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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

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European technical approval ETA-11/0343

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

Handelsbezeichnung: *Trade name:*	**Hilti Firestop Joint Spray CFS-SP WB**
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; Randdichtung von Vorhangfassaden** *Linear Joint and Gap Seals: Perimeter seal of curtain walls*
Geltungsdauer vom: *Validity from:* bis: *to:*	**26.09.2011** **25.09.2016**
Herstellwerk: *Manufacturing plant:*	**Hilti Werk 4a**
Diese Europäische technische Zulassung umfasst: *This European technical approval contains:*	**14 Seiten inklusive 3 Anhängen** *14 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 English. 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

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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 Joint Spray CFS-SP WB is a membrane-forming coating used to form a perimeter seal between rigid floor slabs and curtain walling with mineral wool as backfilling material. In facade constructions the coating is normally only applied on the top side. Very porous joint edges are treated with Hilti Firestop Joint Spray 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 Joint Spray CFS-SP WB see Annex B. For a specification of suitable mineral wool as backfilling material see Annex B.2.

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 Joint Spray CFS-SP WB is to provide fire resistance performance in the area of the perimeter joint between a curtain wall and rigid floor slabs.

The specific elements of construction between which Hilti Firestop Joint Spray CFS-SP WB may be used are as follows:

a) Rigid floors: The floor must have a minimum thickness of 150 mm and comprise concrete with a minimum density of 2400 kg/m^3.

c) Curtain wall: Curtain walls with steel framing (transoms, mullions), the cavity formed by the spandrel panel and the framing filled with mineral wool board or mineral wool lamella board of a density of minimum 120 kg/m^3 to form the perimeter joint edge, the transom forming the underground for the Joint Spray CFS-SP WB – see figure in Annex C.

The rigid floor must be classified in accordance with EN 13501-2 for the required fire resistance period.

The provisions made in this European technical approval are based on an assumed working life of Hilti Firestop Joint Spray CFS-SP WB 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.

1.2.2 Use Category

The use category of Hilti Firestop Joint Spray CFS-SP WB is Type $Y_{1\ (-20/+70)°C}$. Since the requirements for type Y_1 are met, also the requirements for type Y_2, Z_1 and Z_2 are fulfilled.

Type Y_1: Products intended for use at temperatures below 0°C with exposure to UV but no exposure to rain.

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.

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

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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).

ETAG Cl. No.	ETA Cl. 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 E according to EN 13501-1:2010
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)	No performance determined
2.4.4	2.4	Water permeability (material property)	Water tight to 1000 mm head of water
2.4.5	2.5	Release of dangerous substances	See clause 2.5
Safety in use			
2.4.6	2.6	Mechanical resistance and stability	See clause 2.6
2.4.7	2.7	Resistance to impact/movement	See clause 2.7
2.4.8	2.8	Adhesion	See clause 2.8
Protection against noise			
2.4.9	2.9	Airborne sound insulation	$R_{w(C;Ctr)}$; $D_{n,e,w\ (C;\ Ctr)}$
Energy economy and heat retention			
2.4.11	2.10	Thermal properties	See clause 2.10
2.4.12	2.11	Water vapour permeability	No performance determined
General aspects relating to fitness for use			
2.4.13	2.12	Durability and serviceability	$Y_{1,\ (-20/+70)°C}$

2.1 Reaction to fire

The reaction to fire classification for Hilti Firestop Joint Spray CFS-SP WB is class E in accordance with EN 13501-1.

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2.2 Resistance to fire

Hilti Firestop Joint Spray CFS-SP WB has been tested in accordance with EN 1364-4:2007.

Based upon these test results and the field of direct application specified within EN 1364-4:2007, Hilti Firestop Joint Spray CFS-SP WB has been classified in accordance with EN 13501-2, as shown in Annex C.

Before the fire test a cycling test according to ETAG 026-3 has been performed to show the ability of the sealing system to accommodate movement ("mechanical ageing") without loosing its fire resistance, using the frequency designated "seismic" (30 cycles per minute) at an amplitude of ± 25 %.

For details of suitable floor constructions and curtain wall constructions see 1.2.1.

2.3 Air permeability

No performance determined.

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 Joint Spray CFS-SP WB (dry film thickness) on mineral wool. Test result: Water tight to 1000 mm head of water or 9806 Pa.

2.5 Dangerous substances

According to the manufacturer's declaration, the product specification has been compared with the list of dangerous substances of the European Commission to verify that that it does not contain such substances above the acceptable limits.

A written declaration in this respect was submitted by the ETA-holder.

In addition to the specific clauses relating to dangerous substances contained in this ETA, 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 Product Directive, these requirements need also to be complied with, when and where they apply.

2.6 Mechanical resistance and stability

See 2.7

2.7 Resistance to impact/movement

The resistance to impact/movement has been tested using the test procedure according to ETAG 026-3. Due to the maximum seal width of 200 mm the method according to Clause 3 of EOTA TR001 (hard body impact) had to be used. The hard body impact test simulates the impact, resulting from an object accidentally falling against the seal.

Safety in Use: The requirement of withstanding a 10 Nm impact was fulfilled without damages.

Serviceability: The requirement of withstanding a 10 Nm impact was fulfilled without damages.

2.8 Adhesion

Adhesion is covered by the impact tests described in 2.7.

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2.9 Airborne sound insulation

Test reports from noise reduction according to EN 20140-10, EN ISO 140-1, EN 20140-3, EN ISO 10140-1, EN ISO 10140-2, EN ISO 10140-5 and EN ISO 717-1 have been provided.

A special test set-up was used to simulate the conditions of a perimeter seal of a curtain wall.

The resulting $R_{w(C;Ctr)}$ and $D_{n,e,w\ (C;\ Ctr)}$ values are:

Joint width [mm]	Seal depth [mm]	Coating	$R_{w(C;Ctr)}$ [dB]	$D_{n,e,w\ (C;\ Ctr)}$ [dB]
200	200	Both sides	40 (-1; -5) [a)]	55 (0; -4) [b)]
200	200	Top side	37 (-1; -4) [a)]	52 (-1; -4) [b)]

[a)] where S = 0,3 m^2 (S = CFS-SP WB portion of total test area)
[b)] where reference area A_0 = 10 m^2

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 Joint Spray CFS-SP WB has been tested in accordance with EOTA TR 024, Table 4.1 for the Y_1 use category specified in EOTA ETAG 026-3 and the results of the test have demonstrated suitability for perimeter seals intended for use at temperatures between -20 °C and +70 °C ($Y_{1,\ (-20/+70)°C}$).

2.12.2 Serviceability

2.12.2.1 Movement capability

The movement capability of ± 25 % was verified by a small scale movement test.

2.12.2.2 Overpaintability

Hilti Firestop Joint Spray CFS-SP WB may be overpainted with Acrylic paint systems.

2.12.2.3 Compatibility with metals

The compatibility test showed no negative influence of Hilti Firestop Joint Spray CFS-SP WB on steel and aluminium surfaces.

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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

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

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

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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 and notified body (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 system1),
  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.

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

[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.

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-11/0343 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.

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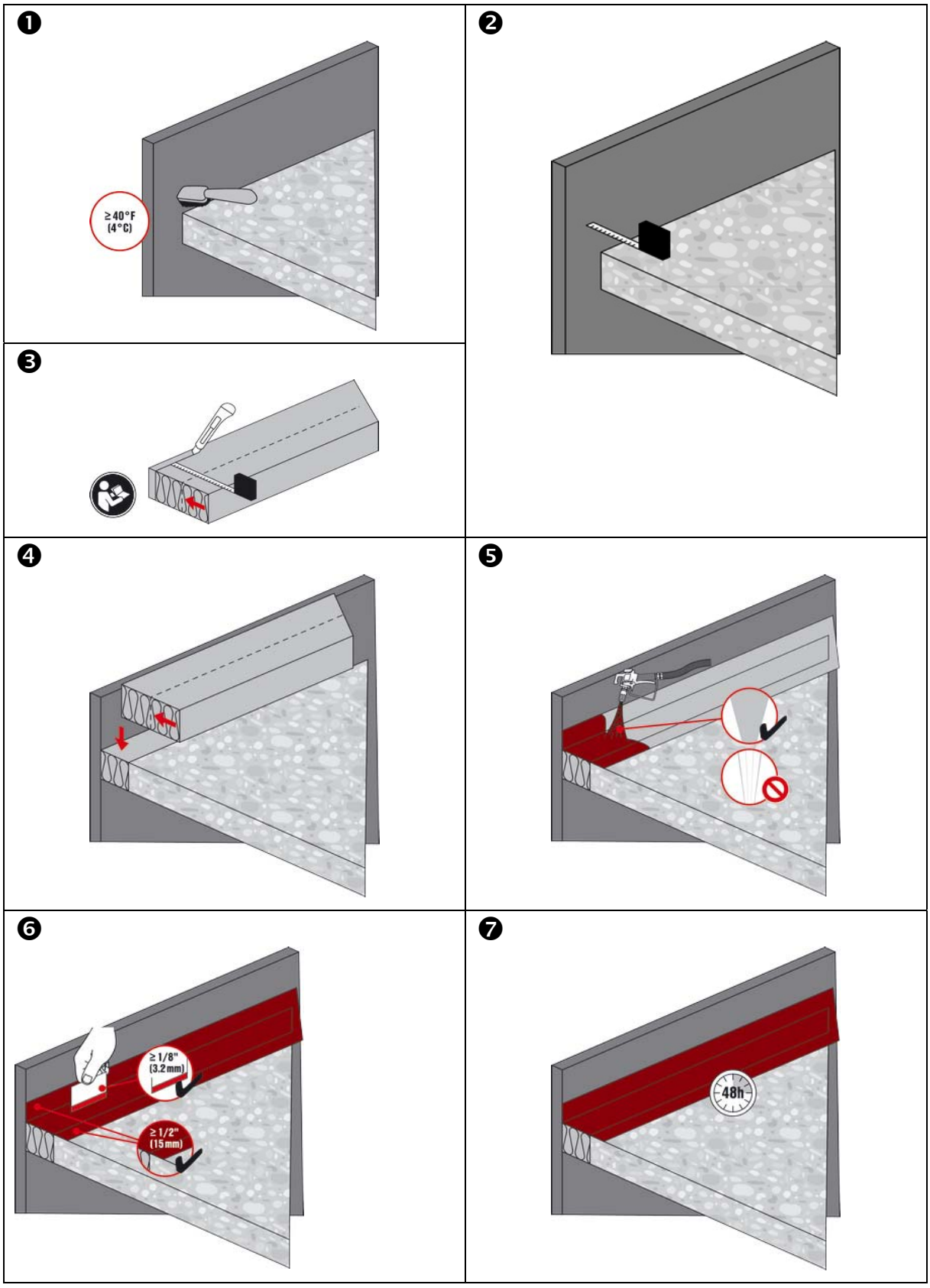
4.2 Installation

Installation of the Hilti Firestop Joint Spray CFS-SP WB should be conducted as follows:



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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.

Storage temperature: 4 °C up to max. +25 °C

5.2 Use, maintenance, repair

The Hilti Firestop Joint Spray CFS-SP WB 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

Rainer Mikulits
Managing Director

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ANNEX A

REFERENCE DOCUMENTS and LIST OF ABBREVIATIONS

A.1 References to standards mentioned in the ETA:

EN 1364-4	Fire resistance tests for non-load bearing elements - Part 4: Curtain walling – Part configuration
EN 13501	Fire classification of construction products and building elements – Part 1: Classification using test data from reaction to fire tests Part 2: Classification using test data from fire resistance tests
EN ISO 140-1	Measurement of sound insulation in buildings and of building elements -- Part 1: Requirements for laboratory test facilities with suppressed flanking transmission
EN 20140	Acoustics – Measurement of sound insulation in buildings and of building elements – Part 3: Laboratory measurements of airborne sound insulation of building elements Part 10: Laboratory measurement of airborne sound insulation of small building elements
EN ISO 10140	Acoustics - Laboratory measurement of sound insulation of building elements - Part 1: Application rules for specific products Part 2: Measurement of airborne sound insulation Part 5: Requirements for test facilities and equipment
EN ISO 717-1	Acoustics – Rating of sound insulation of buildings and of building elements – Part 1: Airborne sound insulation

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

A.3 Abbreviations used in drawings:

Abbreviation	Description
A	Hilti Firestop Joint Spray CFS-SP WB
B_1	Backfilling material (mineral wool) of perimeter seal
B_2	Mineral wool in cavity between transoms and spandrel panel
E_1	Rigid floor construction
E_2	Spandrel panel
L_1	Overlap of Hilti Firestop Joint Spray CFS-SP WB
T	Transom
t_A	Thickness of Hilti Firestop Joint Spray CFS-SP WB
t_B	Thickness of backfilling material
t_{E1}	Thickness of the rigid floor construction / joint depth
w	Joint width

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ANNEX B

DESCRIPTION OF PRODUCT(S) & PRODUCT LITERATURE

B.1 Hilti Firestop Joint Spray CFS-SP WB

Hilti Firestop Joint Spray CFS-SP WB is a 1-component product and is composed essentially of filling substances and an acrylic binder. It is delivered in various colours.

Hilti Firestop Joint Spray CFS-SP WB is supplied in 19 Liter buckets.

A detailed specification of the product is contained in document “Identification / Product Specification relating to the European technical approval ETA-11/0343 - Hilti Firestop Joint Spray CFS-SP WB” 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-11/0343 - Hilti Firestop Joint Spray CFS-SP WB” which is a non-public part of this ETA.

Technical product literature:

- Technical Data Sheet Hilti Firestop Joint Spray CFS-SP WB
- Safety Data Sheet acc. to 1907/2006/EC, Article 31, for Hilti Firestop Joint Spray CFS-SP WB

B.2 Mineral wool

Mineral wool products suitable for being used as backfilling material of the perimeter seal

Characteristics	Specification
Stone wool	EN 13162 or EN 14303
Density	40 to 70 kg/m^3
Facing	No Al-facing, no other facing

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ANNEX C

RESISTANCE TO FIRE CLASSIFICATION OF PERIMETER SEALS BETWEEN RIGID FLOOR CONSTRUCTIONS AND CURTAIN WALLING MADE FROM HILTI FIRESTOP JOINT SPRAY CFS-SP WB

Rigid floor constructions (E_1) according to 1.2.1 a), $t_{E1} \geq 150$ mm;

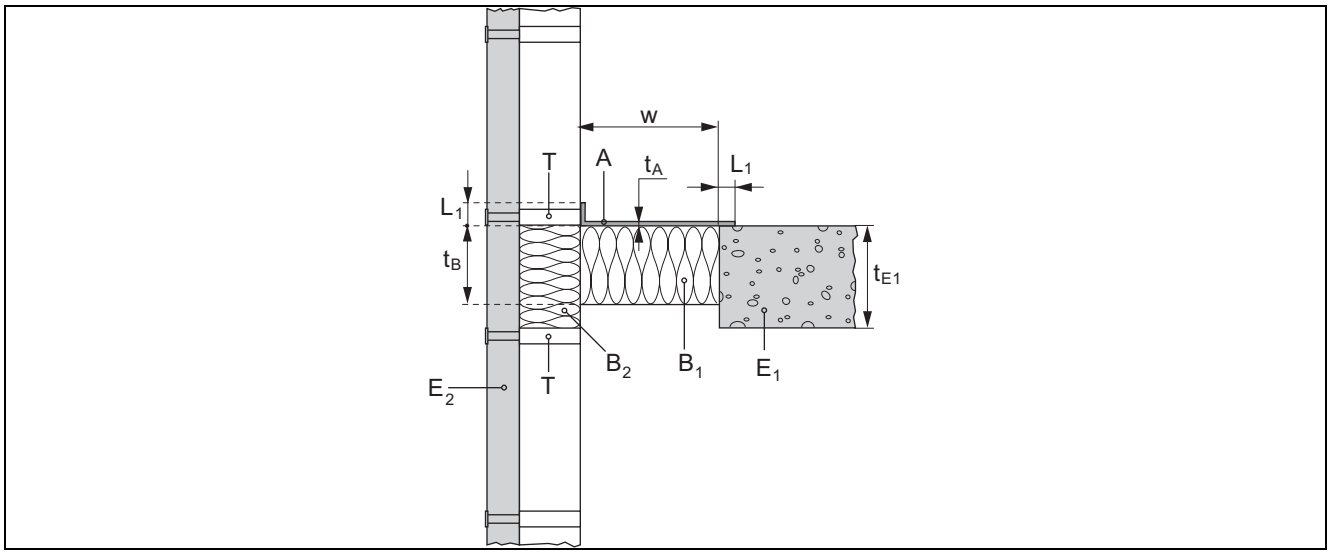
Curtain walling (E_2) according to 1.2.1 c);

Hilti Firestop Joint Spray CFS-SP WB (A), t_A = 3,2-5 mm (wet film, resulting in ca. 2 mm dry film thickness), overlap on floor construction and curtain wall (L_1) minimum 15 mm, together with mineral wool products (B) as specified in Annex B.2 as backfilling material: $t_B \geq 150$ mm, compression of mineral wool ≥ 55 %, splice distance minimum 1000 mm;

Nominal joint width (w): 10 to 200 mm;

Movement capability: ± 25 %;

Construction details:



Classification: EI 90-H-M 25-F-W 10 to 200

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