EXPLANATORY NOTES ON SUBSTRATE PREPARATION AND TREATMENT

1. Aluminum
Alloys containing magnesium or silicon 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, stainless
The terms “stainless steel” and “special steel” encompass a wide group with an important influence on the adhesion behavior. Adhesion might be improved by a prior scuffing step with a very fine abrasive pad.

4. Steel, hot-dip galvanized, electrogalvanized
The surface composition of hot-dip components is not uniform. It is therefore necessary to carry out a preliminary adhesion check. Diled zinc-coated steel has to be degraded prior to use. In case of electrogalvanising 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 electrogalvanised steel.

5. 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.

6. Surface coatings, paint finishes
As a general rule, successful bonding with Sikaflex® products is expected with the following paint systems: carphoresis immersion coatings, powder coatings, epoxy or polyurethane paints. When using the following paint systems: polyvinyl butyral or epoxy resin varnish, 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 the sun and other aging sources prior to bonding.

7. FRP (Fibre reinforced plastic)
These materials consist of the most part of thermosetting plastics derived from unsaturated polyester, less commonly from epoxy vinyl ester 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 moldings 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. Transient or transient FRP must follow the current UV-rules, see General Information.

8. 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 provided. Therefore they have to be treated separately.

9. PMMA/PC
Scratch resistant coating on PMMA or PC must be removed in the bonding area with sand paper (100 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 9 and consider always the UV-rules mentioned under “Transparent or translucent substrates” and ESC under item General Information.

10. Sikafloor®-352 SL/ST/VSL
These are solvent free 2C polyurethane fillers and levelling compounds used to level uneven subsoils in ship and boat constructions prior to the installation of e.g. a teak deck system. Do not use solvent to clean cured and ground Sikafloor®-352 SL/ST/VSL. Consult the respective PDS for further information.

11. Glass (mineral) / Ceramic screen print
Due to production, some windscreens may have silicone contaminated ceramic screen print or glass. It might be necessary to consider the pre-treatment of the glass.

12. Teak / Wood and wood derivatives
The teak quality is essential for an optimal result. Standing year rings and the absence of alternating spiral growth are essential to assure a uniform plain deformation under different climatic conditions. It is recommended to use a teak deck system. Do not use solvent to clean cured and ground Sikafloor®-352 SL/ST/VSL. Consult the respective PDS for further information.

13. Phenolic film faces plywood
These are waterproof plywood panels with a yellow or brown film facing. Sika recommends to grind the surface down to the wood in the bonding area or pre-treat 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 bonding is occasionally exposed to UV-light, a sole black primer for UV protection may be sufficient.

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 rubber 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 chemical, environmental exposure. Each bonding process must be verified.

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

MARINE SIIA PRE-TREATMENT CHART
FOR SEALING AND BONDING IN MARINE APPLICATIONS

UTILISATION OF SIKAPRE-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.
**RECOMMENDATIONS FOR SIKA MARINE RANGE**

**PRODUCT DATA AND ABBREVIATIONS**

<table>
<thead>
<tr>
<th>Substrate</th>
<th>EN*</th>
<th>SikaFlex®-291-292</th>
<th>SikaFlex®-293 UV</th>
<th>SikaFlex®-291-292</th>
<th>SikaFlex®-295 PC</th>
<th>SikaSil® 605 S</th>
<th>SikaSil® SC-20</th>
<th>SikaFlex®-291-292</th>
<th>SikaFlex®-292-293</th>
<th>SikaFlex®-291-292</th>
<th>SikaFlex®-291-292</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum (AA 1100, 1100 Cu)</td>
<td>1</td>
<td>AP-C</td>
<td>SA-205</td>
<td>SMM</td>
<td>AP-C</td>
<td>SA-205</td>
<td>SMM</td>
<td>AP-C</td>
<td>SA-205</td>
<td>SMM</td>
<td>AP-C</td>
</tr>
<tr>
<td>Aluminum (anodized)</td>
<td>2</td>
<td>AP-C</td>
<td>SA-205</td>
<td>SMM</td>
<td>AP-C</td>
<td>SA-205</td>
<td>SMM</td>
<td>AP-C</td>
<td>SA-205</td>
<td>SMM</td>
<td>AP-C</td>
</tr>
<tr>
<td>Steel (lustrous)</td>
<td>3</td>
<td>AP-C</td>
<td>SA-205</td>
<td>SMM</td>
<td>AP-C</td>
<td>SA-205</td>
<td>SMM</td>
<td>AP-C</td>
<td>SA-205</td>
<td>SMM</td>
<td>AP-C</td>
</tr>
<tr>
<td>Steel (hot dipped, galvanized)</td>
<td>4</td>
<td>AP-C</td>
<td>SA-205</td>
<td>SMM</td>
<td>AP-C</td>
<td>SA-205</td>
<td>SMM</td>
<td>AP-C</td>
<td>SA-205</td>
<td>SMM</td>
<td>AP-C</td>
</tr>
<tr>
<td>Non ferrous materials (copper, brass, bronze,…)</td>
<td>5</td>
<td>AP-C</td>
<td>SA-205</td>
<td>SMM</td>
<td>AP-C</td>
<td>SA-205</td>
<td>SMM</td>
<td>AP-C</td>
<td>SA-205</td>
<td>SMM</td>
<td>AP-C</td>
</tr>
<tr>
<td>Wood and wood derivates</td>
<td>6</td>
<td>AP-C</td>
<td>SA-205</td>
<td>SMM</td>
<td>AP-C</td>
<td>SA-205</td>
<td>SMM</td>
<td>AP-C</td>
<td>SA-205</td>
<td>SMM</td>
<td>AP-C</td>
</tr>
<tr>
<td>Metal with shop primer</td>
<td>7</td>
<td>AP-C</td>
<td>SA-205</td>
<td>SMM</td>
<td>AP-C</td>
<td>SA-205</td>
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<td>AP-C</td>
<td>SA-205</td>
<td>SMM</td>
<td>AP-C</td>
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<tr>
<td>Metal with 2C Ac/PU-paint</td>
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<td>SA-205</td>
<td>SMM</td>
<td>AP-C</td>
<td>SA-205</td>
<td>SMM</td>
<td>AP-C</td>
<td>SA-205</td>
<td>SMM</td>
<td>AP-C</td>
</tr>
<tr>
<td>FRP (unmaturated polymer) gelcoat side or SMC</td>
<td>9</td>
<td>AP-C</td>
<td>SA-205</td>
<td>SMM</td>
<td>AP-C</td>
<td>SA-205</td>
<td>SMM</td>
<td>AP-C</td>
<td>SA-205</td>
<td>SMM</td>
<td>AP-C</td>
</tr>
<tr>
<td>FRP (unmaturated polymer) lay-up side</td>
<td>10</td>
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<td>SMM</td>
<td>AP-C</td>
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<td>SMM</td>
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<tr>
<td>ABS</td>
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<td>SMM</td>
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<td>SA-205</td>
<td>SMM</td>
<td>AP-C</td>
<td>SA-205</td>
<td>SMM</td>
<td>AP-C</td>
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<tr>
<td>Hard PVC</td>
<td>12</td>
<td>AP-C</td>
<td>SA-205</td>
<td>SMM</td>
<td>AP-C</td>
<td>SA-205</td>
<td>SMM</td>
<td>AP-C</td>
<td>SA-205</td>
<td>SMM</td>
<td>AP-C</td>
</tr>
<tr>
<td>PMMA/PC (without anti-scratch coating)</td>
<td>13</td>
<td>AP-C</td>
<td>SA-205</td>
<td>SMM</td>
<td>AP-C</td>
<td>SA-205</td>
<td>SMM</td>
<td>AP-C</td>
<td>SA-205</td>
<td>SMM</td>
<td>AP-C</td>
</tr>
</tbody>
</table>

### Sika® Primer

- **-206 G-P**
- **-209 D**
- **-290 DC**
- **MultiPrimer Marine**

**Color of container cap**
- black
- green
- blue
- grey

**Color of product**
- colorless to slightly yellow
- colorless, clear

**Type of product**
- Primer

**Application temperature**
- The general range is 10 – 35 °C.

**Consumption**
- Approximately 20 ml/cm² (depending on application method).

**Flash-off time**
- The minimal range of the flash-off time varies from 30 to 60 minutes depending on product, substrate and climatic conditions.

### Notice:
- Sikaflex® adhesives 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 Basecoat from BASF.

### Abbreviation

- **AP-C**: Abrasive Pad very fine (e.g. from Sia or 3M) followed by cleaning, drying with dry or wet SPD
- **AP-V**: Abrasive Pad very fine and vacuum cleaning
- **GP-V**: Grinding (60 – 80 grit) and vacuum cleaning
- **SCP**: Sika® Cleaner P
- **SA-100**: Sika® Activator 100
- **SA-205**: Sika® Activator 205
- **SMM**: Sika® MultiPrimer Marine
- **SP-206 GP**: Sika® Primer-206 G+P
- **SP-209 D**: Sika® Primer-209 D
- **SP-290 DC**: Sika® Primer-290 DC
- **ZP**: Sika® Cox ZP-Primer

### Legal Disclaimer

- The information contained herein and any other advice we give in good faith based on Sika’s current knowledge and experience of the products when properly handled and applied under normal conditions is in accordance with the receipt’s recommendations. The information only applies to the application(s) and product(s) expressly referred to herein and is based on the best information available. Sika cannot accept liability for any advice that is not based on the application or use of the product(s). In case of any queries, Sika’s Technical Service department supplies Sika products. The information contained herein does not relieve the user of the products from testing them for the intended application and purpose. All orders are accepted subject to our current terms of sale and delivery. Sika must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which can be downloaded at your local Sika company website or will be supplied on request.

### Pre-Treatment Chart for Sealing and Bonding in Marine Applications

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**Pre-Treatment Chart for Sealing and Bonding in Marine Applications**

**Version 6 (5/2018)**

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### Notice:

- Not all products available globally.
- Please consult additional information, such as General Guidelines, Bending and Sealing with Sika®-Aktivator, current Product Data Sheets, Safety Data Sheets, additional Product and Technical Information, etc. prior to use of the products. Products shown in this document are as of technical service. Sika cannot accept liability for any advice that is not based on the application or use of the products.

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**SIKA PRE-TREATMENT CHART FOR SEALING AND BONDING IN MARINE APPLICATIONS**

**VERSION 6 (5/2018)**

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