UBAtc
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European Technical Assessment

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Technical Assessment Body issuing the European Technical Assessment: UBAtc.
UBAtc has been designated according to Article 29 of Regulation (EU) No 305/2011 and is member of EOTA (European Organisation for Technical Assessment)

Trade name of the construction product:	DOWSIL™ 896 PanelFix
Product family to which the construction product belongs:	9 - Adhesive used in cladding systems
Manufacturer:	DOW Europe GmbH Bachtobelstrasse 3 D-8810 Horgen Switzerland
Manufacturing plant:	Dow Silicones Belgium S.P.R.L. Parc Industriel Zone C, B-7180 SENEFFE Belgium
Website:	www.dow.com
This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of:	EAD 15-25-0005-0606, edition 2017
This European Technical Assessment contains:	7 pages, without any annexes

European Organisation for Technical Assessment

Legal bases and general conditions

1 This European Technical Assessment is issued by UBAtc (Union belge pour l'Agrément technique de la construction, i.e. Belgian Union for technical Approval in construction), in accordance with:

- Regulation (EU) N° 305/2011[1] of the European Parliament and of the Council of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC
- Commission Implementing Regulation (EU) N° 1062/2013[2] of 30 October 2013 on the format of the European Technical Assessment for construction products
- European Assessment Document (EAD) 15-25-0005-06.06

2 Under the provisions of Regulation (EU) No 305/2011, UBAtc is not authorized to check whether the provisions of this European Technical Assessment are met once the ETA has been issued.

3 The responsibility for the conformity of the performances of the products with this European Technical Assessment and the suitability of the products for the intended use remains with the holder of the European Technical Assessment.

4 Depending on the applicable Assessment and verification of constancy of performance (AVCP) system, (a) notified body(ies) may carry out third-party tasks in the process of assessment and verification of constancy of performance under this Regulation once the European Technical Assessment has been issued.

5 This European Technical Assessment allows the manufacturer of the construction product covered by this ETA to draw up a declaration of performance for the construction product.

6 CE marking should be affixed to all construction products for which the manufacturer has drawn up a declaration of performance.

7 This European Technical Assessment is not to be transferred to other manufacturers, agents of manufacturers, or manufacturing plants other than those indicated on page 1 of this European Technical Assessment.

8 The European Technical Assessment holder confirms to guarantee that the product(-s) to which this assessment relates, is/are produced and marketed in accordance with and comply with all applicable legal and regulatory provisions, including, without limitation, national and European legislation on the safety of products and services. The ETA-holder shall notify the UBAtc immediately in writing of any circumstance affecting the aforementioned guarantee. This assessment is issued under the condition that the aforementioned guarantee by the ETA-holder will be continuously observed.

9 According to Article 11(6) of Regulation (EU) N° 305/2011, when making a construction product available on the market, the manufacturer shall ensure that the product is accompanied by instructions and safety information in a language determined by the Member State concerned which can be easily understood by users. These instructions and safety information should fully correspond with the technical information about the product and its intended use, which the manufacturer has submitted to the responsible Technical Assessment Body for the issuing of the European Technical Assessment.

10 Pursuant to Article 11(3) of Regulation (EU) N° 305/2011, manufacturers shall adequately take into account changes in the product-type and in the applicable harmonised technical specifications. Therefore, when the contents of the issued European Technical Assessment do not any longer correspond to the product-type, the manufacturer should refrain from using this European Technical Assessment as the basis for their declaration of performance.

11 All rights of exploitation in any form and by any means of this European Technical Assessment is reserved for UBAtc and the ETA-holder, subject to the provisions of the applicable UBAtc regulations.

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13 Subject to the application introduced, this European Technical Assessment is issued in English and may be issued by the UBAtc in its official languages. The translations correspond fully to the English reference version circulated in EOTA.

14 This European Technical Assessment, ETA 17/0689, was issued for the first time on 08/01/2018.

[1] OJEU, L 88 of 2011/04/04

[2] OJEU, L 289 of 2013/10/31

Technical Provisions

1 Technical description of the product

1.1 Characteristics of the products

1.1.1 General

This ETA is being issued for the products specified on the cover page on the basis of agreed data/information, deposited with the UBAtc, which identifies the products that have been assessed. Changes to the product/production process, which could result in the deposited data/information being incorrect, should be notified to the UBAtc before the changes are introduced. The UBAtc will decide whether or not such changes affect the ETA.

1.1.2 Adhesive DOWSIL™ 896 PanelFix

The mechanical characteristics of the product are the following:

- Recommended design tensile stress: σ_{des} = 0,21 MPa
- Recommended design static shear stress in τ_{cd} = 0,03 MPa
- Tensile elastic modulus E_d = 1,40 MPa
- Shear modulus G_d = 0,45 MPa
- Maximum hydrothermal displacement in dynamic shear: $\Delta_{s,d}$ = 1,5 mm

Table 1 – DOWSIL™ 896 PanelFix - identification characteristics

Test	Reference	Result
Specific mass	EN ISO 1183-1	1,53 ± 0,8
Hardness A	EN ISO 868	59 ± 1
Thermogravimetric analysis	EN ISO 11358-1	Curve kept in ETA technical file
Colour	EN ISO 11664-4	White

1.1.3 Ancillary products for adhesion surface preparation

Cleaning agent:

- HPL: Cleaning agent DOWSIL™ R40 or DOWSIL™ R41
- Aluminium mill finish: cleaning agent DOWSIL™ R41

DOWSIL™ Panelfix tape

2 Specification of the intended use(s) in accordance with the applicable EAD

2.1 General

Adhesive DOWSIL™ 896 PanelFix is a mono component silicone based adhesive intended to be used to bond HPL cladding panel products on aluminium support frames. Suitable substrates are defined in this ETA, clause 2.3.1.1.

Failure of the adhesive bead might cause risk to human life and/or have considerable economic consequences.

The provisions made in this European Technical Assessment are based on the assumed working life of the product of 25 years[3].

2.2 Provisions related to manufacturing, packaging and storage

The adhesive DOWSIL™ 896 PanelFix is fabricated and packaged by Dow Silicones Belgium S.P.R.L.. in Seneffe Belgium.

When stored at or below 30°C in the original unopened containers, DOWSIL™ 896 Panelfix has a usable shelf life of 12 months from the date of production.

2.3 Provisions related to the design and use of the product

2.3.1 Design rules

2.3.1.1 Suitable substrates for adhesive adhesion surface

The generic types of suitable adhesion substrates are being specified only as indication.

Table 2 – Adhesive – Generic type of substrates

Generic types of substrates	DOWSIL™ 896 PanelFix
HPL – EN 438-7	Suitable
Anodised aluminium	Suitable

2.3.1.2 Drainage and ventilation

Water stagnation is not allowed in the vicinity of the adhesive bead. Therefore, the bonded cladding shall be designed with an efficient drainage and ventilation.

2.3.1.3 Design of the adhesive bead

The adhesive bead has to transfer the cladding panel loadings to the cladding frame.

Therefore, the section of the adhesive bead shall be designed according EAD 15-25-0005-06.06, Annex 3, taking into account the mechanical characteristic values given in this ETA, clause 1.1.2.

The ETA-holder should review and approve appropriate joint design

[3] The indications given as to the working life of the products cannot be interpreted as a guarantee given by the ETA-holder or the assessment body. It should only be regarded as a means for specifiers to choose the appropriate criteria for this product in relation to the expected, economically reasonable working life of the works.

2.3.2 Application of the adhesive

The adhesive DOWSIL™ 896 PanelFix shall be applied between 5 and 35°C in a dust free location. The joint shall be tooled before the snap time has been reached, preferably within 10 minutes after the extrusion. It is important to take into account that the snap time may vary with temperature and relative humidity.

After the snap time has been reached, there should be no relative movement induced anymore between the glass and the metal frame.

In all cases, it should be checked that there is no condensation on the substrates prior to the sealant application.

The workability characteristics of the product are the following:
- Skin over time (at 25°C, 50% R.H.): 5 to 10 minutes
- Tack-free time (at 25°C, 50% R.H.): 15 to 20 minutes
- Time before transport: In case the cladding elements are glued in workshop, transportation on work site is allowed if the following two conditions are respected:
  - Stored at standard room temperature during at least for 5 days
  - An adhesion test may be carried out and at least 70% of the joint shall be cured.

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

The assessment of the adhesive for the intended use has been made in accordance with EAD 15-25-0005-06.06.

ER2 Safety in case of fire

No performance assessed.

ER3 Hygiene, health and environment

No performance assessed.

ER4 Safety in use

The product has been successfully subjected to the EAD 15-25-0005-06.06.

The results are given in the following tables 3 and 4.

Table 3 – Adhesive - Mechanical characteristics

Test	EAD clause	Results	Characteristics
Tension rupture	2.2.6	-20 °C V_{mean}=1,37 MPa +23 °C V_{mean}=1,29 MPa +60 °C V_{mean}=1,37 MPa +23 °C $R_{u,5}$ = 0,96 MPa	23°C $R_{u,5}$ = 0,96 MPa Rupture 94 % cohesive -20°C R_{rc} = 1,07 Rupture 96 % cohesive 60°C R_{rc} = 1,06 Rupture 100 % cohesive
Temperature and high humidity	2.2.7.1	V_{mean}=1,25 MPa	$\Delta X_{m,cth}$ = 0,97 $C_{r,th}$ =100 % cohesive
Immersion in water	2.2.7.2	V_{mean} = 1,1 MPa	$\Delta X_{m,ciw}$ = 0,78 $C_{r,iw}$ = 98 % cohesive
High humidity and NaCl atmosphere	2.2.7.3	V_{mean}=1,25 MPa	$\Delta X_{m,cNa}$ = 0,97 $C_{r,Na}$ = 96 % cohesive
High humidity and SO_2 atmosphere	2.2.7.4	V_{mean}=1,29 MPa	$\Delta X_{m,cSO}$ = 1 $C_{r,SO}$ = 99 % cohesive
Mechanical fatigue in tension	2.2.7.5	V_{mean}=1,54 MPa	$\Delta X_{m,cf}$ = 1,2 $C_{r,f}$ = 99 % cohesive
Shear under cyclic loading	2.2.8	$\Delta_{s,d}$ = 1,5 mm V_{mean}=1,37 MPa	$S_{t,c}$ = F_1-F_2/F_1 = 7,2% $\Delta X_{m,cl}$ = 1,06 $C_{r,cl}$ = 94 % cohesive
Shear creep and climatic ageing	2.2.9	$\tau_{c,s}$ =0,03 MPa	$S_{t,v}$ = 0,2
Tear resistance	2.2.10	V_{mean}=1,54 MPa	$X_{m,tr}$ = 1,20 I_e = 1,20

Table 4 – Adhesive - Physical Mechanical characteristics

Test	EAD	Results
Shrinkage	2.2.1.1	The shrinkage is 3,6%
Effects of material contact	2.2.1.2	DOWSIL™ Panelfix tape – Resistance $R_{R,c}$ = 0,86 – No discoloration
Specific mass	2.2.3.2	1,53 ± 0,8
Elastic modulus	2.2.3.3	Average: 1,38 MPa standard deviation: 0,24
Flow resistance	2.2.3.4	No flow

ER6 Energy economy and heat retention

The generally accepted value of the thermal conductivity (λ-value) of the adhesive to be used in thermal modelling for assessment of the thermal performance is 0,35 W/m.K in accordance with EN ISO 10456.

Durability

The durability of the fitness for use of the adhesive bead has been demonstrated as follows: All the specific aspects of durability have been covered under the headings above.

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

In accordance with Regulation (EU) N° 305/2011[4], Article 65, Directive 89/106/EEC is repealed, but references to the repealed Directive shall be construed as references to the Regulation.

The system of assessment and verification of constancy of performance, specified in Decision[5] 1999/470/EC of the European Commission for construction adhesives, as amended by Decision[6] 2001/596/EC of 8 January 2001, is specified in the following Table.

The system(s) of assessment and verification of constancy of performance are shown in the following Table.

Table 5 – System(s) of assessment and verification of constancy of performance

Product(s)	Intended use(s)	Level(s) or class(es)	Assessment and verification of constancy of performance system(s)*
Structural adhesives	For uses subject to reaction to fire regulations	A1*, A2*, B*, C*	1
		A1**, A2**,B**, C**, D, E,	3
		(A1 to F)***, NPD****	4
	For structural uses in buildings and other civil engineering works	-	2+

[a] See Annex V to Regulation (EU) N° 305/2011

* 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).

** Products/materials not covered by footnote (*).

*** Products/materials that do not require to be tested for reaction to fire (e.g. products/materials of Class A1 according to Decision 96/603/EC)

**** 'No Performance Declared' in accordance with Regulation (EU) N° 305/2011, Article 6(f)

[4] OJEU, L 88 of 2011/04/04

[5] Official Journal L 184 of 17 July 1999

[6] Official Journal L 209 of 2 August 2001

5 Technical details necessary for the implementation of the AVCP system

5.1 Tasks for the ETA-holder

5.1.1 Factory production control (FPC)

5.1.1.1 General

The manufacturer shall establish, document and maintain a FPC system to ensure that the products placed on the market conform to the assessed performance characteristics. The FPC system shall consist of procedures, regular inspections and tests and/or assessments and the use of the results to control raw and other incoming materials or components, equipment, the production process and the product.

A FPC system conforming with the requirements of EN ISO 9001, and made specific to the requirements of this ETA, is considered to satisfy the above requirements.

The results of inspections, tests or assessments requiring action shall be recorded, as shall any action taken. The action to be taken when control values or criteria are not met shall be recorded.

5.1.1.2 Equipment

All weighing, measuring and testing equipment shall be calibrated and regularly inspected according to documented procedures, frequencies and criteria.

5.1.1.3 Raw materials and components

The specifications of all incoming raw materials and components shall be documented, as shall the inspection scheme for ensuring their conformity.

5.1.1.4 Non-conforming products

In the event of any non-conformity of any product, that product shall be placed into quarantine and action taken to rectify the cause of the non-conformity. Products may not subsequently be dispatched until the problem has been resolved.

5.1.1.5 Tests and frequencies

All the elements, requirements and provisions adopted by the manufacturer are documented in a systematic manner in the form of written policies and procedures. This production control system ensures that the product is in conformity with the European Technical Assessment (ETA).

5.2 Tasks for the Technical Assessment Body

5.2.1 Initial Type Testing

The cornerstones of the control plan for the manufacturer comprises the tests specified in EAD 15-25-0005-06.06, Table 4.

5.2.2 Assessment of the factory production control - Initial inspection and continuous surveillance

Assessment of the FPC is the responsibility of a Notified Body. An assessment shall be carried out at the manufacturing plant to demonstrate that the factory production control is in conformity with the ETA and any subsidiary 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 ETA. This continuous surveillance is performed as specified in EAD 15-25-0005-06.06, Table 5. It is recommended that surveillance inspections should be conducted at least twice a year.

6 Bibliography

EAD 15-25-0005-06.06 Adhesive for wall cladding

EN 438-7 High-pressure decorative laminates (HPL) - Sheets based on thermosetting resins (Usually called Laminates) - Part 7: Compact laminate and HPL composite panels for internal and external wall and ceiling finishes

EN 13501-1 Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests

EN ISO 868 Plastics and ebonite - Determination of indentation hardness by means of a durometer (Shore hardness)

EN ISO 1183-1 Plastics - Methods for determining the density of noncellular plastics - Part 1: Immersion method, liquid pyknometer method and titration method

EN ISO 7390 Building construction - Jointing products - Determination of resistance to flow of sealants

EN ISO 9001 Quality management systems - Requirements

EN ISO 10456 Building materials and products - Hygrothermal properties -Tabulated design values and procedures for determining declared and design thermal values

EN ISO 11358-1 Plastics - Thermogravimetry (TG) of polymers - Part 1: General principles

EN ISO 11664-4 Colorimetry - Part 4: CIE 1976 L*a*b* Colour space

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This European Technical Assessment has been issued by UBAtc asbl, in Sint-Stevens-Woluwe, on the basis of the technical work carried out by the Assessment Operator, BCCA.

On behalf of UBAtc asbl,

Peter Wouters,
Director

On behalf of the Assessment Operator, BCCA, responsible for the technical content of the ETA,

Benny De Blaere,
Director general

The most recent version of this European Technical Assessment may be consulted on the UBAtc website (www.ubatc.be).