



THERMOPLASTICS AND THERMOSET SOLUTIONS FOR ASSEMBLY AND MANUFACTURING

BUILDING TRUST





BOOST PRODUCTIVITY IN THERMOSET PLASTIC PART MANUFACTURING

The right thermoset composite bonding solutions can lead to significant gains in production efficiency and capacity. Since thermoset plastic parts often combine a painted class A surface with a stiffening element, excessive curing times for structural adhesives tend to create unnecessary production bottlenecks.

OPTIMIZE PRODUCTION SPEED AND COSTS

Sika experts can support your industrial process design to achieve the best balance of speed and cost. Whether the curing takes place at ambient or increased temperature, Sika combines a wide range of high-performance structural adhesives with deep process expertise to create tailored solutions that minimize press time and maximize production output.

BRING US YOUR TOUGHEST PRODUCTION CHALLENGES

From initial concept to serial production, our experts combine unmatched expertise in structural adhesives with deep experience in all stages of thermoset part manufacturing to help you achieve:



HIGHER THROUGHPUT



FASTER PRESS TIME



INCREASED EFFICIENCY

INCREASE DURABILITY OF THERMOPLASTIC COMPONENTS AND ASSEMBLIES

Environmental stress cracking due to mechanical, chemical or thermal stress is a constant challenge for many manufacturers and integrators of thermoplastic components. This is particularly true for amorphous thermoplastics, where the use of plasticizer-containing adhesives or adhesives with insufficient elasticity can compromise the durability of thermoformed parts.

DURABLE SOLUTIONS DESIGNED FOR THERMOPLASTIC ADHESION

The latest Sikaflex® and SikaForce® solutions formulated without the use of critical plasticizers are designed for superior compatibility to thermoplastic materials, ensuring durable parts and reducing the risk of environmental stress cracking to a minimum. Their high elasticity eliminates read-through, making the adhesive joints invisible.

This also reduces material stress at low temperatures as well as those caused by thermal expansion. Through careful analysis of your product and process requirements, Sika experts can tailor the right adhesive and bonding solutions to enhance your product's durability, optimize adhesion performance, reduce time-consuming surface preparation and much more.

ENHANCING PRODUCT QUALITY TOGETHER

From the early design stage to final assembly, our experts provide tailored adhesive bonding solutions and process enhancements to comprehensively reduce the risk of stress cracking and ensure:



INCREASED DURABILITY



HIGH ADHESION PERFORMANCE



INCREASED EFFICIENCY

Sikaflex[®] PURFORM[®]

Perform today. Purform tomorrow.

PURFORM[®]
Pure Performance

Engineered to remove diisocyanate monomer content, Sikaflex[®] and SikaTack[®] Purform[®] adhesives and sealants deliver all the benefits of industry-leading polyurethanes, with less than 0.1% monomeric diisocyanate for better health protection and occupational safety. Purform[®] is the foundation for a new generation of pure polyurethane solutions for sealing, bonding, and protection. Solutions that perform better, last longer, and meet tomorrow's health and safety needs.

As a manufacturer covering the complete production chain from pre-polymer to final product composition, Sika can design products to meet specific requirements, such as non-staining, non-cracking, or non-yellowing sealants as well as for direct adhesion to specific substrates.

Sikaflex[®]-645 AND Sikaflex[®]-648

Primerless adhesives with superior compatibility to thermoplastics

Purform[®] enables the composition of adhesives and sealants with unique properties to reduce chemical exposure through surface preparation or plasticizers to a minimum.

They are composed using the smallest amount of plasticizer to minimize plasticizer migration into the thermoplastic. Sikaflex[®]-645 and Sikaflex[®]-648 outperform standard elastic adhesives in long-term compatibility with thermoplastic materials (Environmental Stress Cracking, ESC Performance).

- Sikaflex[®]-645 is a highly elastic adhesive sealant with primerless adhesion to ABS, PC and PVC blends.
- Sikaflex[®]-648 is a high-strength assembly adhesive with primerless adhesion to PC blends.

PRIMERLESS ADHESION PERFORMANCE OF Sikaflex[®]-645



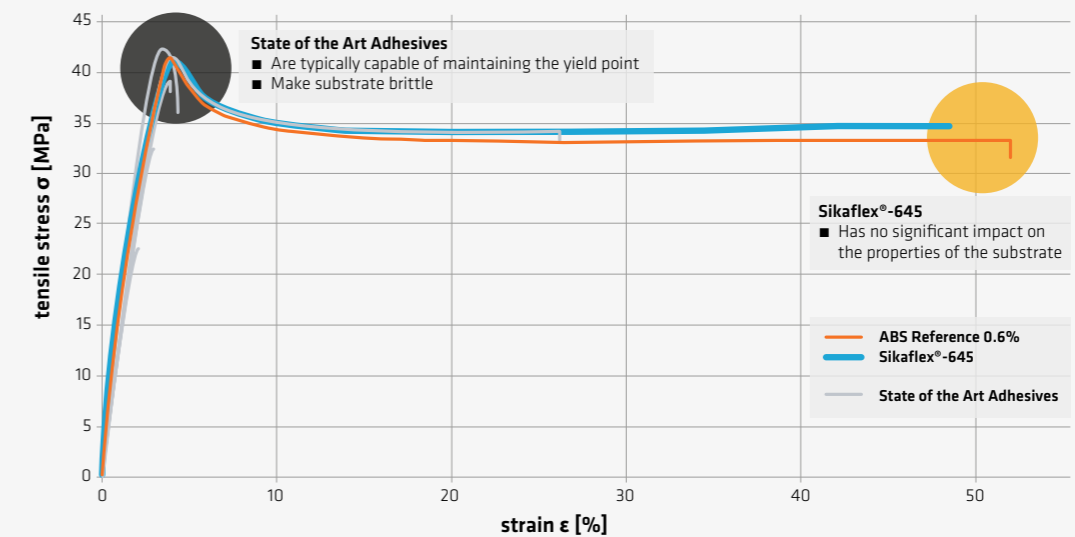
ABS

PVC

PC

COMPATIBILITY BENCHMARK ESC TESTING

EN ISO 527-2 - ABS - 0.6% strain



SOLUTIONS FOR THERMOPLASTICS MANUFACTURING AND ASSEMBLY

YOUR PROCESS	AUTOMATED PROCESSING		MANUAL PROCESSING		
	THERMOPLASTICS ABS/PC/PMMA ETC				ORGANIC GLASS PC/PMMA
	FAST-CURING ASSEMBLY ADHESIVE	SEMISTRUCTURAL, FAST-CURE ASSEMBLY ADHESIVE	PRIMERLESS TO ABS AND PC ELASTIC ASSEMBLY ADHESIVE	HIGH-STRENGTH ASSEMBLY ADHESIVE	SEALANT FOR ORGANIC GLASS
Sika Solution	SikaForce®-820 L06	SikaForce®-453 L04 (Adekit A252)	Sikaflex®-645	Sikaflex®-648	Sikaflex®-223 ^A
Chemistry	2C PUR	2C PUR	1C PUR (Purform®)	1C PUR (Purform®)	1C PUR
Color	Black	Black	White / Black	Black	White / Black
Mix ratio	2:1	1:1	--	--	--
Open Time / Pot Life	L06: 6 min	L04: 4 min	25 min	15 min	45 min
Handling Time (1Mpa, 23°C)	90 min	60 min	--	--	--
Shore A	65	80	40	65	35
Tensile Strength	3.5 MPa	11 MPa	4.5 MPa	7.5 MPa	2 MPa
Elongation at Break	350%	200%	1000%	750%	500%
Lap Shear Strength	2 MPa	8 MPa	1.8 MPa	4.5 MPa	1.5 MPa
Primerless Adhesion	ABS PC Blends	ABS PC Blends	ABS PC Blends	PC Blends	--
Product Description	Fast cure flexible assembly adhesive. Ideal for application by robot. Superior compatibility with thermoplastics to reduce risk of stress cracking to a minimum. No read through when used with thinner sheets of thermoplastics. Ideal for mixed material bonding.	Semistructural, fast-cure assembly adhesive. Ideal for application by robot or out of cartridge. Superior compatibility with thermoplastics to reduce risk of stress cracking to a minimum. No read through when used with thinner sheets of thermoplastics. Ideal for joining sheets of the same material or with a similar thermal expansion coefficient.	Bonds without primer to various ABS, PVC and PC blends. Superior compatibility with thermoplastics to reduced risk of stress cracking to a minimum. Its high elasticity reduces material stress at low temperature or caused by thermal expansion.	High-strength assembly and glass adhesive with superior compatibility with thermoplastics to reduce risk of stress cracking to a minimum. Its high elasticity reduces material stress at low temperature or caused by thermal expansion. Can be accelerated with Sikaflex® Booster.	Weathering-resistant adhesive sealant for organic glass installation. Its high elasticity reduces material stress at low temperature or caused by thermal expansion. Can be accelerated with Sikaflex® Booster

Always consult the most current local Product Datasheet. Check with your local Sika Company about product availability or alternative solutions. Performance and compatibility needs to be verified for each project. Thermal Expansion of Components, Process Requirements and Adhesion are critical parameters for product selection.

^A In context with Thermoplastics, mostly suitable for organic glass sealing and bonding

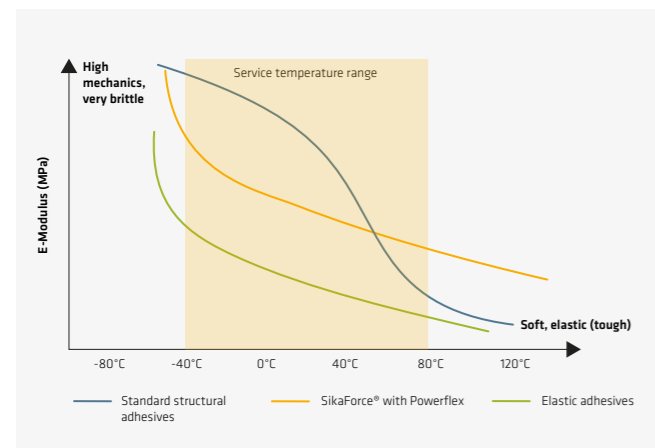
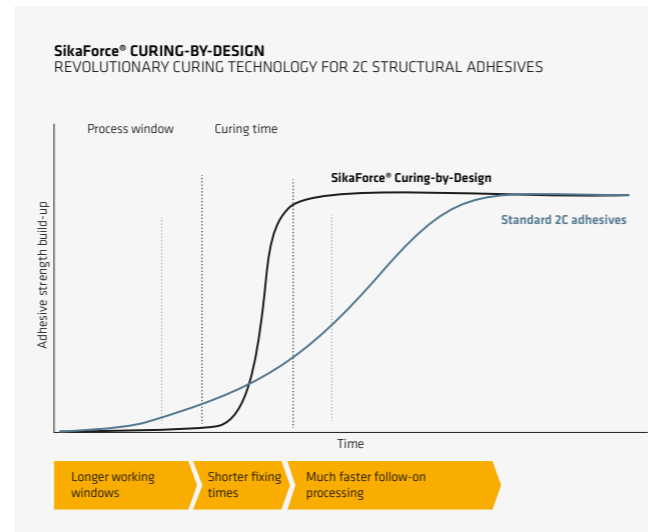
SikaForce® CURING BY DESIGN STRUCTURAL ASSEMBLY ADHESIVES



SikaForce® Curing by Design provides a unique snap cure effect combining long working time with fast curing. This enables users of SikaForce® Curing by Design structural adhesives to have the shortest press time at elevated and ambient temperatures.

These solutions also provide the highest levels of strength combined with lasting elasticity even at low temperatures. Thanks to their unique performance characteristics, SikaForce®-800 Series adhesives outperform even the state-of-the-art 2C structural adhesives designed to bond lightweight materials.

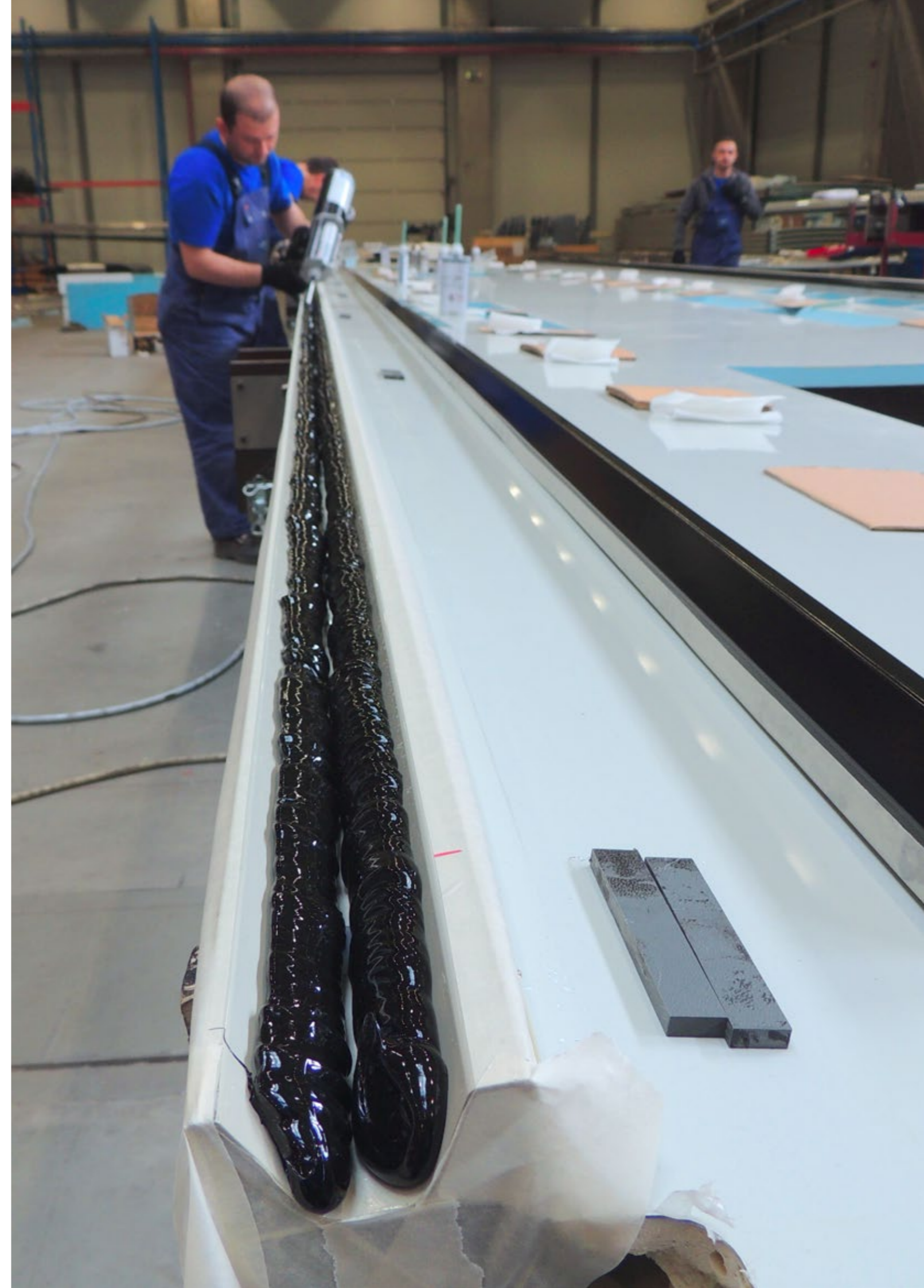
Standard 2-component adhesives show a significant loss of mechanical strength at elevated temperatures (e.g., 80°C). SikaForce®-800 Series structural adhesives show a substantially higher strength retention rate when heated while keeping its elasticity over the entire service temperature.



SikaForce®-803 L45 AND SikaForce®-840 L07 - HIGH STRENGTH RETENTION AND SNAP CURING FOR ASSEMBLY

SikaForce®-840 L07 is a structural adhesive that maintains flexibility even at cold temperatures. It reduces stress that may occur at the lower end of the service temperature range and enhances the durability of thermoset composite parts. Its snap cure performance helps reduce press time which results in higher press capacity and more output.

SikaForce®-803 L45 is made for the assembly of large components at the vehicle manufacturing site. It reaches handling strength within two hours while offering a 45-minute working time. It combines high strength retention at the upper end of the service temperature range while staying elastic at the lower end.



SOLUTIONS FOR THERMOSET PLASTICS

MANUFACTURING AND ASSEMBLY

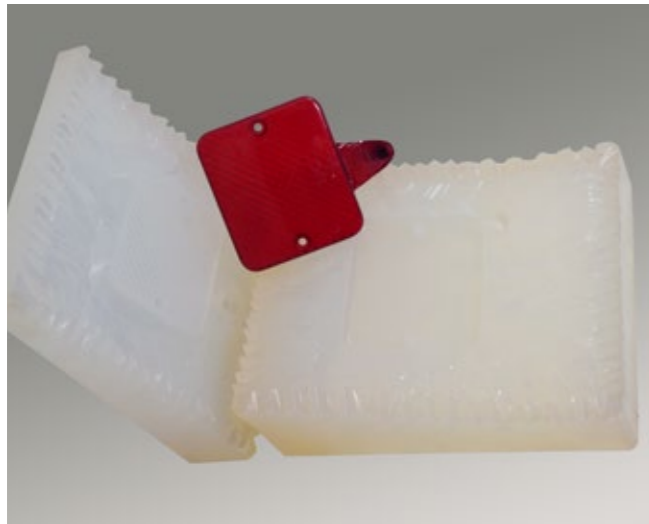
YOUR PROCESS	HIGH SERIES PART PRODUCTIONS			VEHICLE ASSEMBLY (E.G. PART BONDING TO VEHICLE BODY)			
	FAST-CURE 2C ADHESIVE SOLUTIONS			FAST-CURE 1C AND Sikaflex® BOOSTER SOLUTIONS		MOISTURE-CURING 1C SOLUTIONS	
	HIGH VOLUME ASSEMBLY WITH GRAVITY FEEDING	HIGH-VOLUME ASSEMBLY OF THERMOSET PARTS	SNAP CURE ADHESIVE FOR USE AT AMBIENT AND ELEVATED TEMPERATURE	STRUCTURAL ADHESIVE FOR BONDING OF LARGE COMPONENTS	SNAP CURE ADHESIVE FOR STRUCTURAL BONDING OF LARGE COMPONENTS	STRUCTURAL BONDING OF LARGE COMPONENTS	INSTANT GRAB ASSEMBLY ADHESIVE
Sika Solution	SikaForce®-430 L10 (Adekit A230)	SikaForce®-490 L03 (Adekit A290)	SikaForce®-840 L07	SikaForce®-436 L25 (Adekit A236)	SikaForce®-803 L45	Sikaflex®-554	Sikaflex®-545
Chemistry	2C PUR	2C PUR	2C PUR (Curing by Design)	2C PUR	2C PUR (Curing by Design)	STP	STP
Color	Beige	Black	Black	White / Black	Black	White / Black	White
Mix ratio	1:1	1:1	1:1	1:1	1:1	Sika® Booster available	--
Open Time / Pot Life	L10: 10 min	L03: 3 min	L07: 7 min	L25: 25min L120: 120 min	45 min	25 min	10 min
Handling Time (1Mpa, 23°C)	35 min	10 min	20 min	4 hrs	2 hrs	With Booster 4hrs	--
Shore A	D: 70	88	95	D: 55	80	55	45
Tensile Strength	14 MPa	13 MPa	15 MPa	11 MPa	10 MPa	3.5 Mpa	2.5 MPa
Elongation at Break	30%	75%	100%	180%	300%	500%	400%
E-Modulus	200 MPa	0.5-1%: 150 MPa	0.05-0.25%: 350 MPa	0.05-0.25%: 34 MPa	0.5-1.0%: 25 MPa	--	--
Lap Shear Strength	17 MPa	8 MPa	15 MPa	8 MPa	2.5 MPa	2.5 MPa	1.5 MPa
Primerless Adhesion	Composites	Composites	Composites	Composites	Paints, Coated Metals, Glass, Composites	Paints, Metals, Glass, Composites	Paints, Metals, Glass, Composites
Product Description	Structural adhesive ideal for shell assembly in SMC / composite manufacturing in combination with gravity feeding or direct pumping equipment. Stronger than most polyester / vinylester composites (fiber pull out).	Structural adhesive ideal for shell assembly in SMC / composite manufacturing. Stronger than most polyester / vinylester composites (fiber pull out).	Structural adhesive with snap cure effect. Ideal for shell assembly in SMC / composite manufacturing at ambient temperature or heated press.	Structural adhesive with long working time for assembly of large composite parts. Able to compensate for large gaps. Stronger than most polyester / vinylester composites (fiber pull out).	Structural adhesive ideal for large composite parts with longer work time and faster curing. Able to compensate for large gaps.	Structural elastic adhesive with excellent weathering performance for assembly bonding and sealing in industrial manufacturing. Curing can be accelerated with Sika® Booster or PowerCure.	Adhesive sealant with instant grab. For part assembly without use of tape and spacers. Excellent weathering resistance for inside and outside sealing.

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SIKA ADVANCED RESINS

High-performance resins and block materials

DISCOVER OUR CUSTOMIZED SOLUTIONS with local support and worldwide availability from the model to the part. Our wide range of high-quality resins and block materials offers the perfect solutions for fast and cost-effective production of your prototypes and small to mid-size series.



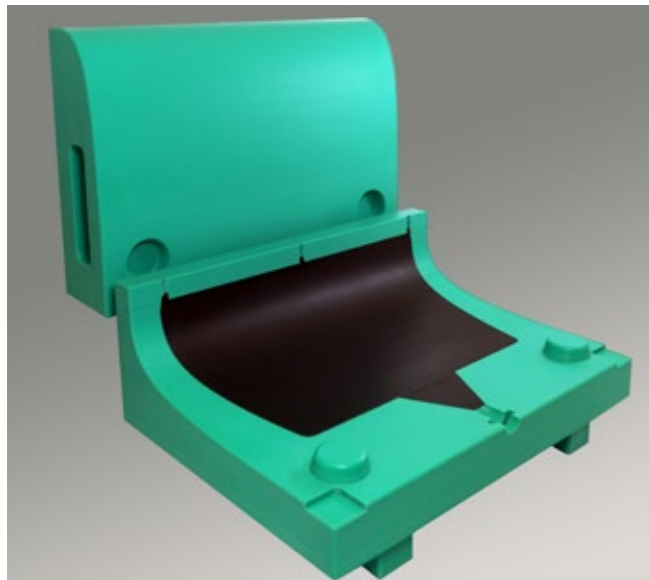
ESSIL SILICONE SYSTEMS

To cover the complete process, Sika's portfolio for rapid prototyping also includes the ESSIL silicone systems for mold making. Our silicones allow you to produce molds that create parts with the highest surface quality and dimensional stability.



RIM PROTOTYPING SYSTEMS

Our SikaBiresin® RG low-pressure RIM systems give you the opportunity to produce high-class prototypes and series of up to several hundred parts. The short pot life and demolding time ensure superior cost efficiency. Whether you are producing small or large part volumes, Sika offers an optimal solution suited to the properties of your thermoplastic series. For adhesion of RIM parts, a wide range of SikaFlex®, SikaForce® and SikaFast® systems are available to meet your precise individual requirements.



SikaBlock® BOARD MATERIALS

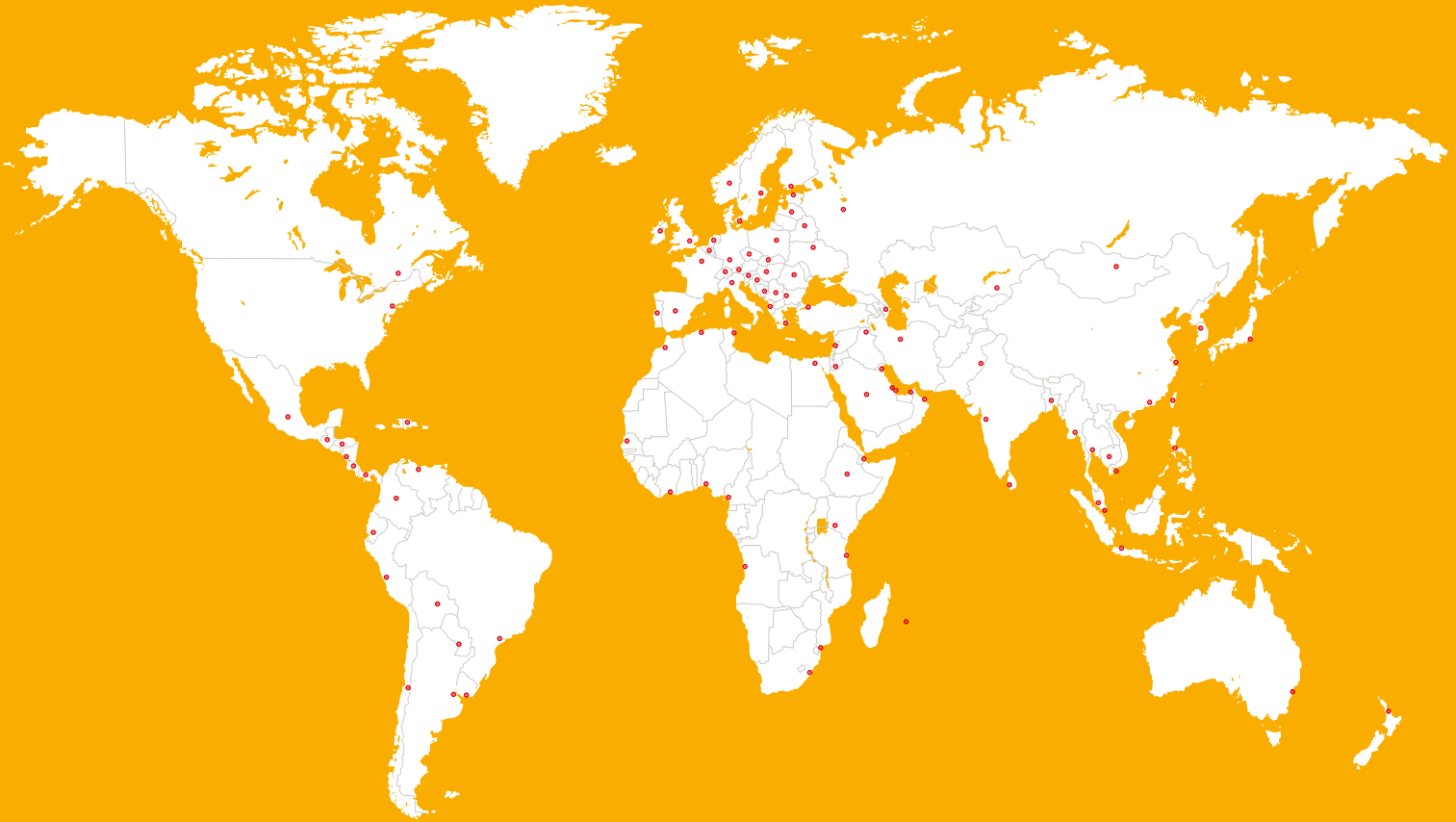
The relatively low pressures used in the RIM process, compared to thermoplastic injection molding, make it possible to use significantly more cost-effective tools. Building RIM molds is fast, inexpensive and enables easy modification. Mold manufacture can be performed most efficiently by CNC milling of PUR solid block materials. Sika offers suitable SikaBlock® board materials with varying densities and material properties, each of which are adapted to the various needs and durability of the tool (e.g. the required number of pieces).

SikaBiresin® PX

Our polyurethane-based SikaBiresin® PX vacuum casting systems are ideally suited for rapid prototyping. They simulate the majority of thermoplastic series material characteristics, ranging from soft to stiff, without limiting the intricacy of shapes and designs. The SikaBiresin® PX range also includes transparent and high-temperature resistant systems.



GLOBAL BUT LOCAL PARTNERSHIP



CONTACT US FOR MORE INFORMATION:



www.sika.com/transportation

Sika is a specialty chemicals company with a leading position in the development and production of systems and products for bonding, sealing, damping, reinforcing and protecting in the building sector and the motor vehicle industry. Sika's product lines feature concrete admixtures, mortars, sealants and adhesives, structural strengthening systems, industrial flooring as well as roofing and waterproofing systems.

Our most current General Sales Conditions shall apply. Please consult the most current local Product Data Sheet prior to any use.



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