POLYURETHANE
SIKA PRE-TREATMENT CHART

FOR 1-COMPONENT POLYURETHANES – Sikaflex®-100 AND -200 SERIES

UTILISATION OF SIKA PRE-TREATMENT CHART

The information about the pre-treatment of surfaces in this document serves as a guideline only and must be verified by tests on original substrates. Project specific pre-treatment recommendations, based on laboratory tests, are available from Sika upon request. Always consult additional information.

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BUILDING TRUST

GENERAL RECOMMENDATIONS FOR Sikaflex®-100 AND -200 SERIES

PRECONDITION:
Surfaces have to be clean, dry and free of oil, grease, dust and loose particles. Depending on the nature of soiling, Sika® Remover-208, Sika® Cleaner P or another suitable cleaning solution may be used. For substrates that are prone to oxidation and/or have a weak surface layer it might be necessary to abrade the surface down to sound material. Verify compatibility with cleaning products.

Levels	Description
1	■ General sealing applications, small components with low level of stress exposure ■ Non-structural interior bonding applications, no exposure to temperature extremes, no contact with water
2	■ Sealing applications involving large components where higher joint movements are to be expected ■ Interior and exterior bonding applications under normal environmental conditions
3	■ Other applications, not covered under Level 1 and 2, where additional requirements are specified ■ Serial application

Substrate	EN*	Mechanical 1	Adhesion Promoter / Cleaner	Primer	Mechanical 2	Adhesion Promoter	Primer	3
Aluminum (AlMg3, AlMgSi1 and similar)	1	AP-C AP-C	SA-100	 SP-207	AP-C AP-C	SA-205	SP-204 N SP-207	CONTACT SIKA TECHNICAL DEPARTMENT INDUSTRY
Aluminum (anodized)	2		SA-100	 SP-207	 AP-C	SA-205	SP-204 N SP-207	
Steel (mild)	3		SA-205 SA-100	SP-204 N SP-206 GP	AP-C AP-C	SA-205	SP-204 N SP-207	
Steel (stainless)	4		SA-100	 SP-207	AP-C AP-C	SA-205	SP-204 N SP-207	
Steel (hot-dip galvanized, electrogalvanized)	5		SA-205	 SP-207	AP-C AP-C	SA-205	SP-204 N SP-207	
Non-ferrous metals (copper, brass, bronze,...)	6	AP-C	SA-205	SP-210	AP-C	SA-205	SP-210	
2-Component top coat, water- and solvent based (PUR, acrylic)	7		SA-100	 SP-207		 SA-100	SP-207 SP-206 GP	
Powder coat (Polyester (PES), EP/PES)	7		SA-100	 SP-207	AP-C AP-C	 SA-100	SP-207 SP-206 GP	
2-Component paint primer, water- and solvent based (PUR, acrylic, epoxy)	7		SA-100	 SP-207		 SA-100	SP-207 SP-206 GP	
Cathode dip coating (e-coating)	7		SCP SA-100	 		 SA-100	SP-207 	
Coil coating, mainly Polyester	8		SA-205 SCA	 	AP-C	SA-205 SCA	 SP-206 GP	
FRP (unsaturated polyester) gelcoat side or SMC	9		SA-100	 SP-207	AP-C	SA-100	 SP-207	
FRP (unsaturated polyester) lay-up side	9	AP-C AP-C	 SA-100	SP-207 SP-206 GP	GR-V GR-V	 SA-205	SP-207 SP-215	
FRP (Epoxy-matrix), CFRP	10	AP-C AP-C	 SA-100	SP-207 SP-206 GP	AP-C AP-C	 SA-100	SP-207 SP-206 GP	
ABS	11		 	SP-209 D SP-206 GP		SA-100 SA-100	SP-209 D SP-206 GP	
Hard PVC	11		 	SP-215 SP-207		SA-205 	SP-215 SP-207	
PMMA / PC (without anti scratch coating)	12		 	SP-209 D SP-207	AP-C AP-C	 	SP-209 D SP-207	
Glass	13		 	SP-207 	 	 	SP-207 	
Ceramic screen print	13		 	SP-207 	 	 	SP-207 	
Wood / Plywood	14		 	 	 	 	SP-215 	

* EN = Explanatory notes see page 4.

Recommended process
Alternative process

PRODUCT DATA AND ABBREVIATIONS

The following product information is an abbreviated version of the current Product Data Sheets.

Sika® Aktivator	-100	-205	Sika® Coating Aktivator
Color of container cap	orange	yellow	white
Color of product	colorless to slight yellow	colorless, clear	colorless to slight yellow
Type of product	Adhesion promoter		
Application temperature	The general range is 10 – 35 °C. For specific values always refer to the most recent Product Data Sheet.		
Application	Wipe with a clean and lint-free paper towel (Sika Aktivator®-100 wipe on / wipe off application is required)		
Consumption	Approximately 20 ml/m² (depending on application method).		
Flash-off time (23 °C / 50 % r.h.)	The minimal range of the flash-off time varies from 10 to 30 minutes depending on product, substrate and climatic conditions. For specific values always refer to the most recent Product Data Sheet.		

Sika® Primer	-204 N	-206 G+P	-207	-209 D	-210	-215
Color of container cap	light blue	black	black	green	grey	dark blue
Color of product	opaque yellow	black	black	black	transparent, yellowish	transparent, yellowish
Type of product	Primer					
Application temperature	The general range is 10 – 35 °C. For specific values always refer to the most recent Product Data Sheet.					
Preparation for use	Shake bottle vigorously until the mixing balls rattle freely. Then continue shaking for an additional minute.				n.a.	
Application	Brush / felt / foam applicator					
Consumption	Approximately 50 ml/m² (depending on application method and substrate porosity).					
Flash-off time (23 °C / 50 % r.h.)	The minimal range of the flash-off time varies from 10 to 30 minutes depending on product, substrate and climatic conditions. For specific values always refer to the most recent Product Data Sheet.					

Notice: Sika® activators and primers are moisture reactive systems. In order to maintain product quality it is important to reseal the container immediately after use. With frequent use i.e. opening and closing several times, it is recommend disposing of the product one month after the first opening. With infrequent use, it is recommend disposing of the product 2 months after opening.
When selecting a foam applicator, the solvent resistance must be considered. Suitable products include Sika® Cleaner PCA or melamine foam Basotect from BASF.

Abbreviation	Product/Explanation
AP-C	Abrasive Pad, very fine (e.g. from Sia or 3M) followed by cleaning step, dry wipe or SCP
GR-V	Grinding (60 – 80 grit) and vacuum cleaning
SCP	Sika® Cleaner P
SA-100	Sika® Aktivator-100
SA-205	Sika® Aktivator-205
SCA	Sika® Coating Aktivator
SP-204 N	Sika® Primer-204 N
SP-206 GP	Sika® Primer-206 G+P
SP-207	Sika® Primer-207
SP-209 D	Sika® Primer-209 D
SP-210	Sika® Primer-210
SP-215	Sika® Primer-215

Always consult additional information, such as General Guidelines "Bonding and Sealing with Sikaflex®", current Product Data Sheets, Safety Data Sheets, additional Product- and Technical Information, etc. prior to use of the products. Project oriented solutions are documented in Technical Service reports. These solutions can vary from the table opposite and take priority over the general recommendations provided in this Pre-Treatment Chart.

EXPLANATORY NOTES ON SUBSTRATE PREPARATION AND TREATMENT

1. Aluminum
Alloys containing magnesium or silicium may form an unstable layer on the surface. This layer must be removed with a very fine abrasive pad.

2. Aluminum, anodized
For aluminum that has been surface treated, e.g. chromated, anodized or coated, a simple pre-treatment is usually sufficient. Due to the wide variety of anodizing treatments it is necessary to run preliminary tests to check for satisfactory adhesion.

3. Steel, mild
Depending on the exposure conditions, steel is subject to corrosion. Sika primers, which are applied to the surface in a very thin layer, do not provide corrosion protection as such, see also item General Information.

4. Steel, stainless
The terms "stainless steel" and "special steel" encompass a whole group with an important influence on the adhesion behavior. Adhesion can be improved by a prior scuffing step with a very fine abrasive pad.

5. Steel, hot-dip galvanized, electrogalvanized
The surface composition of hot-dip components is not uniform. It is therefore necessary to carry out periodic adhesion checks. Oiled zinc coated steel has to be degreased prior to use. In case of electrogalvanizing the substrate is prepared to a controlled specification and the composition of the surface layer is more or less uniform throughout. Do not use abrasives on electrogalvanized steel.

6. Non-ferrous metals
Metals like brass, copper and bronze are prone to interact with the sealant or adhesive. Therefore it is recommended to contact Sika for advice prior to use.

7. Surface coatings, paint finishes
As a general rule, successful bonding with Sikaflex® products is expected with the following paint systems: cataphoretic immersion coatings, powder coatings, epoxy or polyurethane paints. When using the following paint systems: polyvinyl butyral or epoxy resin ester, cohesion is often higher than adhesion to the substrate. Caution: the presence of paint additives may adversely affect adhesion to the paint surface. Certain coatings can be negatively influenced by weathering. Therefore they have to be protected against UV-light and other aging sources prior to bonding.

8. Coil coating
Coil coating is a process which is defined in EN 10169: 2010. It is the process for coating metal coils. Available coatings include polyesters, plastisols, polyurethanes, polyvinylidene fluorides (PVDF), epoxies. Due to the wide variety of coil coatings, it is necessary to run preliminary tests to check for satisfactory adhesion.

9. FRP (fibre reinforced plastic)
These materials consist for the most part of thermosetting plastics derived from unsaturated polyester, less commonly from epoxy vinylester or phenol formaldehyde resins. Newly manufactured components have not yet attained full cure, and as such are subject to further shrinkage following their removal from the mould. For this reason only aged or tempered FRP mouldings should be selected for adhesive bonding. The smooth side (gel coat side) may be contaminated by mould release agents which will adversely affect adhesion. The surface of the rough reverse side, which is exposed to the air during manufacturing has to be abraded thoroughly prior to additional surface preparation. Transparent or translucent FRP must follow the current UV-rules, see General Information.

10. CFRP
(Carbon-fiber-reinforced polymer)
These materials are plastics which contain carbon fibers. The binding polymer is often a thermoset resin such as epoxy, but other thermoset or thermoplastic polymers such as polyester, vinyl ester or nylon are sometimes used. The properties of the final CFRP product can also be affected by the type of additives introduced to the binding matrix (resin).

11. Plastics
Some plastics require special physico-chemical treatment before they can be successfully bonded (flame treatment or plasma treatment in combination with chemical pre-treatment). Polypropylene and Polyethylene are two examples. With many plastic blends it is impossible to give specific guidance due to the potential variety of components and internal/external release agents they contain. Some engineered plastics such as ABS, PMMA and PC may contain substances which can be dissolved by the solvents of that are part of the Sika®Primer formulation, which can then in some cases lead to issues with adhesion. Thermoplastics are subject to a risk of stress cracking. Thermally formed components must be destressed prior to adhesive bonding process. For transparent or translucent plastics see General Information on this page.

12. PMMA/PC
Scratch resistant coating on PMMA or PC must be removed in the bonding area with sand paper (120 grit) and pre-treated as defined for non-coated substrates. Note that this last step may impair the mechanical properties of the PMMA/PC. Contact Sika for solutions without removal of the coating. See also further item 11 and consider always the UV-rules mentionend under "Transparent or translucent substrates" and ESC under item General Information.

13. Glass/Ceramic screen print
Due to production, some windscreens may have silicone contaminated ceramic screen print or glass. It can be removed by using Sika® Cleaner PCA.

14. Phenolic film faces plywood
These are waterproof plywood panels with a yellow or brown film facing. The surface preparation is the same as for paints and coatings. In some cases it could be necessary to grind the surface down to the wood and pre-treat it as such.

GENERAL INFORMATION

Transparent or translucent substrates
With transparent or translucent substrates where the bonded surface is exposed to direct sunlight through the transparent or translucent layer, some form of UV barrier must be incorporated to shield the adhesive bond. This may consist of an opaque cover strip, an optically dense screen printed border or a black primer for semi-transparent substrates such as translucent FRP or screen prints. Due to the high UV exposure for exterior applications the sole use of black primers for UV protection is not sufficient. For interior applications and where the bondline is occasionally exposed to UV-light, a sole black primer for UV protection may be sufficient. Contact Technical Department of Sika Industry.

Corrosion protection
All listed pre-treatment products in this chart are not designed to give comprehensive corrosion protection. In most cases primer layers protect the surface to a certain degree. Whether or not this protection is sufficient for specific processes is at the customers sole discretion.

EPDM/SBR
Rubbers can be made from natural caoutchouc or are produced artificially. Therefore nearly endless combinations are possible. For this reason each type of rubber has to be tested separately.

ESC
At present environmental stress cracking (ESC) is one of the most common causes of unexpected brittle failure of thermoplastics, especially amorphous polymers. Key parameters to trigger ESC are: stress, liquid chemicals, environmental exposure. Each bonding process must be verified.

Protective layer
Substrate surfaces with high variability like galvanization, anodization, coil coating, varnishing, finishing must be subjected to periodic inspections.

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