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European Technical Assessment

ETA-19/0692
of 07.07.2022

General part

Technical Assessment Body issuing the ETA	Austrian Institute of Construction Engineering (OIB)
Trade name of the construction product	OTTOCOLL® S 645
Product family to which the construction product belongs	Structural Sealant Glazing Kit: Structural Sealant I
Manufacturer	Hermann Otto GmbH Krankenhausstraße 14 83413 Fridolfing Germany
Manufacturing plant	Hermann Otto GmbH Krankenhausstraße 14 83413 Fridolfing Germany
This European Technical Assessment contains	9 pages including 1 Annex
This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of	Guideline for European technical approval (ETAG) No. 002 Structural Sealant Glazing Systems (SSGS) - Part 1: Structural Sealant Glazing System, edition March 2012, used as European Assessment Document (EAD)
This European Technical Assessment replaces	European Technical Assessment ETA-19/0692 issued on 08.01.2020

Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and should be identified as such.

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In addition to the specific clauses relating to dangerous substances contained in this European Technical Assessment, there may be other requirements (e.g. trans-posed European legislation and national laws, regulations and administrative provisions).

In order to meet the provisions of the EU Construction Products Directive, these requirements need also to be complied with, when and where they apply.

Specific parts

1. Technical description of the product

1.1 Definition of the construction product

The structural sealant OTTOCOLL® S 645 is a two-component silicone-based sealant to be used in structural sealant glazing kits (SSGK) for use in vertical or horizontal constructions (e.g. for façades and roofs, or parts of them) according to ETAG 002 used as EAD. The structural sealant is only one component of the kit. The kit as such is not covered by this ETA.

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

2.1 Intended use

The structural sealant OTTOCOLL® S 645 is to be used in structural sealant glazing kits (SSGK) within the scope of ETAG 002 to bond glazing products on structural support frames or walkable glass constructions.

OTTOCOLL® S 645 can also be used to provide a hermetic structural edge seal to insulating glass units. Suitable substrates are defined for the sealant in the present ETA clause 2.4.2.

Complementary European Technical Assessments for kits have to assess the fitness for use of those structural sealants in the structural sealant glazing kits.

The Basic requirements for construction works listed in clause 3, shall be fulfilled, as failure of the structural bond would cause risk to human life and/or have considerable economic consequences.

2.2 Distribution

The sealant is put on the market under following conditions.

Supplier	Trade name
Hermann Otto GmbH	OTTOCOLL® S 645

2.3 Manufacturing

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

The sealant is manufactured by Hermann Otto GmbH, in accordance to the provisions of this European Technical Assessment using a specific manufacturing process as identified during first audit of the plant by the Österreichisches Institut für Bautechnik and inspection by approved body. All data shall be laid down in the production control plan.

All specific provisions of OTTOCOLL® S 645 about e.g. storage, transportation, installation, working time, etc. shall be taken to the technical literature of the manufacturer.

2.4 Installation

2.4.1 Design rules of the sealant

The section of the structural sealant bead is calculated in accordance to ETAG 002-1 annex 2 where W is defined in national design codes. The maximum thickness of the seal for OTTOCOLL® S 645 in case of unsupported glazing is 12 mm.

2.4.2 Suitable substrates for structural adhesion surface

The generic and/or specific types of suitable substrates are given in Annex 1 and in the technical documentation. For any other substrate, the evaluation shall be performed by reference to ETAG 002, used as EAD, clause 5.1.4. For particular substrate included in a generic family, the evaluation rules are given ETAG 002-1, used as EAD, clause 5.3.

Additional to metallic substrates further materials as substrates can be used after performing in dependence on an evaluation by reference to ETAG 002. In general the substrate must be defined and replicable regarding surface character, identification and quality by means of suitable testing methods. This shall be ensured by an accredited authority.

Complementary products of structural seal adhesion surface preparation are:

Cleaning products:

- OTTO Cleaner T (cleaning product, for glass and metals)

Primer:

- OTTO Primer 1216 (primer, only on stainless steel and anodised aluminium). Variation to the mentioned complementary products shall be approved by an accredited authority.

The composition of effective cleaning and pre-treatment steps for specific bonding surfaces have to be discussed with the supplier of the structural sealant. During factory production control the operator has to produce and test specimens of the original composition that means including original substrates, original products for cleaning and pre-treating and the original structural sealant.

2.4.3 Design of the Structural Sealant Glazing System

Water stagnation is not allowed in the vicinity of the structural seal. The SSGS shall be designed to provide sufficient drainage and ventilation around the sealant section.

The SSGS shall be designed to allow the realisation of a regular, rectangular structural sealant bead with and without insert or discontinuous substrate.

2.4.4 Application of the sealant

The ETA applicant provides to his clients a complete procedure for the bonding and specifications for installation including the following conditions:

- Temperature of application +5°C to +35°C in a dust free location
- The substrates shall be free from superficial condensation
- Procedure for cleaning the substrates
- Procedure for application of the primer when specified
- Application of the sealant itself according to technical documentation of manufacturer
- Storage according to technical documentation of manufacturer

2.4.5 Recommendation for façade cleaning product

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

Nevertheless, the assessment of the façade cleaning agent has to be done in the framework of the ETA for the kit to check compatibility aspect with other components.

2.4.6 Chemical compatibility

The chemical compatibility of all materials in contact with the structural sealant have to be assessed in the framework of the ETA for systems.

The chemical compatibility of the following components in contact with the structural sealant are assessed according ETAG 002-1, see technical documentation: spacer tapes, silicone sealant.

2.4.7 Responsibility of the manufacturer

It is the responsibility of the ETA holder to ensure that the information on the related component requirements and their fabrication and setting is given to the person concerned. This information may be made by reproduction of the relevant parts of the European technical assessment.

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

Basic requirements for construction works	
BWR 2	Reaction to fire: No performance assessed
BWR 3	Dangerous substances: The manufacturer made a declaration of conformity to the Council Directive 76/769/EEC and its amendments
BWR 4	The characteristics of the sealants have been established on the basis of test results in accordance to chapter 5.1.4 of ETAG 002-1.
BWR 6	Energy economy and heat retention: No evaluation made on the sealant. The thermal conductivity to be taken into account for further calculation on structural sealant glazing kit is λ = 0.36 W/(m*K).
BWR 7	Sustainable use of natural resources: No performance assessed

3.1 Safety in case of fire (BWR 2)

3.1.1 Reaction to fire

OTTOCOLL® S 645: class E according EN 13501-1.

3.2 Hygiene, health and environment (BWR 3)

3.2.1 Release of dangerous substances

According to the manufacturer's declaration OTTOCOLL® S 645 does not contain dangerous substances detailed in Council Directive 67/548/EEC and Regulation (EC) no 1272/2008 as well as EOTA TR 034 (General BWR 3 Checklist for EADs/ETAs – Dangerous substances), edition October 2015 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 European Technical Assessment, 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 Regulation, these requirements need also to be complied with, when and where they apply.

3.3 Safety and accessibility in use (BWR 4)

3.3.1 Properties and characteristics of the sealant

Properties & Characteristics	OTTOCOLL® S 645
Design stress in tension σ_{des}	0,20 MPa
Design stress in dynamic shear τ_{des}	0,17 MPa
Design stress in static shear τ_{∞}	0,010 MPa
Elastic modulus in tension or compression E	2,74 MPa
Elastic modulus in shear tangential to G	0,91 MPa
Elastic modulus in tension at 12,5 % elongation $K_{12,5}$	2,72 MPa
Resistance to tearing	category 1 (ETAG 002)
Colour	black, white, grey, green, yellow, blue, brown, red
Working time at 23 °C 50 % RH	approx. 20 min
Tack free time at 23 °C 50 % RH	≤ 180 min
Minimum time before transportation of the bonded unit	7 days
Specific mass	V_{mean} = 1,36 kg/l ±0,025
Hardness A	≥ 40 (mean 45)
Thermogravimetric analysis	Curve kept in ETA technical file

An earlier transportation is possible on these terms: the tested H-samples give the following result: rupture ≥ 90 % cohesive and break stress ≥ 0,7 MPa

3.4 Energy economy and heat retention (BWR 6)

Determination of thermal insulation and susceptibility to condensation:

The generally accepted value of the thermal conductivity (λ value) of the structural sealant to be used in thermal modelling for the assessment of thermal performance is 0,36 W/(mK).

3.5 Sustainable use of natural resources (BWR 7)

No performance assessed.

3.6 General aspects relating to fitness for use

All the specific aspects of durability of the fitness for use of OTTOCOLL® S 645 are particularly covered at ER4 according to ETAG002, used as EAD.

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

4.1 AVCP system

According to the Decision 1999/454/EC of the European Commission the system of assessment and verification of constancy of performance (see Annex V of Regulation (EU) No 305/2011) given in the following table apply:

Product	Intended uses	Level or Class	System
OTTOCOLL® S 645	for SSGS kits Types II and IV	Any	System 1
OTTOCOLL® S 645	for SSGS kits Types I and III	Any	System 2+

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

5.1 Tasks of the manufacturer

5.1.1 Factory production control

The manufacturer has a factory production control system in the plant and exercises permanent internal control of 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. The production control ensures that the product is in conformity with the European technical assessment. The incoming materials are subjected to controls and tests by the manufacturer before acceptance according to a prescribed test plan. The manufacturer proceeds to controls during the production according to specific policies. Those controls include:

- Base: colour, appearance, flow, viscosity, specific gravity
- Catalyst: colour, appearance, flow
- Mixture: snap time, shore A hardness, tensile and elongation at rupture according to ETAG 002-1: 2012 8.3.2.4.1.

The results and details of the extent, nature and frequency of controls be performed within the factory production control shall be recorded and evaluated in accordance with the provisions of the control plan.

The records include at least the following information:

- Designation of the product
- Batch number
- Type of testing
- Results of testing and comparison with the requirements.

5.1.2 Other tasks of the manufacturer

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

The manufacturer shall provide a technical data sheet and a technical documentation. This technical literature shall be handed over to the Österreichisches Institut für Bautechnik.

The manufacturer shall, based on a contract, involve a notified product certification body, which is notified for the tasks referred to in clause 4.1 of the ETA in the field of Assessment product. For this purpose, the control plan referred to in clause 5.1 and 5.2 of the ETA shall be handed over by the manufacturer to the notified product certification body involved.

5.2 Tasks of notified product certification body

The Notified Body shall retain the essential points of its actions referred to clause 5.2.1 to 5.2.3, state the results obtained and conclusions drawn in written report.

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

5.2.1 Determination of the product type

Notified bodies undertaking tasks under Systems 1 shall consider the European Technical Assessment issued for the construction product in question as the assessment of the performance of that product. Notified bodies shall therefore not undertake the tasks referred to in point 1.2 (b)(i), in Annex V of Regulation (EU) No 305/2011, unless there are changes in the manufacture or manufacturing plant. In such cases, the necessary initial type testing shall be agreed between the Österreichisches Institut für Bautechnik and notified product certification body involved.

5.2.2 Initial inspection of the manufacturing plant and of factory production control

The notified product certification body shall ascertain that, in accordance with the control plan, the manufacturing plant, in particular personnel and equipment, and the factory production control are suitable to ensure a continuous and orderly manufacturing of the kit according to the specifications given in clause 2 and in the Annexes of the European Technical Assessment.

5.2.3 Continuous surveillance, assessment and evaluation of factory production control

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

It shall be verified that the system of factory production control and the specified manufacturing process are maintained taking into account the control plan.

Continuous surveillance and assessment of factory production control have to be performed according to the control plan.

The results of continuous surveillance shall be made available on demand by the notified product certification body or the Österreichisches Institut für Bautechnik. In cases where the provisions of the European Technical Assessment and the control plan are no longer fulfilled, the certificate of constancy of performance shall be withdrawn.

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The original document is signed by:

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Managing Director

ANNEX 1

List of suitable substrates among others for structural adhesion surface

A. Glass products

Float glass according to EN 572-2
Thermally toughened safety glass according to EN 12150
Semi-tempered safety glass according to EN 1863-1

Other suitable glasses:
Laminated safety glass according to EN ISO 12543-1
Laminated glass (assessment according ETAG 002 required)
Coated glass (assessment according to ETAG 002 required)

B. Metal products

Anodized aluminum (EN 5005 H14 (AlMg1))
Anodized aluminum (EN AW 6060, T66)
Stainless steel (1.4301 (X5CrNi19-10), grinded, grain size 320)

For detailed list of manufacturers see technical documentation of the ETA-holder