Deutsches Institut für Bautechnik

Anstalt des öffentlichen Rechts

Kolonnenstr. 30 L
10829 Berlin
Germany

Tel.: +49(0)30 787 30 0
Fax: +49(0)30 787 30 320
E-mail: dibt@dibt.de
Internet: www.dibt.de

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

DIBt

Mitglied der EOTA
Member of EOTA

European Technical Approval ETA-05/0068

English translation prepared by DIBt - Original version in German language

Handelsbezeichnung *Trade name*	Sikasil® IG-25
Zulassungsinhaber *Holder of approval*	SIKA SERVICES AG Tüffenwies 16 8048 Zürich SCHWEIZ
Zulassungsgegenstand und Verwendungszweck *Generic type and use of construction product*	Klebstoff zur Verwendung in Mehrscheiben-Isolierverglasungen *Structural Sealant for use in Insulating glass units*
Geltungsdauer: vom *Validity: from*	20 January 2006
bis *to*	19 January 2011
verlängert vom *extended from*	20 January 2011
bis *to*	19 January 2016
Herstellwerk *Manufacturing plant*	SIKA ENGINEERING SILICONES srl Via L. Einaudi 6 20068 Peschiera Borromeo (MI) ITALIEN
Diese Zulassung umfasst *This Approval contains*	9 Seiten *9 pages*

I LEGAL BASES AND GENERAL CONDITIONS

1 This European technical approval is issued by Deutsches 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];
- Gesetz über das In-Verkehr-Bringen von und den freien Warenverkehr mit Bauprodukten zur Umsetzung der Richtlinie 89/106/EWG des Rates vom 21. Dezember 1988 zur Angleichung der Rechts- und Verwaltungsvorschriften der Mitgliedstaaten über Bauprodukte und anderer Rechtsakte der Europäischen Gemeinschaften (Bauproduktengesetz - BauPG) vom 28. April 1998[4], as amended by law of 31 October 2006[5];
- Common Procedural Rules for Requesting, Preparing and the Granting of European technical approvals set out in the Annex to Commission Decision 94/23/EC[6];
- Guideline for European technical approval of "Structural sealant glazing systems - Part 1: Supported and unsupported systems", ETAG 002-01.

2 Deutsches 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. 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 Deutsches 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 Deutsches 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.

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1 Official Journal of the European Communities N° L 40, 11 February 1989, p. 12

2 Official Journal of the European Communities N° L 220, 30 August 1993, p. 1

3 Official Journal of the European Union N° L 284, 31 October 2003, p. 25

4 *Bundesgesetzblatt Teil I 1998*, p. 812

5 *Bundesgesetzblatt Teil I 2006*, p.2407, 2416

6 Official Journal of the European Communities N° L 17, 20 January 1994, p. 34

II SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL

1 Definition of product and intended use

1.1 Definition of the product

The structural sealant ELASTOSIL IG 25 is a two-component silicone-based sealant to be used in insulating glass units that have a structural function. The structural sealant is only one component of the kit. The kit as such is not covered by this ETA.

1.2 Intended use

The structural sealant ELASTOSIL IG 25 is to be used in structural sealant glazing systems (SSGK) within the scope of ETAG 002 to fabricate insulating glass units by structurally bonding two glass panes together. Each glass pane in the insulating glass unit must be supported to transfer the dead load (Type I and II). This European Technical Approval expressly does not cover the bonding of glass with other building materials.

The fitness for use of systems (or kits) in which the structural sealant is used will have to be verified separately, in particular by means of a complementary ETA for kits based on ETAG 002.

The sealant ELASTOSIL IG 25 may be used in structural sealant glazing kits of either of the following two types referred to in ETAG 002 and shown in Figure 1. Whether devices to reduce danger in the event of bond failure are required or not depends on national regulations that are applicable at the location of use.

Type I: Mechanical transfer of the dead load of the infill to the sealant support frame and from there to the structure. The structural seal transfers all other actions. Devices are used to reduce danger in the event of a bond failure.

Type II: Mechanical transfer of the dead load of the infill to the sealant support frame and thence to the structure. The structural seal transfers all other actions and no devices are used to reduce danger in the event of bond failure.

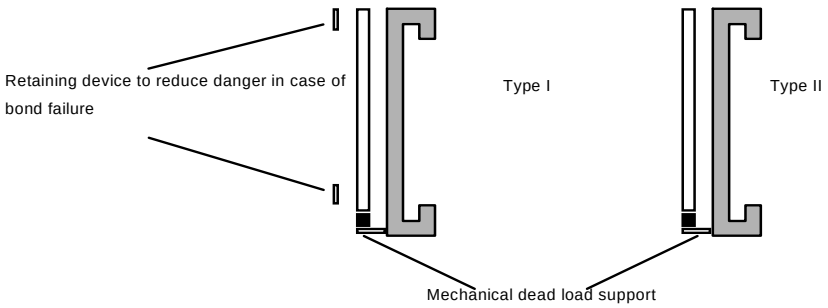

Figure 1 - Schematic examples of the different types of SSGK

The provisions made in this European Technical Approval are based on an assumed working life of the SSGK of 25 years.

The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

2 Characteristics of the product and methods of verification

2.1 Characteristics of the product

2.1.1 Structural Sealant Elastosil IG 25

- Design stress in tension: $\sigma_{des.}$ = 0.14 MPa
- Design stress in dynamic shear: $\tau_{des.}$ = 0.101 MPa
- Design stress in static shear: $\tau\infty$= 0.01 MPa
- Modulus of elasticity in tension or compression tangential to the origin: E_o = 2.2 MPa
- Modulus of elasticity in shear tangential to the origin: G_o = 0.73 MPa
- Working time (at 25 °C, 50 % R.H.): 20 minutes
- Tack-free time (at 25 °C, 50 % R.H.): 180 to 300 minutes
- Time before transport of the bonded frame: the minimum time before transport is normally 3 days. Nevertheless, earlier transportation to the work site is possible if the following two conditions are respected (see ETAG Table 10 “Checks during the production”): The tested H-samples give the following result: Rupture 100% cohesive and breaking stress $\geq$ 0.7 MPa.
- Structural sealant – identification characteristics

Test	ETAG ref.	Result
Specific mass (mixed at 13/1 ratio)	5.2.1.1	V_{mean} = 1.36 g/cm³
Hardness (Shore A)	5.2.1.2	Mean value of 42 (minimum of 34)
Thermogravimetric analysis	5.2.1.3	The curve is deposited with the DIBt
Colour	5.2.1.4	Black colour

The European Technical Approval is issued for the product on the basis of agreed data/information deposited with the DIBt, which identifies the product that has been assessed and judged. Changes to the product/production process that could result in the deposited data/information being incorrect should be notified to the DIBt before the changes are introduced. The DIBt will decide whether or not such changes affect the European Technical Approval and consequently the validity of the CE marking based on the European Technical Approval, and if so whether further assessment/alterations to the European Technical Approval shall be necessary.

2.1.2 Complementary products for preparing the structural seal adhesion surface

The following product shall be used as a cleaning product for the glass-glass adhesion:

"Sika VENTOTEC Cleaner Glass & Metal"

2.1.3 Dangerous Substances

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 EU Construction Products Directive, these requirements must also be complied with, when and where they apply.

2.2 Methods of verification

The assessment of the fitness for use of the structural sealant for the intended use in relation to the requirements concerning safety in case of fire, safety in use, hygiene, health and the environment, energy economy and heat retention, within the meaning of the Essential Requirements 2, 3, 4 and 6, has been made in accordance with the "Guideline for European Technical Approval for Structural Sealant Glazing Kits" (ETAG 002).

Where the guideline allows for classifications and/or choice, the following performances have been determined.

ER2 SAFETY IN CASE OF FIRE

Reaction to fire: class F (no performance determined).

The resistance to fire of the installed SSGK shall be assessed within the framework of the European Technical Approval for the kit.

ER3 HYGIENE, HEALTH AND THE ENVIRONMENT

Concerning "Dangerous substances", the structural sealant manufacturers declared compliance with Council Directive 76/769/EEC published in the "Official Journal of the European Communities" of 27/07/1976 and its amendments.

ER4 SAFETY IN USE

The following tests relevant for sealant assessment have been passed by reference to ETAG 002: 5.1.4.1.1, 5.1.4.1.2, 5.1.4.2.1, 5.1.4.2.2, 5.1.4.2.3, 5.1.4.2.4, 5.1.4.2.5, 5.1.4.6.1, 5.1.4.6.2, 5.1.4.6.3, 5.1.4.6.4, 5.1.4.6.5and 5.1.4.6.7.

Further tests need to be conducted within the framework of the complementary European Technical Approval for the kit.

ER6 ENERGY ECONOMY AND HEAT RETENTION

Determination of thermal insulation:

The thermal conductivity value of the structural sealant is 0.35 W/(m·K).

3 Evaluation and attestation of conformity and CE marking

3.1 System of attestation of conformity

Within the framework of the mandate for structural sealant glazing kits, the attestation of conformity systems specified by the European Commission detailed in the mandate are as follows [Commission decision of 24/06/96, published in the EC Official Journal L 254 of 08/10/96]:

- System 1 for SSGK, Type II
- System 2+ for SSG kits Type I.

Note: The systems being as described in Council Directive 89/106 EEC Annex III.2.(i) and (ii).

As the structural sealant is a construction product that is marketed as such, it is impossible, within the context of this ETA, to determine in advance the type of kits in which the sealant is to be used. As a consequence, only system 1 shall apply.

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

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

b) Tasks for the approved body:
   - initial type-testing of the product
   - initial inspection of factory and of factory production control
   - 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 sealant manufacturer shall exercise permanent internal control of the production. All the elements, requirements and provisions adopted by the manufacturer are documented in a systematic manner in the form of written policies and procedures, including records of results performed. This production control system shall ensure that the product is in conformity with this European Technical Approval.

The Factory production control (FPC) involves the following tests.

base: Colour, appearance, viscosity, flow

catalyst: Colour, appearance, viscosity, flow

mixture: Pot time, Shore A hardness, tensile and elongation at rupture at initial state and after 7 days immersion in water at 23 °C, peel adhesion to glass after 24 hours immersion in water at 70°C.

For bonding glass, it is necessary for the manufacturer to undertake adhesion/cohesion tests after thermal conditioning until rupture occurs, as described in ETAG 002 para graph 8.3.2.4 ("Check on incoming material (i) for each batch of sealant"). The testing of "H" pieces and peel tests as part of the FPC provides the necessary evidence.

3.2.1.2 Testing of samples taken at the factory – Prescribed Test Plan

The manufacturer shall, on the basis of a contract, involve a body which is approved for the tasks referred to in section 3.1 in the field of SSGK 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, 3.2.1.2, and 3.2.2 shall be handed over by the manufacturer to the approved body.

The manufacturer shall make a declaration of conformity, stating that the construction product is in conformity with the provisions of the European Technical Approval N° 05/0068, issued on 20 January 2006.

3.2.2 Tasks of the approved body

The approved body shall perform the

- initial type-testing of the product,
- initial inspection of factory and of factory production control,
- continuous surveillance, assessment and approval of factory production control,

in accordance with the provisions laid down in the Control Plan of ETAG 002, paragraph 8.3.2.4.

An assessment shall be carried out on the particular manufacturing process of each manufacturing plant to demonstrate that the factory production control is in conformity with the European Technical Approval and any basic information. This assessment is based on an initial inspection of the factory.

Subsequently continuous surveillance of factory production control is necessary to ensure continuing conformity with the European Technical Approval. This continuous surveillance is performed as per ETAG 002 SSGK chapter 8.3.

It is necessary that surveillance inspections are conducted at least twice a year.
The approved 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/written reports.

The approved certification 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 according to ETAG 002, paragraph 8.3.2.4 are no longer fulfilled the certification body shall withdraw the certificate of conformity and inform the Deutsches Institut für Bautechnik without delay.

3.3 CE marking

The CE marking shall be affixed on each cartridge or packaging (see example, figure 2). The letters "CE" shall be followed by the identification number of the approved certification body, where relevant, and be accompanied by the following additional information:

- the name and address of the producer (legal entity responsible for the manufacture),
- 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 guideline for European Technical Approval
- number of the certification body
- the remark "only applicable with a complementary ETA for the kit"
- the remark "Typ I and II"

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

4.1 Manufacturing

The structural sealant ELASTOSIL IG 25 shall be fabricated by one of the manufacturing plants mentioned on page 1.

4.2 Design rules and application of the structural sealant

4.2.1 Design rules

4.2.1.1 Structural seal design

The structural seal shall be designed in accordance with the rules given in the complementary European Technical Approval for the related structural sealant glazing kit. In addition to wind loads, it shall also take into consideration loads caused by climatically determined pressure differences between the glazing cavity and the atmosphere.

4.2.1.2 Suitable substrates for structural adhesion surface

Only uncoated soda-lime glass was verified to be a suitable substrate for structural adhesion. This also includes thermally prestressed soda-lime glass provided its use is regulated in a supplementary European Technical Approval for kits based on ETAG 002.

4.2.1.3 Drainage and ventilation

Water stagnation in the vicinity of the structural seal shall be eliminated constructively.

4.2.1.4 Transfer of the infill loading to the building structure via the structural sealant

The structural sealant ELASTOSIL IG 25 is suitable for use in SSGK Types I and II (see also figure 1). This means that the bonded infill shall be equipped with mechanical self-weight supports.

4.2.2 General technical conditions

The structural sealant ELASTOSIL IG 25 shall be mixed at a ratio of 13:1 (base: catalyst) by weight. The structural sealant's processing temperature of +5 to +40 °C shall be observed. The joint shall be tooled before the working time has been reached, preferably within 10 minutes after extrusion. It should be noted that the working time may vary depending on the temperature and relative humidity.

No relative displacement of the panes in the insulating glass units may occur once the working time has been reached.

Before applying the sealant, it should be checked in all cases that there is no condensation on the substrates.

4.2.3 Chemical compatibility

During the assessment procedure for this European Technical Approval, the compatibility between ELASTOSIL IG 25 and ELASTOSIL SG 500 has been verified.

4.2.4 Responsibility of the manufacturer

It is the responsibility of the holder of the European Technical Approval to ensure that the information on the relevant component requirements and their fabrication is given to the person concerned. This information may be made by reproducing the relevant parts of the European Technical Approval.

The European Technical Approval is issued for the product on the basis of agreed data/information, deposited with the Deutsches 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 the Deutsches Institut für Bautechnik before the changes are introduced. The Deutsches 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.

5 Indications to the manufacturer

5.1 Packaging, transport and storage

The maximum storage duration of the sealant is 14 months after the fabrication date in its original, unopened packaging, when stored at a temperature below 30 °C.

5.2 Use, maintenance, repair

5.2.1 Application of the structural sealant

The complementary European Technical Approval for the structural sealant glazing kit describes the application of the sealant. In particular, the complementary European Technical Approval for the kit states the cleaning product to be used as well as the primer and, if needed, the method of application

5.2.2 Recommendation for facade cleaning

It is recommended to use a neutral detergent (1 % solution in water) with a pH of approximately 7.

Nevertheless, the assessment of the facade cleaning product shall be done within the framework of the European Technical Approval for the kit in order to check that these cleaning agents do not affect other kit products (gaskets, weather sealant, etc).

Dr.-Ing. Karsten Kathage
Head of Department

beglaubigt:
Herr