



GENERAL GUIDELINE

SikaTack® Panel System

23.09.2015 / VERSION 1 / SIKA SERVICES AG

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1 PURPOSE AND GENERAL INFORMATION

This document contains recommendations and hints for the application of the SikaTack® Panel System for wall cladding applications. This guideline is relevant for the following products:

- SikaTack® Panel 1-part polyurethane adhesive
- SikaTack® Panel-10 1-part polyurethane adhesive
- SikaTack® Panel-50 1-part silicone adhesive

The information herein is offered for general guidance only. Since structural bonding applications are critical applications and conditions as well as substrates may vary greatly, customers and applicators must test the suitability of the product for each specific project and contact Sika for advice.

For detailed information about specific silicone and polyurethane products and surface pre-treatment agents please refer to the most recent Product Data Sheets (PDS) and Safety Data Sheets (SDS) (see www.sika.com).



Figure 1: General Health and Safety Instructions

2 INTRODUCTION

The SikaTack® Panel System is an adhesive system for economic and concealed installation of wall cladding. Part of the system is the elastic adhesives, for long and durable fixation of the panels even under harsh climate conditions. In addition the double-sided adhesives tape for keeping the distance between panel and substructure and for immediate fixation of the panel. Finally the system contains corresponding products for the pretreatment of substrates.

The SikaTack® Panel System has proven its suitability for internal and exterior wall cladding in thousands of façade projects and under various climatic conditions. The SikaTack® Panel System is used on all common panels and substructures.

3 DESIGN AND JOINT DIMENSIONING

Joints must be properly dimensioned as changes are no longer possible after assembling and installation or adhesive application, respectively. Basis for calculation of the necessary joint dimensions are the technical values of the adhesive and the adjacent building materials, the exposure of the building elements, their construction, size and weight as well as external loads (wind, snow, temperature, etc.).

Generally, due to the way of installation, the joint has the dimension of 12 mm width and 3 mm thickness.

4 WORKING PLACE CONDITIONS

The working place must be as dust-free and dry as possible. All substrates and adhesives must never be exposed to direct sun radiation, rain, snow or other direct weathering impacts. The optimum application temperature of the products is between 15 °C and 30 °C (60 – 85 °F). As this may be difficult to comply with on construction site, the SikaTack® Panel System may be processed within 5 – 35 °C (40 – 95 °F). The relative humidity should not exceed 75%. After installation, the temperature may not fall below +5 °C for five hours. The temperature of the components to be bonded (façade panels, sub-frames) must be at least 3 °C higher than the dew point of the air, to avoid condensation on the surfaces.

5 SYSTEM STRUCTURE

5.1 VERTICAL CARRIER RAIL SYSTEM

The substructure must be approved by the responsible supervisory body and in line with the relevant local requirements. For any kind of coatings on the substructure, the suitability has to be tested and approved for the specific application. The substructure should be able to compensate the thermal expansion of the panels to minimize the thermal dilatation applied to the elastic bonding joints.

5.2 DESIGN AND DIMENSIONS

Design and dimension of the substructure depends on the constructional situation and used system. The distances between the sub-frame profiles and their width are determined by the load requirements and by the type of panel used.

Each project requires specific design detailing. The framing must be designed by others in accordance with all relevant standards and appropriate consideration granted to design and manufacture. Project specific documented calculations and drawings should be issued by a qualified and competent person. Sika is unable to provide or approve designs other than the specific interface between rainscreen panels and the vertical sub-frame profile incorporating the SikaTack® Panel adhesive system.

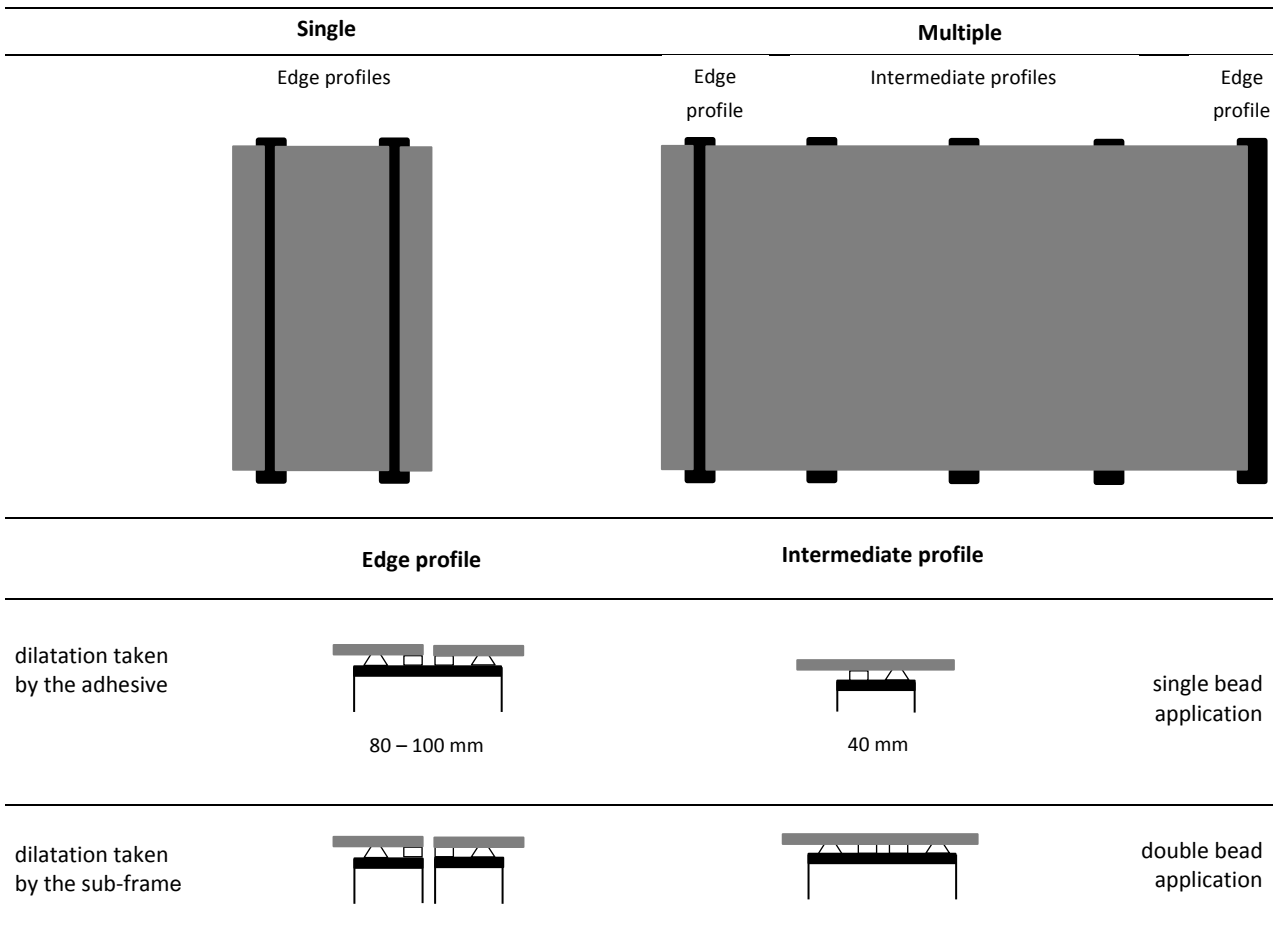


Figure 2: Illustration of framing

5.3 PANELS

The rainscreen panel brand must have proof of suitability for use ideally with local accreditation (local accreditation body). Relevant panel manufacturer's instructions with respect to structural adhesive fixation must be adhered to and incorporated within the full rainscreen build up design.

Movement joints:

For the correct design and dimensioning of the system and for correct anchoring of the vertical aluminum or wood substructure, all standard building regulations for cladding apply.

The vertical aluminum profiles or wooden battens must be parallel and even in order to ensure uniform, stress free adhesion of the cladding panels. Joints in the substructure must not be bonded over by panels. The distances between the panels at joints must be sufficiently wide to avoid compression of the panels due to thermal movement. The data of the panel manufacturer is to be compiled with expansion coefficient of the substructure. Sufficiently large openings for ventilation must be provided at the top and bottom of the system.

For the fixation of the direct substructure on the load bearing building shell, any transfer of loads or movements from the building shell to the vertical substructure and the adhesive joint has to be avoided.



These system configurations must be fully complied with as described and details and may not be changed.

6 SURFACE PRE-TREATMENT

Surfaces must be clean, dry and free from oil, grease, release agents and dust. Do not contaminate pre-treated surfaces during any phase of installation. If contamination occurs, surfaces have to be cleaned again.

The information in table 1 and table 2 is offered for general guidance only. Advice on specific pre-treatment methods based on laboratory adhesion tests will be given on request.



Sika has to test the adhesion of SikaTack® Panel System on project basis on production-run samples of the original materials used in the specific project. The use of the surface pre-treatment agents recommended in the laboratory report is mandatory; otherwise any guaranty for the adhesion behavior of SikaTack® Panel System adhesives isn't valid.

The tables below this page apply as general guidance only.

For each project, adhesion test on the actual panel type must be conducted and the suitable sequence of pre-treatment steps must be followed, what is given by the test report. Please ask your local Sika representative for specific advice.

6.1 SikaTack® Panel AND SikaTack® Panel-10

Table 1: Overview of suitable pre-treatments for SikaTack® Panel and SikaTack® Panel-10 adhesives

Substrate	Surface Pre-treatment
Anodized Aluminum	Sika® Aktivator-205 & SikaTack® Panel Primer
Mill finished Aluminum	Abrasive pad very fine & Sika® Aktivator-205 & SikaTack® Panel Primer
Untreated Wood	Abrasive pad very fine & SikaTack® Panel Primer
High Pressure Laminate	Sika® Aktivator-205 & SikaTack® Panel Primer
Fiber Reinforced Panel	Grinding (80 grit) & SikaTack® Panel Primer or Grinding (80 grit) & Sika® Primer-210
Metal Composite Panel	Abrasive pad very fine & Sika® Aktivator-205 & SikaTack® Panel Primer
Ceramic Panel / Tiles	SikaTack® Panel Primer



Be aware, the overview of suitable pre-treatments for SikaTack® Panel adhesives is for general guidance only. The substrates are generically grouped even if the specific types of panels within a group may have total different surfaces and therefore may require other pre-treatments than stated in the table above.

6.2 SikaTack® Panel-50 ADHESIVE

Table 2: Overview of suitable pre-treatments for SikaTack® Panel-50 adhesive

Substrate	Surface Pre-treatment
Anodized Aluminum	Sika® Aktivator-205 or Sika® Aktivator-205 & SikaTack® Panel Primer
Mill finished Aluminum	Abrasive pad very fine & Sika® Aktivator-205 & SikaTack® Panel Primer
Untreated Wood	Abrasive pad very fine & SikaTack® Panel Primer
High Pressure Laminate	Sika® Aktivator-205 or Sika® Aktivator-205 & SikaTack® Panel Primer
Fiber Reinforced Panel	Sika® Aktivator-205* & Sika® Primer-210 or Sika® Aktivator-205* & SikaTack® Panel Primer
Metal Composite Panel	Sika® Aktivator-205 or Sika® Aktivator-205 & SikaTack® Panel Primer
Ceramic Panel / Tiles	SikaTack® Panel Primer
Enameled glass	Sika® Aktivator-100

* Instead of Sika® Aktivator-205 Grinding (80 grit) may also be used



Be aware, the overview of suitable pre-treatments for SikaTack® Panel-50 adhesive is for general guidance only. The substrates are generically grouped even the specific types of panels within a group may have total different surfaces and therefore may require other pre-treatments than stated in the table above.

6.3 APPLICATION OF Sika® Aktivator-205 & Sika® Aktivator-100



Sika® Aktivator-205 / Sika® Aktivator-100 is not a simple cleaning solvent but contains a bonding agent which forms an activating film on the substrate surface.

1. Moisten a clean, dry, oil-free and lint-free cloth or felt with Sika® Aktivator-205 / Sika® Aktivator-100 and apply it on the surface. Make sure to turn the cloth or paper to expose new surface, or replace it regularly in order to avoid wiping any residues back onto the surface.
2. The required minimum drying times are given in the latest product data sheet.
In case of doubt, contact Sika's Technical Service.
3. If pretreated parts are not bonded / sealed immediately, protect them against subsequent contamination.
4. Adhesives should be applied within 2 hours after the application of Sika® Aktivator-205 / Sika® Aktivator-100. Otherwise the procedure as described above has to be repeated before bonding. Pre-treating procedure can be repeated once only.

For more details about Sika® Aktivator-205 / Sika® Aktivator-100 refer to the actual Product Data Sheet (PDS) and Safety Data Sheet (SDS).



Tightly re-seal container with the inner plastic liner immediately after each use. Sika® Aktivator-205 / Sika® Aktivator-100 shall only be used within one month after opening the can. Discard any Sika® Aktivator-205 / Sika® Aktivator-100 that has become opaque instead of transparent, has gelled or separated.

6.4 APPLICATION OF SikaTack® Panel Primer & Sika® Primer-210

SikaTack® Panel Primer and Sika® Primer-210 shall always be applied after the surfaces have been properly cleaned and dust free and / or pre-treated with Sika® Aktivator-205 as advised.

Ideal application and surface temperature ranges between 15°C and 25°C (60°F - 75°F).

1. Apply a thin but covering coat of SikaTack® Panel Primer / Sika® Primer-210 with a felt, clean lint-free cloth or foam applicator. Make sure that this single application gives adequately dense coverage.
2. Let the primer dry for a minimum time of 30 minutes.
3. If pretreated parts are not bonded / sealed immediately, protect them against subsequent contamination. Adhesives shall be applied within 2 hours after the application of SikaTack® Panel Primer / Sika® Primer-210.

For more details about SikaTack® Panel Primer / Sika® Primer-210 refer to the actual Product Data Sheets (PDS) and Safety Data Sheets (SDS).



Apply SikaTack® Panel Primer / Sika® Primer-210 once only. Priming process must not be repeated! Tightly re-seal container immediately after each use. SikaTack® Panel Primer / Sika® Primer-210 shall only be used within one month after opening the can. Discard any primer that has gelled or separated.

7 PROCESSING AND PRODUCT APPLICATION

SikaTack® Panel adhesives are applied manually directly from cartridges or unipacks with hand or compressed air guns.

The adhesive must be applied evenly and free of air bubbles. The 1-component products form a skin after a certain time (skin time, skin-over time), which varies with ambient humidity and temperature.

Apply SikaTack® Panel adhesives in a triangular bead by using the triangular nozzle supplied (width 8 mm, height 10 mm) with at least 5 mm gap to the fixing tape and to the side of the sub-frame profiles. Some application trials will help to find the correct application speed that will form the correct joint dimension.

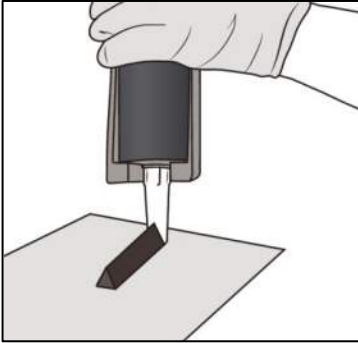




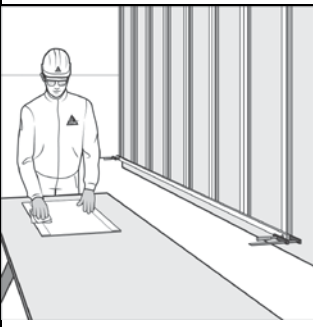



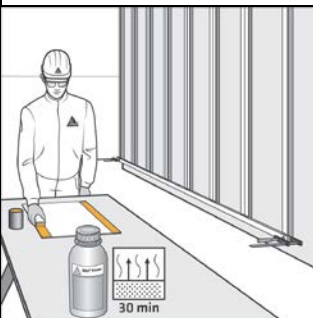



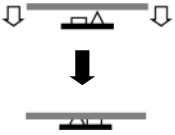





Figure 3: Application of SikaTack® Panel adhesive with a triangle bead.

8 APPLICATION STEPS

 	<p>The temperature of the building components to be bonded (cladding panels, sub-frame profiles, etc.) must be at least 3 °C higher than the dew point temperature. Ambient temperature: +5 °C min. / +35 °C max.</p> <p>Mark precisely where the first panel must be bonded on the substructure or use a reference which is fixed on the substructure.</p> <p>Record all relevant information for the job according to the form: Daily Record - Cladding Installation and Handling on page 16</p>
 	<p>The surface to be bonded must be clean, dry and free from grease. Abrading with an abrasive pad (e.g. Scotch Brite very fine) or mechanical grinding of the surfaces to be bonded with a very fine grinder, (grain 80).</p>
 	<p>Remove dust with a lint-free paper towel or cleaning paper.</p>
 	<p>Activate the bond face with Sika® Aktivator-205 (or other if required). Use a clean lint-free paper towel or cleaning paper and wipe in one direction only (dirty cloths must be replaced).</p> <p>Allow a flash off time of 10 minutes.</p>
 	<p>Shake SikaTack® Panel Primer or Sika® Primer-210 thoroughly (the movement of the steel balls in the container must be clearly audible). Apply one thin coat of SikaTack® Panel Primer or Sika® Primer-210 uniformly over the whole surface with a felt pad.</p> <p>Allow a flash off time of at least 30 minutes.</p>

		<p>Apply SikaTack® Panel Fixing Tape over the whole length of the vertical sections and parallel to the edges. Do not pull off the protective foil at this time.</p>
		<p>Apply the chosen SikaTack® Panel adhesive in a triangular bead by using the triangular nozzle supplied with at least 5 mm gap to the fixing tape and to the side of the sub-frame profile.</p> <p>Assembly time: SikaTack® Panel < 30 min SikaTack® Panel-10 < 30 min SikaTack® Panel-50 < 10 min</p>
		<p>Remove the protective foil on the SikaTack® Panel Fixing Tape. Place the cladding panel in the required position first, without the panel touching the fixing tape. After, press them firmly until they contact the SikaTack® Panel Fixing Tape.</p>

9 QUALITY ASSURANCE

Perfect results require carrying out each processing step perfectly. Sika therefore recommends that the applicators install a strict quality control system. Quality control is the primary responsibility of the processor / applicator but Sika will assist customers in setting up a comprehensive program and train staff to carry out the mandatory tests.

Please contact Sika's Technical Service for further information.

9.1 SKIN-OVER TIME AND TACK-FREE TIME

With 1-part adhesives, check the skin-over time and tack-free time as follows:

1. Apply with a spatula the adhesive to paper or film in a thickness of about 3 to 4 mm and start timer.
2. Test every three minutes whether the adhesive surface has changed by probing with a clean fingertip.

Skin-over time is the point at which the adhesive no longer sticks to the finger (picture 4 – 8).

Tack-free time is the point at which the surface feels dry (no longer tacky).



The skin-over time and tack-free time given in the Product Data Sheets were determined under standard climatic conditions (23 °C / 73 °F, 50 % relative humidity). Higher temperature and higher humidity reduce the skin-over time and tack-free time what affects application life of the adhesive.



Figure 4: Start at the beginning of the bead



Figure 5: Touch slightly the bead with the finger

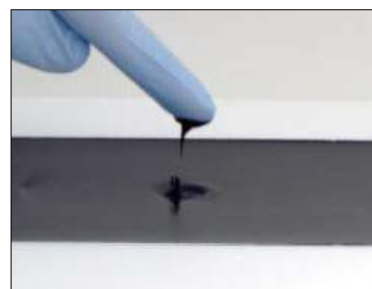


Figure 6: Remove and check for residues

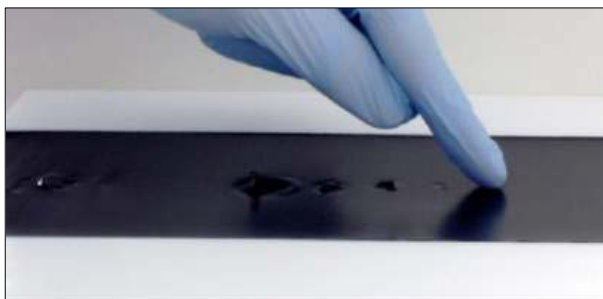


Figure 7: Always change the position for the next test



Figure 8: If no residues on your fingers are recognized the skin-over time has been reached



Please note that skin-over time and tack-free time are determined in a similar time frame and cannot be separated for SikaTack® Panel and SikaTack® Panel-10. For SikaTack® Panel-50 a clear differentiation between skin-over time and tack-free time is necessary. Assembling of the panels has to be done before skin formation!

9.2 PEEL ADHESION TEST

This test is used to check adhesion of SikaTack® Panel adhesives in combination with the used cleaning and pre-treatment steps on samples of the original panel and sub-frame substrates when exposed to a peeling force.

1. Apply the required cleaning and pre-treatment step on the original samples exactly as in the site application. Take into account specific flash-off time.
2. Extrude a bead of SikaTack® Panel adhesive of at least 150 mm length onto the prepared substrate samples.
3. Store the test specimens at room temperature for minimum 72 hours.
4. Carry out peel adhesion testing by cutting approx. 30 mm of one end of the bead from the substrate with a sharp knife or glass scraper.
5. Fold back the loose end at an acute angle of about 30°. The bead is held with one hand and pulled away from the surface so maximum tension is maintained manually.
6. Simultaneously a cut is placed every few millimeters at an angle of around 45° several times and while keep on pulling. Make sure that the cut completely goes through the bead to the substrate.
7. Repeat this procedure until at least 50 % of the bead length has been tested.

After 72 hours, the bead must not detach from the substrate during pulling (≥ 95 % cohesive failure).

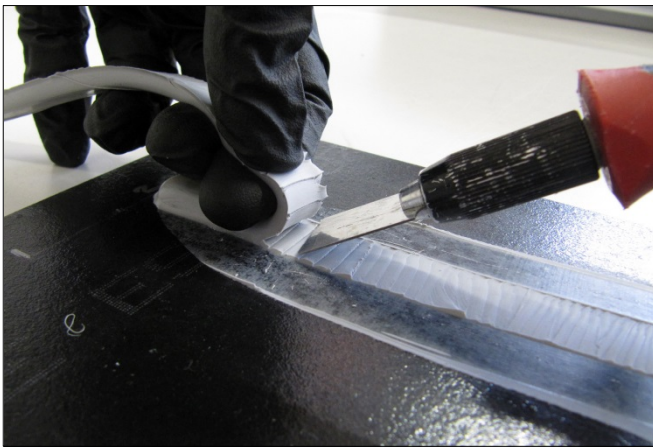


Figure 9: Peel adhesion test

9.3 RECOMMENDED BASIC QUALITY CONTROL SCHEME

Table 3: Scheme for quality control

	Test	Substrate	Frequency	Remark / Detailed Description	Requirement
1	Skin-over Time	n/a	Each time a new adhesive batch is used	Required values only valid for 23 °C / 50 % relative humidity	SikaTack® Panel: 30 – 50 min ** SikaTack® Panel-10: 50 – 70 min ** SikaTack® Panel-50: 10 – 20 min
2	Peel Adhesion*	Panel & Sub-frame	Before start installation of a new project Each time a new adhesive batch is used	72 hours (1-part products) same conditions as bonded elements are stored	≥ 95 % cohesive failure
3	Visual Inspection	Adhesive system & Panel & Sub-frame	Each day and each panel assembled	Check for: complete joint filling, joint dimension, primer presence, tapes correct applied and sticking to the substrates, drainage and ventilation ensured, adhesive bead have contact to air humidity	Joint dimensions: thickness 3 mm, width 12 mm Everything must be in line with the requirements

* For peel adhesion test use substrates originally used in project.

** Skin-over time and tack-free time are in a similar time frame.

General Guideline

SikaTack® Panel System
23.09.2015,
VERSION 1

Sika Services AG
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CH-8048 Zurich

10 DAILY RECORD - CLADDING INSTALLATION AND HANDLING

General Information			
Contractor Name		Address	
Project name		Address	
Name of applicator			
Installation Date	Start Date	End Date	
Training obtained	Yes <input type="checkbox"/> No <input type="checkbox"/>	When	
Weather	Sunny <input type="checkbox"/>	Overcast <input type="checkbox"/>	Rainy <input type="checkbox"/>
Air Temperature	Morning: Min. °F / °C	Midday: Min. °F / °C	Indicate °F <input type="checkbox"/> °C <input type="checkbox"/>
Air Humidity	%	%	
Construction Details			
Material of Panel Brand name		Type	
Dimensions	Max. length: Max. width:	Thickness:	Max. weight:
Wood Note: Moisture content of wood < 14%	Dry on surface <input type="checkbox"/> Dust free <input type="checkbox"/>	None impregnation <input type="checkbox"/>	Planed <input type="checkbox"/>
Aluminum	Finish Dry <input type="checkbox"/> Dust free <input type="checkbox"/>	Free of grease <input type="checkbox"/>	Smooth <input type="checkbox"/>
Pre-treatment of the substructure			
Abrading	Yes <input type="checkbox"/> No <input type="checkbox"/>	Abrasive pad	
Grinding	Yes <input type="checkbox"/> No <input type="checkbox"/>	Grinding paper	
Sika® Aktivator-205	Yes <input type="checkbox"/> No <input type="checkbox"/>	Flash off time in minutes	
SikaTack® Panel Primer	Yes <input type="checkbox"/> No <input type="checkbox"/>	Flash off time in minutes	
Sika® Primer-210	Yes <input type="checkbox"/> No <input type="checkbox"/>	Flash off time in minutes	
Pre-treatment of the cladding panels			
Abrading	Yes <input type="checkbox"/> No <input type="checkbox"/>	Abrasive pad	
Grinding	Yes <input type="checkbox"/> No <input type="checkbox"/>	Grinding paper	
Sika® Aktivator-205	Yes <input type="checkbox"/> No <input type="checkbox"/>	Flash off time in minutes	
Sika® Aktivator-100	Yes <input type="checkbox"/> No <input type="checkbox"/>	Flash off time in minutes	
SikaTack® Panel Primer	Yes <input type="checkbox"/> No <input type="checkbox"/>	Flash off time in minutes	
Sika® Primer-210	Yes <input type="checkbox"/> No <input type="checkbox"/>	Flash off time in minutes	

Tape and Adhesive			
SikaTack® Panel Fixing Tape	Yes <input type="checkbox"/> No <input type="checkbox"/>	Applied on full length	Yes <input type="checkbox"/> No <input type="checkbox"/>
SikaTack® Panel adhesive	SikaTack® Panel <input type="checkbox"/> SikaTack® Panel-10 <input type="checkbox"/> SikaTack® Panel-50 <input type="checkbox"/>	Cartridge <input type="checkbox"/> Unipack <input type="checkbox"/>	Best before: Batch no:
Quality Control			
Skin-over time Prepared: _____ Time: _____	Skin-over time ___ min Temperature ___°C Air humidity ___%		
Peel adhesion Prepared: _____ Tested: _____	Panel Sub-frame	≥ 95% cohesive failure <input type="checkbox"/> ≥ 95% cohesive failure <input type="checkbox"/>	
Visual Inspection	Primer present Yes <input type="checkbox"/> No <input type="checkbox"/>	Joint dimension thickness ___ mm width ___ mm	Observations
Place and date:		Signature:	

11 LEGAL NOTE

The information, and, in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Sika's recommendations. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written recommendations, or from any other advice offered. The user of the product must test the products suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request.

Version given by
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General Guideline
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