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Designated according to Article 29 of Regulation (EU) No 305/2011

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# European Technical Assessment

# ETA 19/0511 of 04.04.2024

## General part

| | |
|---|---|
| **Technical Assessment Body issuing the ETA: ITeC**<br>ITeC 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** | **SikaTack® Panel-50** |
| **Product family to which the construction product belongs** | Adhesives for wall cladding. |
| **Manufacturer** | **SIKA SERVICES AG**<br>Tueffenwies 16<br>CH-8048 Zurich<br>Switzerland |
| **Manufacturing plant(s)** | SIKA ENGINEERING SILICONES S.R.L.<br>Via Einaudi 6<br>20068 Peschiera Borromeo, Milan<br>Italy |
| **This European Technical Assessment contains** | 12 pages including 2 annexes which form an integral part of this assessment. |
| **This European Technical Assessment is issued in accordance with Regulation (EU) 305/2011, on the basis of** | European Assessment Document EAD 250005-00-0606 *Adhesive for wall cladding.* |
| **This ETA replaces** | ETA 19/0511 issued on 12.11.2019 |

**General comments**

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

# Specific parts of the European Technical Assessment

## 1 Technical description of the product

This ETA is applicable to the SikaTack® Panel-50 kit for bonding opaque cladding elements on aluminium alloy subframe in ventilated façades.

The adhesive kit SikaTack® Panel-50 consists of the following components:

- SikaTack® Panel-50 Adhesive: one component silicone-based adhesive. Design characteristics are given in table 1.1.
- SikaTack® Panel Primer: liquid consistency primer for the treatment of surfaces (porous and non-porous).

Other ancillary products for adhesion surface preparation:

- Sika® Aktivator-205: surface pre-treatment and cleaning agent.
- SikaTack® Panel Fixing Tape: double-sided adhesive closed-cell polyethylene spacer tape. This tape is used for the initial bonding of the cladding elements until the complete curing of the SikaTack® Panel-50 Adhesive and to ensure the correct dimensions of the adhesive bead.

Components detailed information and data are given in Annex 1 of this ETA.

Other external wall cladding products (cladding elements, subframe components, thermal insulation, anchors, etc.) are not part of the kit assessed in this ETA.

**Table 1.1:** SikaTack® Panel-50 Adhesive design characteristics.

| Characteristic | Value |
|---|---|
| Thickness | e = 3,0 mm |
| Adhesive bead (bite) | b ≥ 12,0 mm |
| Maximum design tensile stress | $\sigma_{des}$ = 0,15 MPa |
| Maximum design shear stress | $\tau_{des}$ = 0,012 MPa |
| Maximum hygrothermal displacement in dynamic shear | $\Delta L_{s,des}$ = 1,35 mm |

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

The SikaTack® Panel-50 kit is intended for bonding opaque cladding elements on aluminium alloy subframes with vertical profiles in ventilated façades (rainscreens). Substrate materials intended to be used with SikaTack® Panel-50 kit are given in table 2.1.

**Table 2.1:** Substrate materials.

| Generic type of substrate (*) | European technical specification reference |
|---|---|
| HPL laminates | EN 438-7 |
| Ceramic tiles | EN 14411 |
| TMCP - Thin metal composite panels | EAD 210046-00-1201 & EOTA TR 038 |
| Anodised aluminium and aluminium mill finish | EN 755 & EN 1999-1 |

(*) Each specific type of substrate material to be used on-site should be verified by means of the peel test according to Annex 2 of EAD 250005-00-0606. Annex 3 of this ETA includes the specific trade name substrate materials accepted by the manufacturer to be used with SikaTack® Panel-50 kit. The assessment of the panels for the use as external wall cladding elements glued to the subframe is not covered, neither by the EAD 250005-00-0606, nor by this ETA.

The provisions made in this European Technical Assessment are based on an assumed working life of at least 25 years for SikaTack® Panel-50 kit. The indications given on the working life cannot be interpreted as a guarantee given by the manufacturer or the assessment body, 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.

Detailed information and data regarding design, installation, maintenance and repair criteria are given in Annex 2.

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

The assessment of SikaTack® Panel-50 kit for the intended use was performed following EAD 250005-00-0606 *Adhesive for wall cladding (March 2018)*.

**Table 3.1**: Summary of the SikaTack® Panel-50 kit performance (see also detailed performance in relevant sections).

| **Product:** | SikaTack® Panel-50 kit | **Intended use:** | Bonding opaque cladding elements on aluminium alloy subframes of external wall claddings in ventilated façades (rainscreens). |
|---|---|---|---|

| **Basic Works Requirement** | **ETA section** | **Essential characteristic** | | **Performance** |
|---|---|---|---|---|
| BWR 2<br>Safety in case of fire | 3.1 | Reaction to fire | | Depending on the cladding element. See section 3.1 |
| BWR 3<br>Hygiene, health and the environment | --- | Content and/or release of dangerous substances | | Not assessed |
| BWR 4<br>Safety and accessibility in use | 3.2 | Initial mechanical resistance | + 23 ºC | $\sigma_{u,c}$ = 1,45 MPa |
| | | | + 80 ºC | $\sigma_{u,c}$ = 1,47 MPa |
| | | | - 20 ºC | $\sigma_{u,c}$ = 1,39 MPa |
| | 3.3 | Residual mechanical resistance | Ageing under temperature and high humidity | $\sigma_{u,c}$ = 0,97 MPa |
| | | | Immersion in water | $\sigma_{u,c}$ = 1,31 MPa |
| | | | High humidity and NaCl atmosphere | $\sigma_{u,c}$ = 1,32 MPa |
| | | | High humidity and $SO_2$ atmosphere | $\sigma_{u,c}$ = 1,00 MPa |
| | | | Mechanical fatigue in tension | $\sigma_{u,c}$ = 1,12 MPa |
| | 3.4 | Shear under cyclic loading | | $\sigma_{u,c}$ = 1,24 MPa<br>$S_{t,m}$ = 9,7% |
| | 3.5 | Shear creep and climatic ageing | | $S_{tv,c}$ = 0,52 mm |
| | 3.6 | Tear resistance | | $\sigma_{u,c}$ = 0,95 MPa |
| Durability | 3.7 | Shrinkage | | See table 3.5 |
| | | Gas inclusion | | Not relevant |
| | | Effects of materials in contact | | See table 3.5 |
| | | Specific mass | | |
| | | Tensile elastic modulus | | |
| | | Flow resistance | | |
| | | Hardness | | |
| | | Thermogravimetric analysis | | |
| | | Colour | | |

## 3.1 Reaction to fire

The reaction to fire of SikaTack® Panel-50 kit has been assessed according to section 2.2.2 of EAD 250005-00-0606.

The reaction to fire of SikaTack® Panel-50 kit depends on the specific cladding element. See table 3.2 for the reaction to fire according to Commission Delegated Regulation (EU) 2016/34 and EN 13501-1.

For other cladding elements, reaction to fire of SikaTack® Panel-50 kit has not been assessed.

**Table 3.2**: Reaction to fire depending on the specific cladding element materials.

| Generic cladding element material | Specific cladding element | Reaction to fire class |
|---|---|---|
| Ceramic tile | Laminam® | B-s2,d2 |
| TMCP | Alucobond® A2 | B-s2,d2 |

*Note: A European reference fire scenario has not been laid down for façades. In some Member States, the classification of external wall claddings according to EN 13501-1 might not be sufficient for the use in façades. An additional assessment of external wall claddings according to national provisions (e.g. on the basis of a large-scale test) might be necessary to comply with Member State regulations, until the existing European classification system has been completed.*

## 3.2 Initial mechanical resistance

Initial mechanical resistance has been tested according to section 2.2.4 of EAD 250005-00-0606.

Test results are given in table 3.3.

**Table 3.3:** SikaTack® Panel-50 mechanical resistance.

| Test type | | Breaking tensile stress (MPa) | | Elongation at break (%) | | Ratio | Cohesive rupture (%) |
|---|---|---|---|---|---|---|---|
| | | $\sigma_{u,m}$ | $\sigma_{u,c}$ | $\varepsilon_{u,m}$ | $\varepsilon_{u,c}$ | $\Delta x_m$ | $C_{r,m}$ |
| Initial | NT | 1,55 | 1,45 | 283 | 224 | --- | 100 |
| | HT | 1,59 | 1,47 | 218 | 175 | 1,03 | 100 |
| | LT | 1,51 | 1,39 | 269 | 193 | 0,97 | 99 |
| Residual | HT+HR | 1,25 | 0,97 | 240 | 188 | 0,81 | 96 |
| | H2O | 1,39 | 1,31 | 261 | 193 | 0,90 | 98 |
| | HR+NaCl | 1,51 | 1,32 | 261 | 190 | 0,97 | 99 |
| | HR+SO2 | 1,45 | 1,00 | 253 | 117 | 0,94 | 97 |
| | MFT | 1,36 | 1,12 | 262 | 183 | 0,88 | 97 |
| Shear under cyclic loading (SCL) | | 1,42 | 1,24 | 250 | 184 | 0,91 | 94 |
| Tear Resistance (TR) | | 1,06 | 0,95 | 255 | 137 | 0,68 | 98 |
| Effects of materials in contact | | 1,33 | 0,95 | 229 | 84 | 0,85 | 99 |

Where:

NT = At normal temperature, +18 ºC to +23 ºC.
HT = At high temperature, +80 ºC ± 1 ºC.
LT = At low temperature, -20 ºC ± 1 ºC.
HT+HR = 1004 ± 4 hours at high temperature, 60 ºC ± 2 ºC and high relative humidity, 85 ± 2 %.
$H_2O$ = After immersion in water for 7 days at normal temperature.
HR+NaCl = After high humidity and NaCl atmosphere for 480 ± 2 hours.
HR+$SO_2$ = After high humidity and $SO_2$ atmosphere.
MFT = After mechanical fatigue in tension.
SCL = Shear under cyclic loading.
TR = Tear Resistance.
m = Mean (average) value.
c = Characteristic value giving 75% confidence that 95% of the test results will be higher than this value.

## 3.3 Residual mechanical resistance

Residual mechanical resistance has been tested according to section 2.2.5 of EAD 250005-00-0606.

Test results are given in table 3.3.

## 3.4 Shear under cyclic loading

Shear under cyclic loading has been tested according to section 2.2.6 of EAD 250005-00-0606.

Test results are given in table 3.3. In addition, the obtained value for the stabilization load is $S_{t,m}$ = 9,7%.

## 3.5 Shear creep and climatic ageing

Shear creep and climatic ageing has been tested according to section 2.2.7 of EAD 250005-00-0606.

Test results are given in table 3.4.

**Table 3.4:** SikaTack® Panel-50 shear creep results.

| Test type | | Vertical displacement after 168 ± 4 h (mm) | | Vertical displacement after 1004 ± 4 h (mm) | | Stabilization of vertical displacement (mm) | |
|---|---|---|---|---|---|---|---|
| | | $d1_m$ | $d1_c$ | $d2_m$ | $d2_c$ | $Stv_m$ | $Stv_c$ |
| Shear creep and climatic ageing | HT+HR | 0,85 | 1,19 | 1,21 | 1,60 | 0,36 | 0,52 |

Where:
HT+HR = 1004 ± 4 hours at high temperature (60 ºC ± 2 ºC) and high relative humidity (85 ± 2 %).
m = Mean (average) value.
c = Characteristic value giving 75% confidence that 95% of the test results will be lower than this value.

## 3.6 Tear resistance

Tear resistance has been tested according to section 2.2.8 of EAD 250005-00-0606.

Test results are given in table 3.3.

## 3.7 Durability

Relevant durability characteristics of SikaTack® Panel-50 Adhesive have been tested according to section 2.2.9 of EAD 250005-00-0606.

Test results are given in table 3.5.

**Table 3.5:** SikaTack® Panel-50 Adhesive durability characteristics test results.

| Characteristic | Reference | Value |
|---|---|---|
| Shrinkage | EN ISO 10563 | Change in mass: $\Delta m$ = - 2,7% (*)<br>Change in volume $\Delta V$ = - 4,1% (*) |
| Effects of materials in contact | Section 2.2.9.3 of EAD 250005-00-0606 | See table 3.3.<br>No decolouration has been observed |
| Specific mass | EN ISO 1183-1 | 1,35 kg/l |
| Tensile elastic modulus | EN ISO 527-3 | 2,65 MPa |
| Flow resistance | EN ISO 7390, method A | No flow |
| Hardness Shore A | EN ISO 868 | 41,4 |
| Thermogravimetric analysis | EN ISO 11358-1 | Curve kept in ETA technical dossier |
| Colour | EN ISO 11664-4 | Grey |

(*) The symbol "-" indicates a decrease of mass or volume.

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

According to the decision[1] 1999/470/EC of the European Commission for construction adhesives, as amended by decision[2] 2001/596/EC of 8 January 2001, the systems of AVCP (see EC delegated regulation (EU) No 568/2014 amending Annex V to Regulation (EU) 305/2011) given in the following table applies.

**Table 4.1:** Applicable AVPC system.

| Product | Intended use(s) | Level(s) or class(es) | AVCP System(s) |
|---|---|---|---|
| Structural adhesives | For uses subject to reaction to fire regulations | See table 3.2 | 3 |
| | For structural uses in buildings and other civil engineering works | Any | 2+ |

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

All the necessary technical details for the implementation of the AVCP system are laid down in the *Control Plan* deposited with the ITeC[3], with which the factory production control shall be in accordance.

Issued in Barcelona on 4th April 2024

by the Catalonia Institute of Construction Technology.

Ferran Bermejo Nualart

Technical Director, ITeC

[1] Official Journal of the European Union (OJEU) L184 of 17/07/1999.

[2] Official Journal of the European Union (OJEU) L209 of 02/08/2001.

[3] The *Control Plan* is a confidential part of the ETA and is only handed over to the notified certification body involved in the assessment and verification of constancy of performance.

## ANNEX 1: Components description

Information included in tables A1.1 to A1.4 has been taken from the technical data sheets of the manufacturer.

**Table A1.1:** SikaTack® Panel-50 Adhesive.

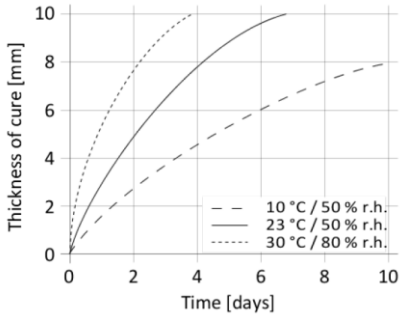
| **Typical Product Data** | **Reference** | **Value** |
|---|---|---|
| Chemical base | --- | 1-component silicone |
| Colour | CQP 001-1 | Grey |
| Cure mechanism | --- | Moisture-curing |
| Density (uncured) | --- | 1,4 kg/l |
| Non-sag properties | CQP 061-4 / ISO 7390 | Good |
| Application temperature ambient | --- | 5 ºC to 40 ºC |
| Skin time at 23 ºC / 50% RH | CQP 019-1 | 25 min. |
| Curing speed | CQP 049-1 |  |
| Shore A-hardness | CQP 023-1 / ISO 7619-1 | 38 |
| Tensile strength | CQP 036-1 / ISO 527 | 2,1 MPa |
| Elongation at break | CQP 036-1 / ISO 527 | 450% |
| Tear propagation resistance | CQP 045-1 / ISO 34 | 7 N/mm |
| Service temperature | --- | - 40 ºC to 150 ºC |
| Shelf life storage below 25 ºC | CQP 016-1 | 9 months |
| CQP = Corporate Quality Procedure. | | |

**Table A1.2:** SikaTack® Panel Primer.

| **Typical Product Data** | **Reference** | **Value** |
|---|---|---|
| Chemical base | --- | Solvent-based Epoxy solution |
| Colour | CQP 001-1 | Black |
| Solid content | --- | 32% |
| Application temperature | --- | 5 ºC to 40 ºC |
| Application method | --- | Brush, felt or foam applicator |
| Consumption | --- | 50 ml/m$^2$ approx. (*) |
| Flash-off time | --- | 10 min. (≥ 15 ºC)<br>30 min. (< 15 ºC)<br>8 hours (maximum) |
| Shelf life storage below 25 ºC, sealed container in dry place | CQP 016-1 | 9 months |
| CQP = Corporate Quality Procedure.<br>(*) Depending on substrate porosity surface. | | |

**Table A1.3:** Sika® Aktivator-205.

| **Typical Product Data** | **Reference** | **Value** |
|---|---|---|
| Chemical base | --- | Solvent-based adhesion promoter |
| Colour | --- | Colourless, clear |
| Application temperature | --- | 5 ºC to 40 ºC |
| Application method | --- | Wiping with lint-free paper towel |
| Consumption | --- | 20 ml/m$^2$ approx. (*) |
| Flash-off time at 23 ºC / 50% RH (**) | --- | Minimum: 10 min.<br>Maximum: 2 hours |
| Shelf life storage below 25 ºC, sealed container in dry place | --- | 12 months |
| CQP = Corporate Quality Procedure.<br>(*) Depending on substrate porosity surface.<br>(**) In specific applications, temperature and flash-off time may be different. | | |

**Table A1.4:** SikaTack® Panel Fixing Tape.

| **Typical Product Data** | **Reference** | **Value** |
|---|---|---|
| Chemical base | --- | Closed cell polyethylene foam core with pressure sensitive adhesive |
| Colour | --- | Anthracite. |
| Section dimension | --- | 3 mm x 12 mm |
| Density | --- | 0,064 g/cm$^3$ |
| Tensile strength | ISO 527 | MD: 25 N/15 mm<br>TD: 20 N/15 mm |
| Elongation at break | ISO 527 | MD: 250%<br>TD: 150% |
| Compressive strength | ISO 844 | 0,02 N/mm$^2$ (10% deflection)<br>0,05 N/mm$^2$ (25% deflection)<br>0,12 N/mm$^2$ (50% deflection) |
| Peel adhesion | FTM 1 | 23 N/25 mm (180º, 30 min., stainless steel) |
| Resistance to shear | FTM 8 | 150 h (1 kg / 25 mm x 25 mm) |
| Application temperature | --- | 5 ºC to 35 º C |
| Service temperature | --- | - 40 ºC to 70 ºC |
| Shelf life storage below 25 ºC, dry and sunlight protected | --- | 24 months |
| FTM = FINAT Test Method.<br>MD = Longitudinal direction.<br>TD = Transversal direction. | | |

# ANNEX 2: Design, installation, maintenance and repair criteria

## A2.1 Design

The design of the external wall claddings in ventilated façades using SikaTack® Panel-50 kit for bonding the opaque cladding elements on aluminium alloy subframe of vertical profiles should consider:

- Failure of the adhesive bead might cause risk to human life and/or have considerable economic consequences. Therefore, special care should be considered with respect to:
  - The verification of the minimum dimension of the adhesive bead bite, bead length and minimum number of beads by each cladding element by means of calculation, considering the design values given in table 1.1 of this ETA. National safety factors, other national provisions and specific provisions given by the kit manufacturer must be followed.
  - The verification of the adherence on the specific materials (cladding element and subframe profile) to be used on-site (see table 2.1) by means of the peel test (see Annex 2 of EAD 250005-00-0606) in normal conditioning and after ageing.
  - The verification of the specific qualification and training of the SikaTack® Panel-50 kit installer.
- It is assumed that the substrate wall meets the necessary requirements regarding the mechanical strength (resistance to static and dynamic loads) and the airtightness, as well as the relevant resistance regarding watertightness and water vapour.
- The verification of the whole external wall cladding design (including cladding elements, subframe components and anchors to the substrate wall) by means of calculation, considering the mechanical characteristic values of each component in order to resist the actions (dead loads, wind loads, higrothermal loads, etc.) applying on the specific works. National safety factors and other national provisions must be followed.
- The accommodation of the designed system movements to the substrate or structural movements.
- The execution of singular parts of the façade; construction details regarding drainage and ventilation provisions should be considered. 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.
- The corrosion protection of the metallic components taking into account the category of corrosivity of the atmosphere of works (e.g. acc. ISO 9223).
- Because usually the joints are not watertight, the first layer behind ventilated air space (e.g. insulation layer) should be composed by materials with low water absorption.

## A2.2 Installation

Installation of the external wall claddings for ventilated façades using SikaTack® Panel-50 kit should be carried out:

- According to the specifications of the manufacturer and using the components specified in this ETA.
- In accordance with the design and drawings prepared for the specific works. The manufacturer should ensure that the information on these provisions is given to those concerned.
- By appropriately qualified staff and under the supervision of the technical responsible of the specific works.
- Components shelf life and storage conditions must be respected (see tables in Annex 1 of this ETA).

## A2.3 Maintenance and repair

Maintenance of the external wall claddings for ventilated façades using SikaTack® Panel-50 kit includes inspections on-site, to observe the appearance of any damage as cracking, detachment, delamination, mould presence, corrosion presence or water accumulation due to permanent moisture or permanent irreversible deformation.

When necessary, any repair to localized damaged areas must be carried out with the same components and following the repair instructions given by the manufacturer.

## ANNEX 3: List of panels accepted by SIKA SERVICES AG to be used with SikaTack® Panel-50 kit (informative)

Table A3.1 includes the trade name of the panels that have been accepted by Sika Services AG to be to be used with SikaTack® Panel-50 kit.

This Sika Services AG acceptance is based on the results of the peel-test according to the internal Sika Corporate Quality Procedure CQP 033-1 (based on the procedure described in Annex 2 of EAD 250005-00-0606) considering the conditioning stages given in the internal procedure CQP 034-1.

The assessment of the panels for the use as external wall cladding elements glued to the subframe is not covered, neither by the EAD 250005-00-0606, nor by this ETA. Therefore, the panels given in table A3.1 have not been assessed by ITeC for the use as external wall cladding elements glued to the subframe.

**Table A3.1:** Cladding panels accepted by SIKA SERVICES AG to be used with SikaTack® Panel-50 kit.

| Generic type of substrate | Panel European technical reference | Company | Specific panel trade name |
|---|---|---|---|
| Ceramic tiles | EN 14411 | Cosentino S.A. | Dekton |
| | | Deutsche steinzeug Cremer & Breuer AG | KerAion |
| | | Florim Ceramiche S.p.A. | FLORIM MAGNUM / FLORIM |
| | | Iris Ceramica Group S.p.A | Procelain stonwere with: GHRTG44-H39 / GHST200-UB / GHRT131-UB / GHST200-KP |
| | | Laminam S.p.A. | Laminam 3+ / Laminam 5+ |
| | | Levantina y Asociados de Minerales, S.A. | Techlam (with white mesh) |
| | | Panariagroup Industrie Ceramiche S.p.A | Kerlite 5 PLUS / Kerlite 6 PLUS |
| Fibre-cement panels | EN 12467 | Eternit Schweiz AG | Swisspearl Largo: Carat, Carat HR, Avera, Reflex, Incora, Texial, Vintago, Nobilis, Nobilis HR, Planea, Planea HR, Zenor, Design, Natura, R-Color, Terra |
| HPL laminates | EN 438-7 | FunderMax GmbH | Max Exterior |
| | | Resopal GmbH | Resoplan F |
| | | Trespa International B.V. | Trespa Meteon<br>Trespa Meteon FR-KR |
| Polymer composite panels | --- | STENI AS | Steni Colour / Vision |
| | | SYSTEMPOOL, S.A. | KRION K-Life |
| TMCP - Thin metal composite panels | EAD 210046-00-1201 & EOTA TR 038 | 3A Composites GmbH | Alucobond A2 / Alucobond Plus |
| | | Alucoil,S.A. | Larson FR / Larson PE / Larson A2 / Larcore A2 |
| | | Elval Colour | Etalbond A2 / Etalbond FR |
| | | Metawell GmbH | Metawell plus/A2 |
| | | Novelis Deutschland GmbH | Novelis FF2 |
| | | STAC, S.L. | Stacbond A2 / Stacbond FR / Stacbond PE |