Assemble Line Adhesives
Simplified Processes
And Flexible Designs
Start With Sika

Lighter | Stronger | Safer | Quieter | Greener
YOU NEED TO FIND WAYS TO MAKE YOUR NEXT VEHICLE LIGHTER, STRONGER, SAFER, QUIETER OR GREENER.

SO WHERE DO YOU START?
Start with a trusted partner that can deliver global innovation on a localized scale, wherever and whenever it’s needed. Start with a commitment to continuous improvement, and the knowledge that it takes years to become an overnight success. Start with a collaborative approach that can bring together great minds without knocking heads. Start with pioneering innovation that clears a path for the vehicles of the future.

START WITH SIKA
With a full suite of bonding, damping, sealing and reinforcing solutions, Sika is a key strategic partner for both OEMs and component suppliers. By collaborating on advanced development projects and engaging early in program development, we help customers optimize designs, identify cost savings and reduce complexity.
SIKA OFFERS A FULL RANGE OF TECHNOLOGY SOLUTIONS FOR DIRECT GLAZING, as well as component bonding (Sikaflex®, SikaTack®) in order to fulfill customer requirements in terms of long term performance and process capability. Furthermore, in order to support car weight reductions, Sika is providing innovative bonding solutions (Sikaflex®, SikaForce® and pre-treatments) for elastic bonding of mixed-material and metal panel stiffening.

PRODUCT KEY

- Direct Glazing & Glass Replacement
- Mixed Material Bonding
- DVD Bonding
- Trim Part Bonding

A FULL RANGE OF REPAIR SOLUTIONS

Like all of our adhesive systems, our Assembly line product portfolio is available for repair applications. Sikaflex® and SikaTack® products for glass replacement are packaged in easy to use kit form, both OES and Aftermarket, and contain everything needed for service in one package. Our SikaForce® products applied from bulk containers in assembly, are available to the market in cartridges. Our newest product for repair, SikaPower®-477R is offered in a coaxial cartridge, meaning no specialized equipment is necessary, which simply adds value to its already great performance.
DIRECT GLAZING SYSTEMS
Continuous process innovation and eco-friendly solutions

SAFER AND STRONGER VEHICLES START WITH SIKA
With more than 3 decades experience in providing direct glazing technology to automotive assembly lines, few companies understand direct glazing processes, or PUR chemistry, better than Sika. Embedded in this experience, Sika’s eco-friendly inventions and innovations in direct glazing systems have continuously contributed to leading edge improvement of vehicle performance and safety as well as manufacturing processes.

Our advanced and production ready systems include:
- Primerless systems for glass, ceramic and paint
- Accelerated systems - Sika®Booster technology
- Bubble-free systems - Patented i-Cure® pre-polymer technology
- High Green Strength - Fast screen fixation systems.
- VOC-free pre-treatments for glass, ceramics and paint

APPLICATION
- Automated and manual bonding of windshield, backlight and side windows
- Automated bonding of panoramic and modular roof systems
- Simple solutions for any rework requirements in assembly line applications

BENEFITS
- Sustainability - Reduced VOC content
- Systems offer primerless bonding options to various substrates
- Proven materials offering long term durability
- Accelerated PUR systems offer advantage over competitive solutions

TECHNOLOGY OVERVIEW: DIRECT GLAZING SYSTEMS

<table>
<thead>
<tr>
<th>Product</th>
<th>Material Properties</th>
<th>Suitable Substrates</th>
<th>C-Modulus</th>
<th>Application Temperature</th>
<th>Elongation at break</th>
<th>Key Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primerless 1C-PUR</td>
<td>Glass, paint, e-coat</td>
<td>Glass, paint, e-coat</td>
<td>1.2 – 3.5 MPa</td>
<td>RT – 65°C</td>
<td>200 – 500%</td>
<td>Cost reduction</td>
</tr>
<tr>
<td>i-Cure® based 1C-PUR + Sika®Booster</td>
<td>Glass, paint, e-coat, primer</td>
<td>Glass, paint, e-coat, primer</td>
<td>1.2 – 3.5 MPa</td>
<td>RT – 65°C</td>
<td>200 – 500%</td>
<td>Process flexibility, VOC reduction</td>
</tr>
<tr>
<td>Fast Green Strength 1C-PUR</td>
<td>Glass, paint, e-coat, primer</td>
<td>Glass, paint, e-coat, primer</td>
<td>1.2 – 3.5 MPa</td>
<td>RT – 65°C</td>
<td>200 – 500%</td>
<td>High initial screen fixation</td>
</tr>
<tr>
<td>Low Conductive 1C-PUR</td>
<td>Glass, paint, e-coat</td>
<td>Glass, paint, e-coat</td>
<td>1.2 – 3.5 MPa</td>
<td>RT – 65°C</td>
<td>200 – 500%</td>
<td>Antenna suitable</td>
</tr>
</tbody>
</table>

1 AUTOMATED APPLICATION OF SIKAFLEX®
2 AUTOMATED BONDING OF WINDSHIELD

1 IN 4
Windshields worldwide annually are bonded with Sikaflex®
SOLVING MIXED MATERIAL BONDING CHALLENGES
Introducing a new level of design flexibility

LIGHTER VEHICLES START WITH SIKA
The trend towards lightweight structures in car body construction has made mixed assembly of lightweight and composite materials a common strategy.

Our Sikaflex® Ultra High Modulus (UHM), one-component elastic polyurethane adhesive provides OEMs with an innovative alternative to spot welding body structures or to the use of rigid, inflexible structural adhesives. Sikaflex®-UHM creates a new level of design flexibility by allowing engineers to explore innovative uses of lightweight materials, while ensuring designs and materials chosen can comply with all of the requirements for crash-resistance and safety regulations.

This innovative adhesive family provides an industry-leading solution to the most challenging assembly line bonding challenges; providing exceptional performance during crash events, while continuously accommodating the science of differential material thermal expansion and contraction properties (Δ-a) when used together. Further, Sikaflex®-UHM directly contributes to car body stiffness for improved vehicle dynamics. The chemistry, based on Sika patented and proprietary i-Cure® technology, allows for curing acceleration through the use of Sika®Booster products, making this joining technique an enabler for mass production of mixed material design intentions.

APPLICATION
- Aluminum/CFRP to steel body bonding
- CFRP to Aluminum bonding
- CFRP/CFRP bonding

BENEFITS
- Enables light weight structure assembly
- High elasticity contributes to excellent crash performance
- Accommodation of Δ-a due to high elongation
- Constant mechanical performance over service temperature range due to proprietary i-Cure® technology
- Contributes directly to improvement of body stiffness due to High Modulus properties

TECHNOLOGY OVERVIEW: MIXED MATERIAL BONDING – Sikaflex®-UHM AND Sika®Booster

<table>
<thead>
<tr>
<th>Requirement</th>
<th>2C-PUR</th>
<th>2C-PUR</th>
<th>Sikaflex®-UHM</th>
<th>Sikaflex®-UHM + Sika®Booster</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stiffness</td>
<td>x</td>
<td>x</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Crash Performance</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Δ-a</td>
<td>✔</td>
<td>✔</td>
<td>x</td>
<td>✔</td>
</tr>
<tr>
<td>Adhesion to e-coat, paint and CFRP</td>
<td>✔</td>
<td>✔</td>
<td>x</td>
<td>✔</td>
</tr>
<tr>
<td>Cold Curing</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Fast Curing</td>
<td>x</td>
<td>✔</td>
<td>x</td>
<td>✔</td>
</tr>
</tbody>
</table>

2'000'000 KG of weight saved annually by using Sikaflex®-UHM
BONDING AND SEALING SOLUTIONS FOR TRIM ASSEMBLY

New materials - New options - New possibilities

BETTER VEHICLES START WITH SIKA
Bonding of Trim parts directly on the assembly line has opened new possibilities for car body design, while also simplifying and streamlining assembly processes. Sika offers a full range of adhesive and sealant technologies for Trim Parts assembly especially suited to the challenges presented, Sikaflex® and SikaForce® 1C and 2C polyurethanes, hybrid technologies including silane terminated polymers and our proprietary i-Cure® product family.

Typical applications include sealing and bonding of spoilers, antennas, bumpers, tailgates, side-panels, headliners, cockpits and even roof rails. Potential applications are only limited by the engineers and the designers’ imaginations.

Of special interest for these products is the drive to reduce body weight, which has led to greater use of alternative materials for assemblies including aluminum, plastics, and composites, as well as thinner metal panels.

Another Sika innovation; our newly developed Sikaflex®-ULM (Ultra Low Modulus) adhesives, specifically introduced for bonding applications on very thin metal panels, without introducing typical read through effects common to alternative adhesive materials. Sikaflex®-ULM leverages fully the advantages of our patented i-Cure® prepolymer base, specifically addressing constant and consistent performance over the wide range of temperature influences affecting panel bonds.

APPLICATION
- Multiple assembly operations in trim parts bonding
- Ideal for application on thin metal panels (DVD, Headliner)
- Anti-flutter bonding applications, panel to frame, panel to panel
- Wide range of sealing applications in assembly operations

BENEFITS
- Greater freedom in car body design and assembly techniques
- Products directly applicable to weight reduction strategies
- Excellent and constant performance due to i-Cure® technology

3,000,000 KG of weight saved annually by using Sikaflex®-ULM

TECHNOLOGY OVERVIEW: TRIM PART BONDING AND SEALING

<table>
<thead>
<tr>
<th>Product</th>
<th>Material Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Suitable Substrates</td>
</tr>
<tr>
<td>Low-Modulus 1C-PUR</td>
<td>E-coat, Paints, Plastics</td>
</tr>
<tr>
<td>Sikaflex®-ULM i-Cure® based 1C-PUR</td>
<td>Trim Part Bonding and Anti-Flutter</td>
</tr>
<tr>
<td>Hybrid 1C-PUR</td>
<td>Trim Part Bonding and Sealing</td>
</tr>
<tr>
<td>UV-resistant 1C-PUR</td>
<td>Sealing</td>
</tr>
</tbody>
</table>

Typical applications include sealing and bonding of spoilers, antennas, bumpers, tailgates, side-panels, headliners, cockpits and even roof rails.
PRE-TREATMENT SOLUTIONS
Innovative technology for bonding challenges

COMPLETE SYSTEM SOLUTIONS START WITH SIKA
Sika has a long and rich history of innovation in surface pre-treatment technologies, including introduction of the first black-primerless systems, luminescent primer detection systems and eco-friendly water based primer systems all formulated with one mission; worry free and assured bond line adhesion for every potential application.

Our full range product portfolio includes:
- Sika®Aktivator for direct glazing applications; float glass, ceramic frits and paints
- Sika®Primer for direct glazing applications as well as pre-treatment for light weight materials including e-coated aluminum, metals or CFRP parts
- Sika®Cleaner surface preparation applications; prior to the application of Sika®Aktivator or Sika®Primer

Additionally, as the demand for eco-friendly solutions continues to grow, Sika continues the long heritage of pre-treatment innovation, introducing as early as 2006 our first water based Sika®Aktivator for direct glazing; Sika®Hydro Prep®-100. Fast forward to today; Sika®Hydro Prep® products are a sustainability contributor; use of the product in current applications reduces over 200,000 liters of VOC discharge annually. The product has also evolved during this time from a two component mix product to a one component system, which has simplified its use without compromising on performance. Eco-friendly, high performing, and easy to use innovations start with Sika.

APPLICATION
- Direct Glazing - where surface pre-treatment is required
- Enables and enhances mixed material bonding (CFRP, Aluminum, Steel, PE, PP)
- Trim Part Bonding on multiple materials if / where required

BENEFITS
- Simplify pre-treatment procedures with proven technology
- Improve designer’s flexibility in material selection
- Sustainable options - Significant reduction of pre-treatment VOC footprint
- Suitable for manual and automated applications

TECHNOLOGY OVERVIEW: PRE-TREATMENTS – Sika®Aktivator, Sika®Primer, Sika®Cleaner AND Sika®Hydro Prep®

<table>
<thead>
<tr>
<th>Product</th>
<th>Technology</th>
<th>Suitable Substrate</th>
<th>Application Method</th>
<th>Flash Off</th>
<th>Open Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sika®Primer-206 G+P</td>
<td>Solvent based black Primer</td>
<td>Glass, ceramic, paint</td>
<td>Manual</td>
<td>10’ – 24h</td>
<td>&gt; 7 days</td>
</tr>
<tr>
<td>Sika®Primer-206 D</td>
<td>Glass, ceramic</td>
<td>Manual</td>
<td>10’ – 24h</td>
<td>&gt; 7 days</td>
<td></td>
</tr>
<tr>
<td>Sika®Primer-209 D</td>
<td>Paint, plastic, CFRP</td>
<td>Manual</td>
<td>10’ – 24h</td>
<td>MSDS-free</td>
<td></td>
</tr>
<tr>
<td>Sika®Primer-209 N</td>
<td>Plastics</td>
<td>Manual</td>
<td>10’ – 24h</td>
<td>&gt; 7 days</td>
<td></td>
</tr>
<tr>
<td>Sika®Primer-217 LUM</td>
<td>Glass, ceramic, paint, plastic</td>
<td>Manual</td>
<td>10’ – 24h</td>
<td>&gt; 1 month</td>
<td></td>
</tr>
<tr>
<td>Sika®Aktivator-100</td>
<td>Glass, ceramic, primer</td>
<td>Manual</td>
<td>10’ – 24h</td>
<td>&gt; 5 days</td>
<td></td>
</tr>
<tr>
<td>Sika®Aktivator DS</td>
<td>Solvent based Activator</td>
<td>Glass, ceramic</td>
<td>Manual &amp; Automated</td>
<td>10’ – 3 days</td>
<td>&gt; 5 days</td>
</tr>
<tr>
<td>Sika®Paint Aktivator</td>
<td>Paint</td>
<td>Manual</td>
<td>5’ – 6h</td>
<td>&gt; 3 days</td>
<td></td>
</tr>
<tr>
<td>Sika®Hydro Prep®-110</td>
<td>Water based Activator</td>
<td>Glass, ceramic</td>
<td>Manual &amp; Automated</td>
<td>2’ – 7 days</td>
<td>&gt; 7 days</td>
</tr>
<tr>
<td>Sika®Hydro Prep®-206</td>
<td>Water based black Activator</td>
<td>Glass, ceramic, paint, plastic</td>
<td>Manual</td>
<td>&gt; 30’</td>
<td>&gt; 7 days</td>
</tr>
<tr>
<td>Sika®Cleaner</td>
<td>Solvent based Cleaner</td>
<td>Glass, ceramic, paint, plastic</td>
<td>Manual &amp; Automated</td>
<td>10’ – 2h</td>
<td>&gt; 1 day</td>
</tr>
</tbody>
</table>

200’000 LITERS
less solvent used annually by using Sika®Hydro Prep®
As a leader in the glass replacement industry, SiKA offers a comprehensive "all in one" full service portfolio for professional glass replacement. This portfolio includes products designed to meet the stringent standards required for passenger crash protection and windshield mounting, such as FMVSS208/212. Additionally, OE specifications related to safe drive-away time, antenna suitability, and more ensure that our products meet or exceed all necessary requirements.

### TECHNOLOGY OVERVIEW: GLASS REPLACEMENT SYSTEMS - Sikaflex®-250 RANGE AND SikaTack®

<table>
<thead>
<tr>
<th>Product</th>
<th>Technology</th>
<th>Fast SDAT</th>
<th>Long Open Time</th>
<th>Water-based Pre-treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sikaflex®-250 range</td>
<td>1C-PUR</td>
<td>++</td>
<td>++</td>
<td>--</td>
</tr>
<tr>
<td>SikaTack® + Sika®Booster</td>
<td>1C accelerated PUR</td>
<td>++</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

**APPLICATION**
- Glass replacement systems for professional users
- Simple solutions for any rework requirements in assembly line applications

**BENEFITS**
- Fast Safe Drive-Away time
- Repair to original DEM conditions
- Accelerated PUR systems available
- Shortest SDAT available in the industry
- Customized and tailor-made solutions to DEM requirements

With our Sika®Aktivator, Sika®Primer, Sikaflex® and SikaTack® products, we offer a full range of professional repair products for vehicle glass replacement. Our "all in one" full service portfolio includes over 20 million vehicles produced annually worldwide that contain SiKA laminating adhesives, as well as over 65 million car windows bonded during assembly using Sikaflex®. SiKA has more than 17,000 employees in more than 90 countries, and more than 30% of interior noise reduction in vehicles is thanks to SiKA's acoustic solutions.
GLOBAL REACH BUT LOCAL PARTNERSHIP

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Please consult the most current local Product Data Sheet prior to any use.

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