or roof (C)		EI 180-H-M 12,5-F-W 6 to 20
Vertical joints in / between wall constructions (A)	20 to 100 [b]	EI 180-V-M 12,5-F-W 20 to 100 E 240-V-M 12,5-F-W 20 to 100
Joints in floor constructions (B) and Horizontal joints in a wall abutting a floor, ceiling or roof (C)		EI 120-H-M 12,5-F-W 20 to 100 E 180-H-M 12,5-F-W 20 to 100

[a] t_A = 6 mm, compression of mineral wool minimum 60%

[b] t_A = 10 mm, compression of mineral wool minimum 50%

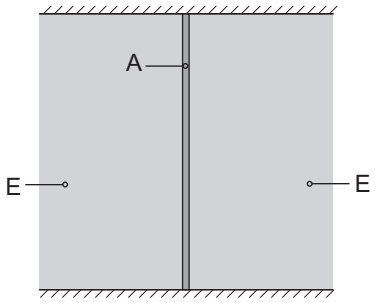
C.1.2 Between steel construction elements according to 1.2.1e) or in rigid constructions according to 1.2.1c) or d) with steel elements as joint faces in linear joints with maximum ± 7,5% movement (non-movement joints), splice distance minimum 1250 mm, $t_E \geq 150$ mm:

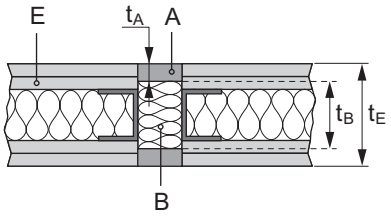
A	B
Vertical joints in / between wall constructions	Joints in floor constructions
	

Orientation	Joint width (mm)	Classification
Vertical joints in / between wall constructions (A)	6 to 20 [a]	EI 60-V-X-F-W 6 to 20 E 240-V-X-F-W 6 to 20
Joints in floor constructions (B) and Horizontal joints in a wall abutting a floor, ceiling or roof		EI 120-H-X-F-W 20 to 100
Vertical joints in / between wall constructions (A)	20 to 100 [b]	EI 60-V-X-F-W 20 to 100 E 240-V-X-F-W 20 to 100
Joints in floor constructions (B) and Horizontal joints in a wall abutting a floor, ceiling or roof		EI 60-H-X-F-W 20 to 100 E 120-H-X-F-W 20 to 100

[a] t_A = 6 mm, compression of mineral wool minimum 60%
[b] t_A = 10 mm, compression of mineral wool minimum 50%

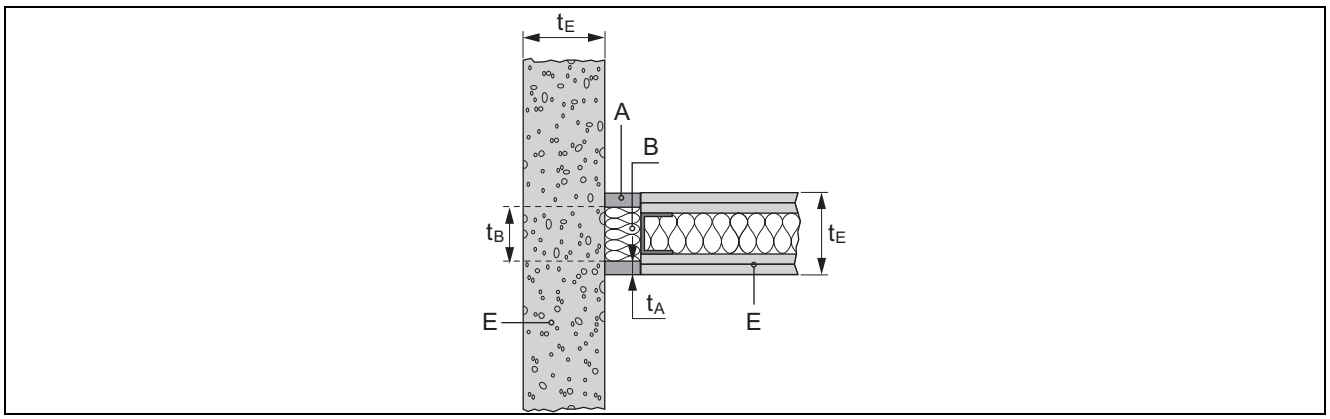
C.1.3 Within or between flexible wall constructions according to 1.2.1a) and rigid wall constructions according to 1.2.1b) in vertical linear joints with maximum ± 7,5% movement (non-movement joints), splice distance minimum 1250 mm, t_A = 10 mm on both sides, $t_E \geq 100$ mm:





Classification: EI 120-V-X-F-W 10 to 30

C.1.4 Between flexible wall constructions according to 1.2.1a) and rigid wall constructions according to 1.2.1b) in vertical linear joints with maximum ± 7,5% movement (non-movement joints), splice distance minimum 1250 mm, t_A = 10 mm on both sides, $t_{E\ flexible\ wall} \geq 100$ mm, $t_{E\ rigid\ wall} \geq 150$ mm:



Classification: EI 120-V-X-F-W 10 to 20

Table C.1.5: Specification for mineral wool products suitable for being used as backfilling material

Characteristic	Specification
Stone wool	EN 13162 or EN 14303
Density	30 to 70 kg/m^3
Facing	No Al-facing

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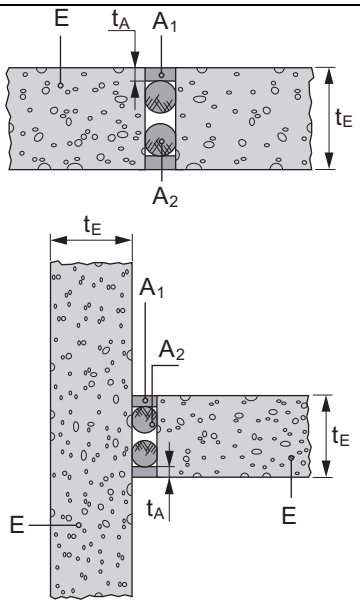
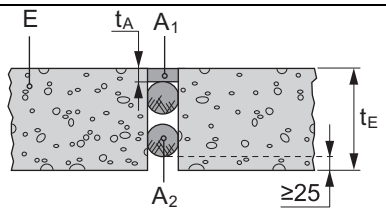
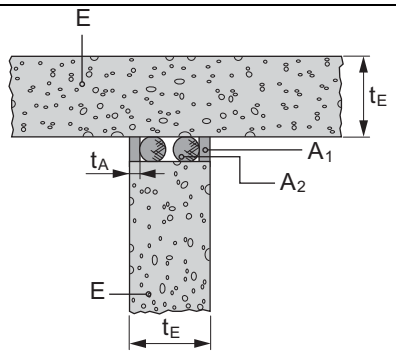
C.2 Together with **Hilti Firestop Round Cord CFS-CO**:

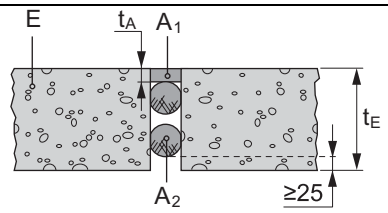
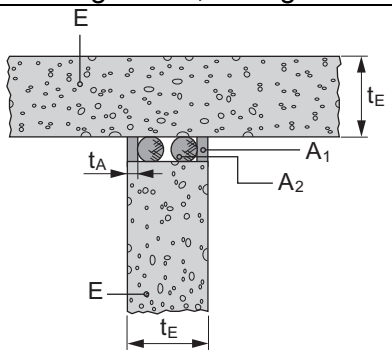
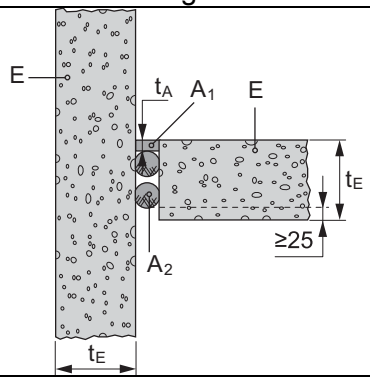
C.2.1 Within or between rigid wall constructions according to 1.2.1c) in vertical joints, within rigid floor constructions according to 1.2.1d) and between such floor and wall constructions ("head of wall joint"), $t_E \geq 150$ mm, with maximum ± 7,5% movement (non-movement joints). In case of two or more rod layers an air gap has to be maintained between the rods. Displacement of splices in the two rod layers minimum 140 mm (vertical joints, joint width ≤ 17 mm), 450 mm (vertical joints, joint width > 17 mm) and 645 mm (horizontal joints).

A	B	C
Vertical joints in / between wall constructions	Joints in floor constructions	Horizontal joints in a wall abutting a floor, ceiling or roof
		

Orientation	Joint width W (mm)	Size of Hilti Firestop Round Cord CFS-CO	Classification
Vertical joints in / between wall constructions (A)	12 to 17 [a]	20	EI 180-V-X-F E 240-V-X-F
	17 to 27 [b]	30	
	27 to 37 [b]	40	
	37 to 47 [b]	50	
	47 to 55 [b]	60	
Joints in floor constructions (B) and Horizontal joints in a wall abutting a floor, ceiling or roof (C)	12 to 17 [a]	20	EI 180-H-X-F
	17 to 27 [b]	30	
	27 to 37 [b]	40	
	37 to 47 [b]	50	
	47 to 55 [b]	60	

[a] t_A = 6 mm
[b] t_A = 10 mm

C.2.2 Within rigid floor constructions (E) according to 1.2.1d), $t_E \geq 150$ mm, with maximum ± 12,5% movement (only shear movement). Minimum two rod layers with an air gap between the rods and a minimum distance of 25 mm from the surfaces of the floor construction. Displacement of splices in the two rod layers minimum 100 mm (joint width ≤ 30 mm).

B	C	D
Joints in floor constructions	Horizontal joints in a wall abutting a floor, ceiling or roof	Horizontal joints in a floor abutting a wall
		

Orientation	Joint width W (mm)	Size of Hilti Firestop Round Cord CFS-CO	Classification
Joints in floor constructions (B) and Horizontal joints in a wall abutting a floor, ceiling or roof (C) Horizontal joints in a floor abutting a wall (D)	12 to 17 [a]	20	EI 90-H-M 12,5-F
	17 to 27 [b]	30	
	27 to 37 [b]	40	
	37 to 47 [b]	50	
	47 to 50 [b]	60	

[a] t_A = 6 mm
[b] t_A = 10 mm