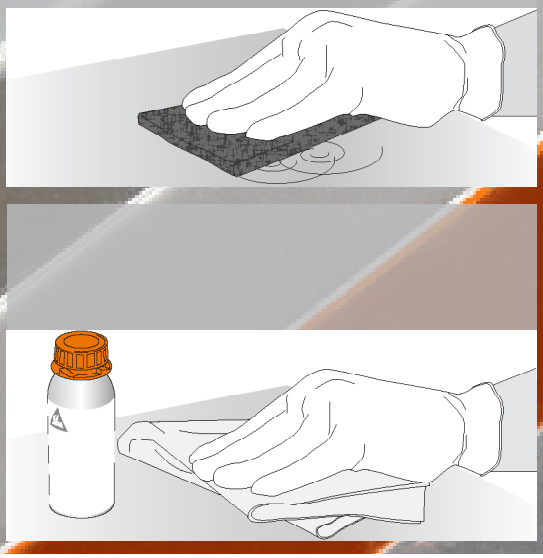
Sika® Hybrid Technology



Sika® Pre-Treatment Chart

For Polyurethane Hybrids Sikaflex®-500 Series - Adhesives and Sealants

Version 3 (11/2011)

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Recommendations for Sikaflex®-500 Series

Levels	Description
1	• General sealing applications, small components with low level of stress exposure • Non-strucutural interior bonding applications, no exposure to short term temperature extremes, and no contact with water
2	• Sealing applications involving large components where higher joint movement 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 needed

Precondition:
Surfaces have to be dry, free of oil, fat, dust and loose particles. Soiled non porous substrates can be cleaned with Sika® Remover-208. According to the nature of soiling, SikaCleaner® P, water based cleaners or steam washer etc may be used. For soiled porous substrates, grind surface down to sound material. It is recommended to verify compatibility with the cleaning products.

	Levels 1			Levels 2			Level 3
	Mechanical	Cleaning/ Activating	Primer	Mechanical	Cleaning/ Activating	Primer	
Aluminium (AlMg3, AlMgSi1) [1]		205		AP	205		Contact Technical Service Business Unit Industry
Aluminium (anodised) [2]		205			205	206 GP	
					205	204 N	
Steel (St37 etc.) [3]		205		AP	205	206 GP	
				AP	205	204 N	
Steel (Stainless steel) [4]		205			205		
Steel (hot dipped, galvanized) [5]		205			205		
2-Component top coat, water- and solvent based (PUR, acrylic) [9]		205			205		
Powder coated (PES, EP/PES) [9]		205		AP	205		
2-Component paint primer, water- and solvent based (PUR, acrylic, epoxy) [9]		205			205		
Cathode dip coating (e-coating) [9]					205		
Coil coating [9]		205			205		
					SCA		
FRP (unsaturated polyester) gelcoat side or SMC [6] [8]		205		AP	205		
FRP (unsaturated polyester) lay-up side [6] [8]	AP	205		AP	205	206 GP	
ABS [7]		205	215	AP	205	215	
					205	209 D	
Hard PVC [7]		205			205	215	
				AP	205		
Glass [8]					205		
Ceramic screen print [8]		205			205		
Wood / Plywood (refer to 10 on page 4) [10]						215	

[1] to [10] see last page „Explanatory Notes on Substrate Preparation“

1st Process = Recommendation
2nd Process = Alternative
For bonding/sealing process no surface preparation (mechanical, cleaning/activating, primer) are required (follow precondition in the yellow box)

Notice: Please also consult additional information, such as General Guidelines „Bonding and Sealing with Sikaflex®“, actual Product Data Sheets, etc. Adhesion test are based on DIN 54457 and Internal Standard CQP 033-1.

Utilisation of Sika® Pre-Treatment Chart

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 on request.

	Sika® Aktivator-205 *	**Sika® Coating Aktivator**
Colour	colourless, clear	colourless to slight yellow
Type of product	Adhesion promoter	
Application temperature	General range is 10 - 35°C (40 - 95°F). For specific values consult the corresponding Product Data Sheet.	
Application	Paper towel	
Consumption	Approximate 40 ml/m²	
Flash-off time (23 °C / 50% r.h.)	The range varies from 10 to 30 minutes depending on product and climatic conditions. Please refere to the actual Product Data Sheet for specific values.	
Colour of container cap	yellow	white

* Note: product name was changed from Sika® Cleaner-205 to Sika® Aktivator-205

	Sika® Primer-204 N	**Sika® Primer-206 G+P**	**Sika® Primer-209 D**	**Sika® Primer-215**
Colour	opaque yellow	black	black	transparent, yellow
Type of produc	Primer			
Application temperature	General range is 10 - 35°C (50 - 95°F). For specific values consult the corresponding Product Data Sheet.			
Prearrangement	Shake can very thoroughly until mixing ball rattles freely. Continue shaking for another minute.			n.a.
Application	Brush / felt / foam applicator			
Consumption	The consumption is in the range of 100 to 150 ml/m². Porous substrates need approx. 200 ml/m². For specific values consult the actual Product Data Sheet.			
Flash-off time (23 °C / 50% r.h.)	The range varies from 10 to 60 minutes to depending on product and climatic conditions. Please refere to the actual Product Data Sheet for specific values.			
Colour of container cap	light blue	black	green	dark blue

Notice: Sika® Aktivators 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, we recommend to dispose of the product one month after opening. With infrequent use, we recommend to dispose of the product 2 months after opening. For further information please refer to our „General Guidelines for Bonding and Sealing with Sikaflex®".
When selecting a foam applicator, the solvent resistance has to be taken into account, e.g. melamine foam Basotect from BASF is suitable.
When using Hybrid products in combination with Polyurethane, the Polyurethane has to be fully cured prior the Hybrid application.

Abbreviation	**Product/Explanation**
	No special pre-treatment required
AP	Abrasive Pad very fine
205	Sika® Aktivator-205 *
SCA	Sika® Coating Aktivator
204 N	Sika® Primer-204 N
206 GP	Sika® Primer-206 G+P
209 D	Sika® Primer-209 D
215	Sika® Primer-215

* Note: product name was changed from Sika® Cleaner-205 to Sika® Aktivator-205

Legal Note

Explanatory Notes on Substrate Preparation

1. Aluminium
Aluminium and aluminium alloys are supplied in the form of profiles, sections, sheets, plates and castings. The information given here on surface preparation and priming relates to this group of products. Alloys containing magnesium may have water-soluble magnesium oxide on the surface. This oxide layer has to be removed with very fine abrasive pads. In the case of aluminium that has been surface treated (chromated, anodised or coated), a simple pre-treatment is normally the only type of surface preparation required.

2. Anodised aluminium
Aluminium is a reactive material which oxidises on exposure to air. Electrochemical or chemical oxidation causes a tough surface layer of uniform thickness to be formed. Surfaces treated in this way absorb dyes or pigments very successfully. In order to enhance the chemical resistance of the oxidised layer and /or seal in the colour, translucent lacquers of varying chemical composition are normally applied to the surface. Preliminary tests are necessary to check for satisfactory adhesion to such substrates.

3. Steel
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.

4. Stainless steel
The terms “stainless steel” and “special steel” embrace a whole group of products of varying chemical composition with varying surface finishes. These have an important influence on the adhesion behaviour. The surface may contain single type chromium oxide. Removing it with a very fine abrasive pad improves the adhesion.

5. Zinc-coated steel
The principal techniques for applying zinc coatings to steel are a) the Sendzimir process, b) electrogalvanising, c) hot dip or continuous strip galvanising. In the case of a) and b) the substrate is prepared to a controlled specification and the composition of the surface layer is more or less uniform throughout. The surface composition of hot dipped 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. Do not use abrasives in case of electrogalvanised steel.

6. FRP (glass fibre reinforced plastic)
These materials consist for the most part of thermosetting plastics derived from unsaturated polyesters, less commonly from epoxy resins or polyurethanes. Newly manufactured components based on unsaturated polyesters contain quantities of styrene in monomeric form, recognised by its distinctive odour. These 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 with traces of mould release agent, which will adversely affect adhesion. The rough reverse side, which is exposed to the air during manufacture, usually contains paraffin, added to assist air drying. Here it is necessary to abrade the surface thoroughly prior to additional surface preparation. Thin section FRP mouldings made from transparent or pale coloured material are translucent. In such cases a suitable UV barrier must be incorporated (see also point 9. Transparent or translucent substrates). In the case of flame retardant FRP components, preliminary tests must be carried out to determine the most appropriate method of surface preparation.

7. Plastics
Some plastics require special physico-chemical treatment before they can be successfully bonded (flame treatment or plasma etching 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. Thermoplastics are subject to a risk of stress cracking. Thermally formed components must be destressed prior to adhesive bonding by the controlled application of heat.

8. Transparent or translucent substrates
In the case of transparent or translucent substrates where the bond face 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 on external application a black primer as a sole UV protection is not suitable (exeptions may be for example prototypes with limited life expectancy). For inhouse applications and where the bondline is occasionally exposed to UV, a sole black primer for UV protection is normally suitable.

9. Surface coatings, paint finishes
Preliminary trials are necessary before attempting to bond substrates with an applied surface coating. As a general rule, reactive systems that cure thermally (cataphoretic immersion coatings, powder coatings) or by addition of polymerisation (epoxy or polyurethane paints) can be successfully bonded with Sikaflex® products. Alkyd resin paints that dry by oxidation are not suitable for bonding. Paint systems that rely on a physical cure mechanism – typically coatings based on polyvinyl butyral or epoxy resin esters – are generally compatible with sealants only, i.e. not with adhesives. Caution: The presence of paint additives designed to modify film formation, such as conditioners, silicones, matting agents, etc., may adversely affect adhesion to the paint surface. Surface coatings must be monitored for consistency of quality and uniformity of composition through a quality assurance system.

10. Phenolic film faced plywood
These are waterproof plywood panels with a yellow or brown film facing. The surface preparation is the same as for paints and coatings. Due to the variety of coatings the required adhesion may not always be achieved. In such case grind the surface down to the wood and pretreat it as such.

Overpaintability
Sikaflex® products can be overpainted with most conventional paint systems. The best results are obtained if the sealant is allowed to cure fully first. If early overpainting is required, trials must be carried out to check compatibility with the paint system. Please note that nonflexible paint systems will impede joint movement, which in extreme cases can lead to cracking of the paint. PVC-based paints and paints that dry by oxidation (oil or alkyd resin based) are generally not suitable for application over Sikaflex® products.

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