



Austrian Institute of Construction Engineering
 Schenkenstrasse 4 | T+43 1 533 65 50
 1010 Vienna | Austria | F+43 1 533 64 23
 www.oib.or.at | mail@oib.or.at



European Technical Assessment

ETA-10/0291
of 28.06.2018

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 Silicone Sealant CFS-S SIL

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 CP 601S

This European Technical Assessment contains

12 pages including Annexes A to B 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 Approval ETA-10/0291 with validity from 28.06.2013 to 27.06.2018

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Specific parts

1 Technical description of the product

“Hilti Firestop Silicone Sealant CFS-S SIL” 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.

| Sealant | Characteristics |
|---|---|
| Hilti Firestop Silicone Sealant CFS-S SIL | Neutral elastic 1-component silicone with intumescent fire protection additives (fire protection silicone). It is delivered in various colours (grey, red, white, anthracite) in 310 ml cartridges and 600 ml foil packs. |

| Additional components | Characteristics |
|---|--|
| Termarock 40 fire protection panel | Stone wool without Al-facing, classification A1 according to EN 13501-1 and a minimum density of 40 kg/m ³ according to EN 13162 or EN 14303, from manufacturer “Deutsche Rockwool Mineralwoll GmbH & Co. OHG”. |
| Hilti Firestop Round Cord CFS-CO | 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. |
| Hilti Primer CSP 264 / Hilti Firestop Primer CFS-PRIM | 1-component toluene-free solution of silicone resins intended to improve adhesion of sealants to mineral or porous building material surfaces. |

2 Specification of the intended use(s) in accordance with the applicable European Assessment Document (hereinafter EAD)

2.1 Intended use

“Hilti Firestop Silicone Sealant CFS-S SIL” is intended to reinstate the fire resistance performance of rigid wall or floor constructions at linear gaps/joints within those constructions or where they are abutting another wall or floor/ceiling/roof construction.

In wall constructions the sealant is used on both sides, in floor constructions on the top side. The joint edges are treated with “Hilti Primer CSP 264” / “Hilti Firestop Primer CFS-PRIM” to achieve the necessary adhesion.

The joint edges can be formed by rigid constructions or by steel/metal components/ attachments, see Annex B.1 and B.2 of the ETA.

The maximum gap/joint width of the linear joint and gap seal has to comply with the dimensions as specified in the following table.

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 |
|---|--|--|--|
| BWR 2 | Reaction to fire | EN 13501-1:2007+A1:2009 | Clause 3.1.1 of the ETA |
| | Resistance to fire | EN 13501-2:2007+A1:2009 | Clause 3.1.2 and Annex C.1 to C.5 of the ETA |
| BWR 3 | Air permeability | EN 1026:2000 | Clause 3.2.1 of the ETA |
| | Water permeability | Annex C of EAD 350141-00-1106 | Clause 3.2.2 of the ETA |
| | Content, emission and/or release of dangers substances | No performance assessed | |
| BWR 4 | Mechanical resistance and stability | No performance assessed | |
| | Resistance to impact / movement | No performance assessed | |
| | Adhesion | EN ISO 11600 | Clause 3.3.3 of the ETA |
| | Durability | EAD 350141-00-1106 clause 2.1 and clause 2.2.12.1b | Clause 3.3.4 of the ETA |
| BWR 5 | Airborne sound insulation | EN ISO 10140-1 and EN ISO 10140-2, EN ISO 717-1 | Clause 3.4.1 of the ETA |
| BWR 6 | Thermal properties | No performance assessed | |
| | Water vapour permeability | No performance assessed | |

3.1 Safety in case of fire (BWR 2)

3.1.1 Reaction to fire

“Hilti Firestop Silicone Sealant CFS-S SIL” was assessed according EAD 350141-00-1106 clause 2.2.1 and classified according to EN 13501-1:2007+A1:2009.

| Component | Class according to EN 13501-1:2007+A1:2009 |
|---|--|
| Hilti Firestop Silicone Sealant CFS-S SIL | B-s2, d1 |

3.1.2 Resistance to fire

“Hilti Firestop Silicone Sealant CFS-S SIL” was tested according to EAD 350141-00-1106 clause 2.2.2, EN 1366-4:2006-08 in conjunction with EN 1363-1:1999-10, installed within linear joints in rigid walls and rigid floors.

Based upon the gained test results and the field of application specified within EN 1366-4:2006-08 in conjunction with EN 1363-1:1999-10 “Hilti Firestop Silicone Sealant CFS-S SIL” has been classified according to EN 13501-2:2007+A1:2009. The individual fire resistance classes are listed in Annex B.1 to B.2 of the ETA.

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3.2 Hygiene, health and the environment (BWR 3)

3.2.1 Air permeability

The air permeability of “Hilti Firestop Silicone Sealant CFS-S SIL” with a thickness of 50 mm was tested according to the principles of EN 1026:2000.

| Pressure [Pa] | 50 | 250 |
|---|-------------|-------------|
| q/A air [m ³ /(h·m ²)] | impermeable | impermeable |

3.2.2 Water permeability

No performance assessed.

3.2.3 Content, emission and/or release of dangerous substances

Nor performance assessed.

3.3 Safety and accessibility in use (BWR 4)

3.3.1 Mechanical resistance and stability

No performance assessed.

3.3.2 Resistance to impact / movement

No performance assessed.

Provisions shall be taken to prevent a person from stepping onto a horizontal penetration seal or falling against a vertical penetration seal (e.g. by covering with a wire mesh).

3.3.3 Adhesion

Adhesion is covered by tests for determining movement capability according to EN ISO 11600. The resulting classification is F-25 LM-M_{1up}.

3.3.4 Durability

“Hilti Firestop Silicone Sealant CFS-S SIL” fulfils the requirements for intended use category.

“Hilti Firestop Silicone Sealant CFS-S SIL” is therefore appropriate for conditions exposed to weathering and can – according to clause 2.1 and clause 2.2.12.1b of EAD 350141-00-1106 – be categorized as Type X. Since the requirements for Type X are met, also the requirements for Type Y₁, Y₂, Z₁ and Z₂ are fulfilled.

3.4 Protection against noise (BWR 5)

3.4.1 Airborne sound insulation

The airborne sound insulation of “Hilti Firestop Silicone Sealant CFS-S SIL” was tested according to EN ISO 10140-1:2016 and EN ISO 10140-2:2010 in a mobile joint measuring apparatus, consisting of a high-performance sound insulating element made of metal profiles and Bondal sheet with slide-in cassettes. The rating of the sound insulation properties has been calculated according to EN ISO 717-1:2013.

“Hilti Firestop Silicone Sealant CFS-S SIL” was tested according to EAD 350141-00-1106 clause 2.2.9 with a joint width of 25 mm. The reached values for the airborne sound insulation in accordance with EN ISO 717-1:2013 are given in the following table.

| R_{s,w} in dB | C in dB | C_{tr} in dB |
|------------------------------|----------------|-----------------------------|
| 63 | -2 | -5 |

3.5 Energy economy and heat retention (BWR 6)

3.5.1 Thermal properties

No performance assessed.

3.5.2 Water vapour permeability

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/EC¹, amended by Decision 2001/596/EC² 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 1.

¹ Official Journal of the European Communities no. L 178, 14.7.1999, p. 52

² Official Journal of the European Communities no. L 209, 2.8.2001, p. 33

| 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> | | | |

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 28.06.2018
by Österreichisches Institut für Bautechnik

The 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

| | |
|----------------|---|
| EN 1026 | Windows and doors - Air permeability – Test method |
| EN 1363-1 | Fire resistance tests - Part 1: General Requirements |
| EN 1366-4 | Fire resistance tests for service installations - Part 4: Linear joint seals |
| EN 13162 | Thermal insulation products for buildings - Factory made mineral wool (MW) products - Specification |
| 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 14303 | Thermal insulation products for building equipment and industrial installations - Factory made mineral wool (MW) products - Specification |
| EN ISO 717-1 | Acoustics – Rating of sound insulation of buildings and of building elements – Part 1: Airborne sound insulation |
| EN ISO 10140-1 | Acoustics - Laboratory measurement of sound insulation of building elements - Part 1: Application rules for specific products |
| EN ISO 10140-2 | Acoustics - Laboratory measurement of sound insulation of building elements - Part 2: Measurement of airborne sound insulation |
| ISO 11600 | Building construction - Jointing products - Classification and requirements for sealants |

A.2 Other reference documents

| | |
|--|--|
| 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 Silicone Sealant CFS-S SIL” | |

A.3 Abbreviations used in drawings

| Abbreviation | Description |
|---------------------|--|
| A, A ₁ | Hilti Firestop Silicone Sealant CFS-S SIL |
| A ₂ | Hilti Firestop Round Cord CFS-CO |
| B | Termarock 40 fire protection panel |
| E, E ₁ | Building element (wall, floor) |
| t _A | Thickness of Hilti Firestop Silicone Sealant CFS-S SIL |
| t _B | Thickness of backfilling material |
| t _E | Thickness of the building element |

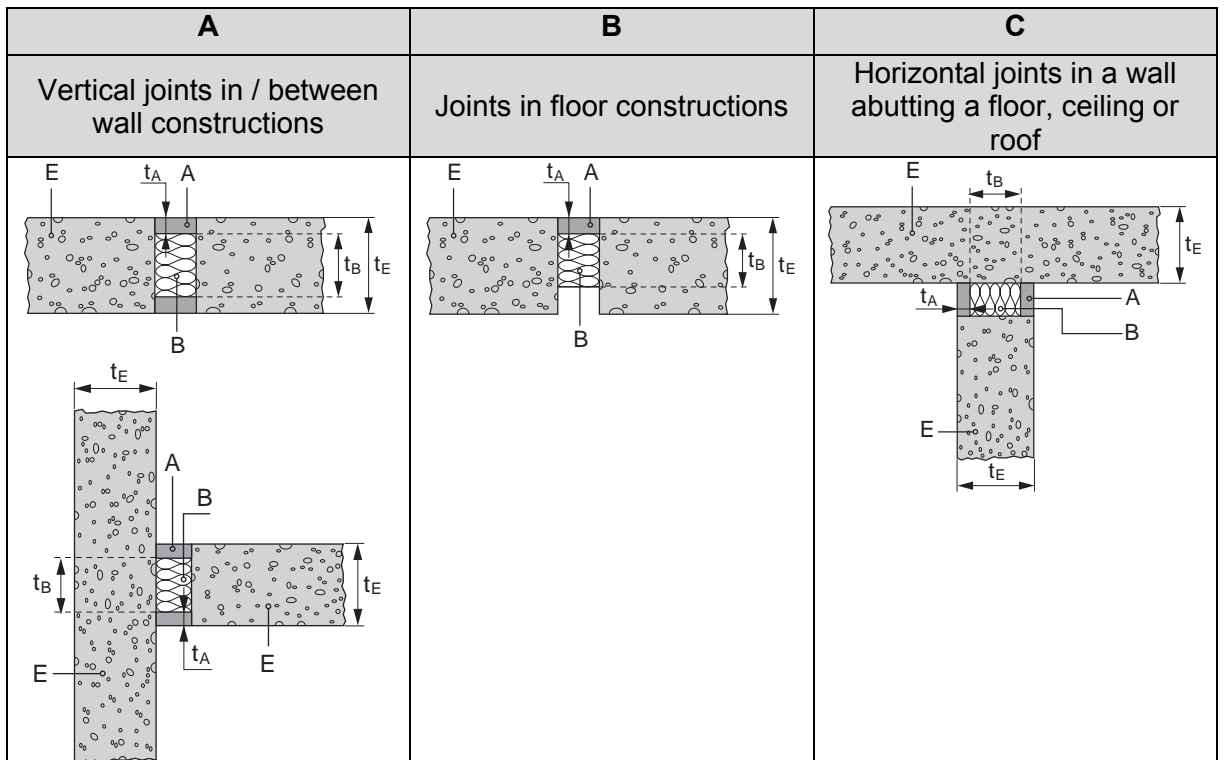
ANNEX B

RESISTANCE TO FIRE CLASSIFICATION OF LINEAR JOINT AND GAP SEALS MADE FROM HILTI FIRESTOP SILICONE SEALANT CFS-S SIL

B.1 “Hilti Firestop Silicone Sealant CFS-S SIL” (A) together with “Termarock 40” (B) as specified in Annex B.1.3 of the ETA as backfilling material:

- Vertical joints in / between rigid wall constructions: $t_B \geq 150$ mm / gap filled completely
- Joints in rigid floor constructions: $t_B \geq 100$ mm
- Horizontal joints in a rigid wall abutting a rigid floor, ceiling or roof: $t_B \geq 100$ mm / gap filled completely

B.1.1 Within or between rigid constructions (E) according to Clause 2.1 of the ETA of $t_E \geq 150$ mm in linear joints with maximum ± 25 % movement, splice distance minimum 1250 mm:

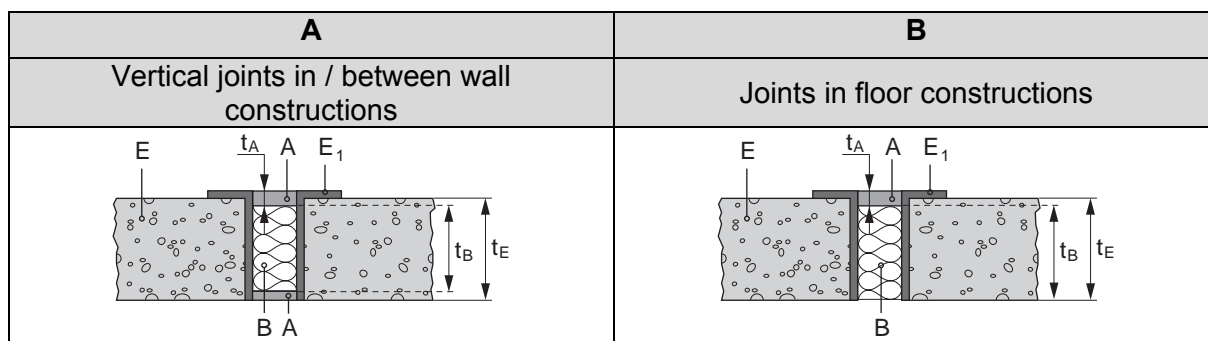


| Orientation | Joint width (mm) | Classification |
|---|-------------------------|---|
| Vertical joints in / between wall constructions (A) | 6 to 20 ^{a)} | EI 180-V-M 25-F-W 6 to 20 E 240-V-M 25-F-W 6 to 20 |
| Joints in floor constructions (B) and Horizontal joints in a wall abutting a floor, ceiling or roof (C) | | EI 180-H-M 25-F-W 6 to 20 E 240-H-M 25-F-W 6 to 20 |
| Vertical joints in / between wall constructions (A) | 20 to 100 ^{b)} | EI 180-V-M 25-F-W 20 to 100 E 240-V-M 25-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 25-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%

B.1.2 Between steel construction elements or in rigid constructions with steel elements as joint faces in linear joints with maximum $\pm 7,5\%$ movement (non-movement joints), splice distance minimum 1250 mm, $t_E \geq 150$ mm, $t_B \geq 150$ mm / gap filled completely:



| Orientation | Joint width (mm) | Classification |
|---|-----------------------|--|
| Vertical joints in / between wall constructions (A) | 6 to 30 ^{a)} | EI 60-V-X-F-W 6 to 30 E 240-V-X-F-W 6 to 30 |
| Joints in floor constructions (B) and Horizontal joints in a wall abutting a floor, ceiling or roof | | EI 60-H-X-F-W 6 to 30 E 240-H-X-F-W 6 to 30 |

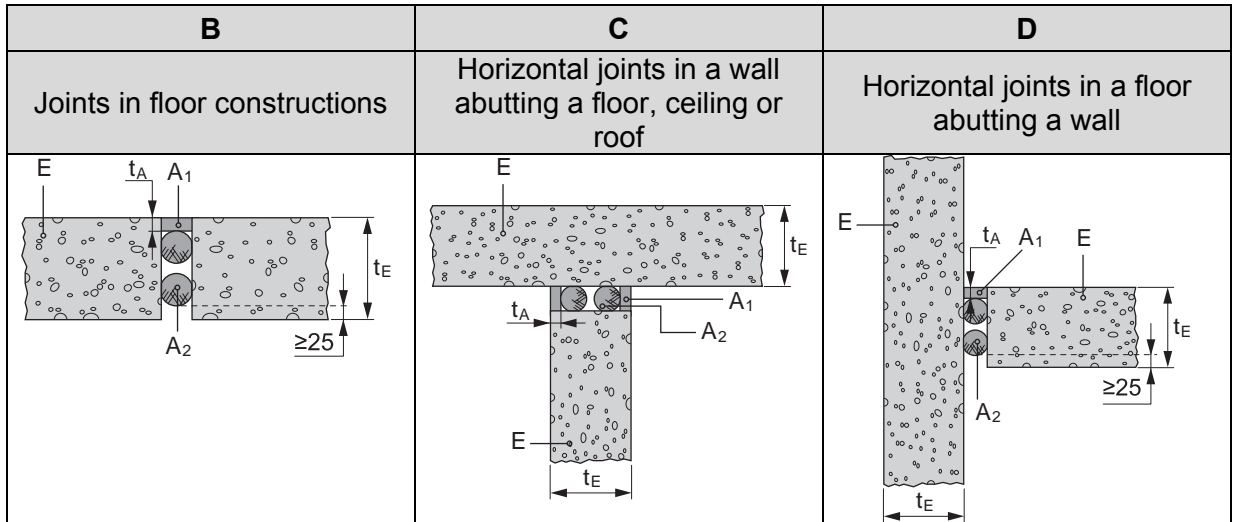
^{a)} $t_A = 10$ mm, compression of mineral wool minimum 40%

B.1.3 “Termarock 40” used as backfilling material

“Termarock 40” without Al-facing, CE marked according to EN 13162 or EN 14303 with a minimum density of 40 kg/m^3 from manufacturer “Deutsche Rockwool Mineralwoll GmbH & Co. OHG”.

B.2 “Hilti Firestop Silicone Sealant CFS-S SIL” (A₁) together with “Hilti Firestop Round Cord CFS-CO” (A₂) as specified in Annex B.2.2 of the ETA as backfilling material:

B.2.1 Within rigid floor constructions (E) according to Clause 2.1 of the ETA, $t_E \geq 150$ mm, in linear joints with maximum $\pm 25,0\%$ 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. Distance between splices in the two rod layers minimum 100 mm (if joint width ≤ 30 mm).



| Orientation | Joint width W (mm) | Size of Hilti Firestop Round Cord CFS-CO | Classification |
|--|------------------------|--|---------------------------|
| Joints in floor constructions (B), 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 25-F-W 12 to 50 |
| | 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

B.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 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.