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Agrément Certificate
05/4218
Product Sheet 1

SIKA ADHESIVE SYSTEMS

SIKATACK PANEL ADHESIVE SYSTEM

PRODUCT SCOPE AND SUMMARY OF CERTIFICATE

This Certificate relates to the SikaTack Panel Adhesive System, a polyurethane-based bonding system suitable for fixing composite, ceramic, high-pressure laminates or cement-based rainscreen cladding panels onto aluminium support frames which are fixed to steel or concrete structures.

AGRÉMENT CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.

KEY FACTORS ASSESSED

Strength and stability — the system is acceptable provided the sub-frame and support rails are designed and installed correctly and the supporting wall able to withstand full wind loads (see section 5).

Air and water penetration — the system will perform satisfactorily provided the support frame details are such that any water driven behind the cladding is prevented from reaching the adhesive bond (see section 6).

Behaviour in relation to fire — the system can meet Class 0 requirements (see section 7).

Durability — the adhesive system is expected to have a life in excess of 30 years in normal UK conditions (see section 9).



The BBA has awarded this Agrément Certificate to the company named above for the system described herein. This system has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of First issue: 28 March 2011

Handwritten signature of Brian Chamberlain in black ink.

Brian Chamberlain
Head of Approvals — Engineering

Handwritten signature of Greg Cooper in black ink.

Greg Cooper
Chief Executive

The BBA is a UKAS accredited certification body — Number 113. The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk

Readers are advised to check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA direct.

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Regulations

In the opinion of the BBA, the SikaTack Panel Adhesive System, if used in accordance with the provisions of this Certificate, will meet or contribute to meeting the relevant requirements of the following Building Regulations:



The Building Regulations 2010 (England and Wales)

Requirement:	A1	Loading
Comment:		The system is acceptable for use as set out in sections 3.4, 3.8 and 5.1 to 5.5 of this Certificate.
Requirement:	B4(1)	External fire spread
Comment:		The system can meet the Class 0 requirements. See sections 7.1 to 7.4 of this Certificate.
Requirement:	C2(b)	Resistance to moisture
Comment:		The system will contribute to meeting this Requirement. See sections 6.1 to 6.5 of this Certificate.
Requirement:	Regulation 7	Materials and workmanship
Comment:		The system is acceptable. See section 9 and the <i>Installation</i> part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)(2)	Fitness and durability of materials and workmanship
Comment:		The use of the system satisfies the requirements of this Regulation. See section 9 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards – construction
Standard:	1.1(a)(b)	Structure
Comment:		The system is acceptable for use as set out in sections 3.4, 3.8 and 5.1 to 5.5 of this Certificate.
Standard:	2.4	Cavities
Standard:	2.6	Spread to neighbouring buildings
Standard:	2.7	Spread on external walls
Comment:		The system can comply with these Standards with reference to clauses 2.6.4 ⁽¹⁾⁽²⁾ and 2.7.1 ⁽¹⁾⁽²⁾ respectively. See sections 7.1 to 7.4 of this Certificate.
Standard:	3.10	Precipitation
Comment:		The system will contribute to satisfying this Standard, with reference to clauses 3.10.1 ⁽¹⁾⁽²⁾ to 3.10.3 ⁽¹⁾⁽²⁾ . See sections 6.1 to 6.5 of this Certificate.
Regulation:	12	Building standards – conversions
Comment:		All comments given for this system under Regulation 9 also apply to this Regulation, with reference to clause 0.12.1 ⁽¹⁾⁽²⁾ and Schedule 6 ⁽¹⁾⁽²⁾ . (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).



The Building Regulations (Northern Ireland) 2000 (as amended)

Regulation:	B2	Fitness of materials and workmanship
Comment:		The system is acceptable. See section 9 and the <i>Installation</i> part of this Certificate.
Regulation:	C4(a)(b)	Resistance to ground moisture and weather
Comment:		The system will contribute to satisfying this Regulation. See sections 6.1 to 6.5 of this Certificate.
Regulation:	D1	Stability
Comment:		The system is acceptable for use as set out in sections 3.4, 3.8 and 5.1 to 5.5 of this Certificate.
Regulation:	E5(a)	External fire spread
Comment:		The system can meet the Class 0 requirements. See sections 7.1 to 7.4 of this Certificate.

Construction (Design and Management) Regulations 2007

Construction (Design and Management) Regulations (Northern Ireland) 2007

Information in this Certificate may assist the client, CDM co-ordinator, designer and contractors to address their obligations under these Regulations.

See section: 3 *General* (3.1) of this Certificate.

Non-regulatory Information

NHBC Standards 2011

NHBC accepts the use of SikaTack Panel Adhesive System, when installed and used in accordance with this Certificate, in relation to *NHBC Standards, Part 6 Superstructure (excluding roofs), Chapter 6.9 Curtain walling and cladding, Section D8, Rainscreen cladding.*

General

This Certificate is a Confirmation of a German Agrément No Z-10.8 - 408 issued by DIBt to Sika Deutschland GmbH.

Technical Specification

1 Description

1.1 The SikaTack Panel Adhesive System consists of four separate components:

- Sika Aktivator 205 — a de-greaser and adhesion promoter for use on aluminium and non-porous substrates forming the bond surface on support frames and cladding panels
- SikaTack Panel Primer — a single-part, epoxy polyurethane-based primer for use on porous and non-porous substrates forming the bond surface on support frames and cladding panels
- SikaTack Double-sided Adhesive Tape — a closed cell, polyethylene adhesive tape to provide temporary support to the panel while the adhesive is curing and to regulate the thickness and spread of the adhesive
- SikaTack Panel Adhesive — a single part, moisture curing, polyurethane resin adhesive.

1.2 This Certificate only covers the adhesive system when used in conjunction with the proprietary cladding systems specified in section 3.1.

1.3 The support frame, any sub-frame, the fixing to the substrate wall and other associated construction details are outside the scope of this Certificate.

1.4 Factory production control on the system is exercised by a specially appointed inspection agency, reporting back to the German approval body DIBt.

2 Delivery and site handling

2.1 The Aktivator, primer and adhesive are supplied in hermetically sealed containers with labels bearing details such as application, contents and quantity.

2.2 The double-sided adhesive tape is supplied in rolls suitably labelled.

2.3 All the components of the system must be protected from sunlight and the elements during transportation and storage. The Certificate holder's storage instructions should be followed.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on the SikaTack Panel Adhesive System.

Design Considerations

3 General

3.1 For the purposes of this Certificate, the SikaTack Panel Adhesive System may only be used in conjunction with approved cladding systems of the correct type as listed on the BBA website (www.bbacerts.co.uk).

3.2 The adhesive system is suitable for fixing composite, ceramic, high-pressure laminates or cement-based rainscreen cladding panels onto aluminium support frames which are fixed to steel or concrete structures.

3.3 The support frame must be of a design consisting of vertical rails only and must be installed to minimise accumulation of moisture on the bonded area.



3.4 The wall and sub-frame on which the adhesive system will be used to fix the cladding must be structurally sound and constructed in accordance with the requirements of the relevant building regulations and national standards.

3.5 The wall on which the cladding using the adhesive system is to be fixed must be watertight to prevent possible moisture ingress to the substrate wall at fixing penetrations.

3.6 Insulation behind the cladding must be of a rigid structure (eg boards) and suitably fixed to the inner leaf to resist the forces of any wind suction acting upon it. The ventilation pathway behind the cladding must retain a minimum gap of 25 mm, or as required by the designer/specifier, and must not be allowed to become blocked nor the insulation dislodged to a position where it may be vulnerable to wetting.

3.7 It is essential that the cladding is installed in accordance with the manufacturer's instructions and, where relevant, the requirements of this Certificate.



3.8 A suitably qualified engineer or appropriately qualified person must check all design aspects of each installation.

4 Practicability of installation

The system should only be installed by cladding contractors who have been trained and approved by the Certificate holder.

5 Strength and stability

Wind loading



5.1 The adhesive bond may be assumed to have the mechanical properties of:

- allowable tensile stress $0.15 \text{ N}\cdot\text{mm}^{-2}$
- allowable shear stress $0.12 \text{ N}\cdot\text{mm}^{-2}$
- allowable shear deformation 1 mm
- theoretical bond width 10 mm.

5.2 The appropriate Certificate relating to a chosen cladding system (see section 3.1) may be referred to for checking its mechanical properties and wind resistance.

5.3 When calculating wind loads, higher pressure coefficients applicable to corners of the building should be used. Wind loads should be calculated in accordance with BS EN 1991-1-4 : 2005 and BS 6399-2 : 1997.

5.4 The sub-frame and the support rails should be so designed as to limit mid-span deflections to $L/200$, and cantilever deflections to $L/150$.

5.5 The supporting wall must be fully restrained and able to take the full wind load bearing upon it. The cladding system, particularly as far as racking resistance is concerned, does not contribute in this respect.

Impact loading

5.6 The use of the adhesive system may contribute to improving the impact resistance of the cladding. However this has not been investigated.

6 Air and water penetration



6.1 The system may only be used with open-jointed, back-ventilated, drained cladding systems. Such systems will not be airtight or watertight. See section 3.1 for more information.

6.2 To prevent deterioration at the fixings the substrate wall should preferably be watertight.

6.3 To prevent damage to the substrate wall, a water-repellent insulant is recommended where insulation is used behind the cladding.

6.4 Provided that the inner wall is airtight, the effect of pressure equalisation will be to prevent rain being readily driven beyond the cladding. The support frame details should be such that any water driven behind the cladding is not allowed to accumulate on the adhesive bond but is removed by natural ventilation and drainage.

6.5 Where pressure equalisation may not apply, insulation behind the cladding should be protected by a breather membrane.

7 Behaviour in relation to fire



7.1 Support frames of aluminium construction are non-combustible and as such have a Class 0 fire rating in accordance with national Building Regulations.

7.2 The behaviour in fire of the cladding sheets and the fire resistance of particular assembled systems will depend on the sheets chosen, and are not covered by this Certificate. The user/specifier should consult the manufacturer of the chosen cladding system to ensure that the system meets the regulatory requirements. Suitable proof of this would be based on test data from an established source, eg a UKAS⁽¹⁾-accredited laboratory.

(1) United Kingdom Accreditation Service.

7.3 The incorporation of combustible material behind the cladding must be avoided wherever possible. Any insulation must be non-combustible.

7.4 Cavity barriers must be incorporated behind the cladding as required under the national Building Regulations. Measures should be taken to ensure that these do not block essential ventilation pathways, for example by use of intumescent cavity barriers (not covered by this Certificate) or overhanging incombustible breaks at each floor level.

8 Maintenance and repair

8.1 The cleaning procedure will depend on the particular cladding sheets used. However, in general, the use of high-temperature water, detergents or solvents should be avoided. For the removal of more persistent stains, the cladding manufacturer's advice should be sought.

8.2 Checks should be carried out periodically to ensure that ventilation and drainage pathways remain clear. This ensures efficient removal of moisture and contaminants from the adhesive bond edge.

8.3 In a repair, the cladding panel is cut on both sides of the vertical rail to allow access to the adhesive bead, which is then cut by a cheese wire or oscillating blade. The old adhesive and double-sided tape are removed, the bond area cleaned, and a new panel fitted using the procedures given in sections 10 and 11.

9 Durability



Based on knowledge of the component materials and available test results, and assuming no exposure to sunlight, the adhesive system is expected to have a life in excess of 30 years in normal UK conditions. Generally, this is comparable to the life expectancy of the cladding systems with which it is used.

Installation

10 General

10.1 The adhesive system must be installed in accordance with the Certificate holder's recommendations, the requirements of this Certificate and the design specification.

10.2 Installers must be trained and approved by the Certificate holder.

10.3 All design aspects of the chosen cladding system, including strength, thermal movement, ventilation and drainage, should be checked by a qualified engineer or other appropriately qualified person before installation. For strength calculations, the appropriate mechanical properties given in sections 3 and 5 may be used.

10.4 The ambient air temperature during installation must be between 5°C and 35°C and the relative humidity no greater than 75%. Furthermore, the bonding surfaces must be at a temperature of at least 3°C above the dew-point of air at the installation site. For further guidance, the advice of the Certificate holder should be sought.

10.5 To achieve full wind resistance, the adhesive should be allowed to cure for at least five hours within the recommended temperature range. Extremely dry atmospheric conditions, eg less than 30% relative humidity, should be avoided.

11 Procedure

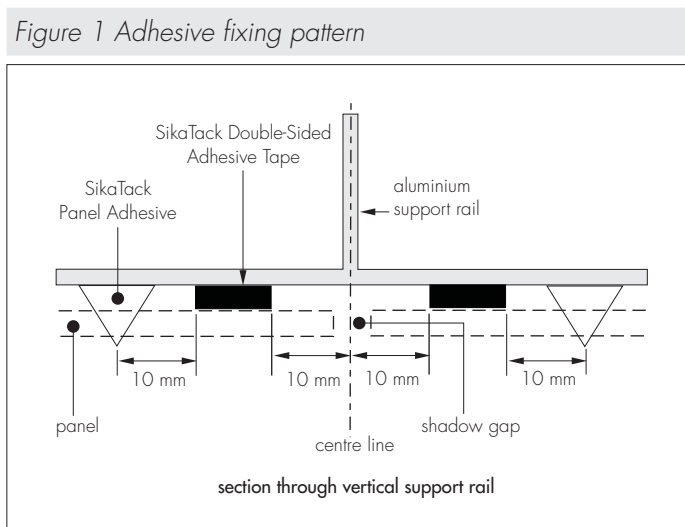
11.1 For a given cladding system, the vertical rails are set out and fixed to the substrate wall, or sub-frame, in accordance with the design drawings. The rails must be parallel, and in a single vertical plane, so that a uniform adhesive bond with the cladding is achieved. To ensure a satisfactory installation, this stage must be carefully checked.

11.2 A predetermined horizontal datum is first marked on the support frame. Correct fixing of the first row of panels to this datum is critical in achieving uniform gaps and panel alignment throughout the installation.

11.3 The bonding surface of a mill-faced aluminium sub-frame is roughened using a suitable abrasive.

11.4 , The bonding surfaces of the carrier rails and cladding panels are de-greased using SikaTack Aktivator 205, primed using the SikaTack Panel Primer, and allowed to dry. SikaTack Panel Adhesive must be applied when the primer is dry and within eight hours of its application. Should this time be exceeded, the bond surfaces must be re-primed.

11.5 The SikaTack Double-sided Adhesive Tape is applied to the aluminium rail (see Figure 1), to provide temporary support to the panel while the adhesive is curing.



11.6 A continuous, uniform bead of SikaTack Panel Adhesive is applied⁽¹⁾ near the opposite edge of the rail, approximately 10 mm away from the assembly tape.

(1) Extruded through a pre-cut nozzle giving a triangular run of adhesive 10 mm in height and 8 mm in width.

11.7 After removing the protective strip from the assembly tape, the shadow gap trims, where specified or required, are bonded into position.

11.8 The initial panel is positioned near its bottom edge on the freshly applied adhesive and, after careful alignment, pressed firmly against the assembly tape to provide continuous contact with it.

11.9 Subsequent panels are applied in a similar manner using suitable packers to achieve a continuous and uniform shadow gap between panels. For heavy panels, additional temporary supports may be required.

11.10 After initial set of the adhesive, any packers or temporary supports are removed.

11.11 Careful planning is essential to ensure that, where a gap is provided to allow for thermal movement of the vertical support rail, the cladding panel does not 'straddle' this gap.

Technical Investigations

12 Investigations

12.1 Based on DIBt Certificate No Z-10.8 - 408, an assessment was made of the system's mechanical resistance, durability, behaviour in relation to fire and practicability of installation.

12.2 An assessment was made of the manufacturing process, associated quality control procedures, and the system's history of performance in use.

12.3 Visits to installations in progress were made to assess the bonding system's practicability of installation.

12.4 The Certificate holder's technical literature and drawings were examined for general content.

Bibliography

BS 476-7 : 1997 *Fire tests on building materials and structures — Method of test to determine the classification of the surface spread of flame of products*

BS 6399-2 : 1997 *Loading for buildings — Code of practice for wind loads*

BS EN 1991-1-4 : 2005 *Eurocode 1 : Actions on structures — General actions — Wind actions*

13 Conditions

13.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is granted only to the company, firm or person named on the front page — no other company, firm or person may hold or claim any entitlement to this Certificate
- is valid only within the UK
- has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English law.

13.2 Publications and documents referred to in this Certificate are those that the BBA deems to be relevant at the date of issue or re-issue of this Certificate and include any: Act of Parliament; Statutory Instrument; Directive; Regulation; British, European or International Standard; Code of Practice; manufacturers' instructions; or any other publication or document similar or related to the aforementioned.

13.3 This Certificate will remain valid for an unlimited period provided that the product/system and the manufacture and/or fabrication including all related and relevant processes thereof:

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- remain covered by a valid German Agrément and
- are reviewed by the BBA as and when it considers appropriate.

13.4 In granting this Certificate, the BBA is not responsible for:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- individual installations of the product/system, including the nature, design, methods and workmanship of or related to the installation
- the actual works in which the product/system is installed, used and maintained, including the nature, design, methods and workmanship of such works.

13.5 Any information relating to the manufacture, supply, installation, use and maintenance of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used and maintained. It does not purport in any way to restate the requirements of the Health & Safety at Work etc Act 1974, or of any other statutory, common law or other duty which may exist at the date of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care. In granting this Certificate, the BBA does not accept responsibility to any person or body for any loss or damage, including personal injury, arising as a direct or indirect result of the manufacture, supply, installation, use and maintenance of this product/system.

