



# TRANSPORTATION TECHNOLOGY ON WHEELS

BUILDING TRUST





## DRIVING SOLUTIONS

Sika's success and reputation is based on its long-lasting tradition of innovation. Accordingly, the core of its business is the innovation management and the focus on developing quality products and the best solutions for their customers.

A key factor for the success of Sika's R&D work is its strategic focus on clearly defined core competencies, namely bonding, sealing, damping, reinforcing and protecting of commercial vehicles. In this brochure we provide an overview about the technologies Sika offers worldwide for the transportation industry.

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# SIKA CORE COMPETENCIES

## SEALING

Sealing of joints, cavities, and other open areas afford many benefits such as minimizing the flow of gasses, liquids, dust, sound, heat and cold.

Other benefits are:

- Increased functionality and comfort in the interior
- Reduced corrosion
- Prevent moisture and water entrapment
- Improved aesthetics

## BONDING

Bonding provides a permanent and powerful connection between different materials with the benefit of even stress distribution and therefore improved shock and impact resistance. Further important benefits compared to mechanical fixations are:

- No damage of corrosion prevention coatings
- Reduced number of processing operations
- Reduced interior and exterior noise transmission
- Greater freedom for design

## DAMPING

Damping reduces noise vibration harshness (NVH) transmitted by load-bearing structures and cavities.

Important factors are:

- Reduced vehicle weight as compared to traditional damping techniques
- Can be applied at any point during vehicle assembly
- Enhanced passenger comfort
- Easy to handle and implement in mass production



# REINFORCING

Reinforcing boosts strength of load-bearing structures exposed to both static and dynamic forces (crash).

In addition, reinforcing provides:

- Increased structural stability / safety
- Improved fatigue behavior
- Design flexibility leading to weight reduction
- Node stiffness and global body frequency response improvement

# PROTECTING

Protecting extends the working life of the vehicle with reduced maintenance and repair costs.

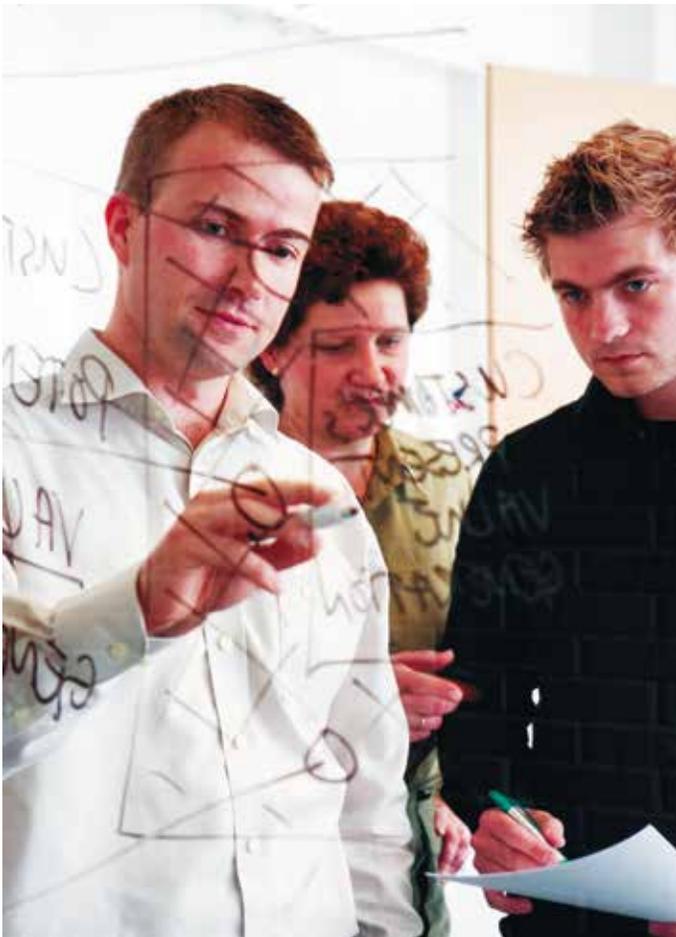
Further benefits are:

- Sound damping
- Vibration reduction
- Corrosion prevention
- Sealing



# SIKA PROFESSIONAL SOLUTIONS – FROM FLOOR TO ROOF

Sika's contact with the customer does not end with the sale of a product. In fact this is just one step within the partnership. Sika's primary aim is to provide innovative solutions that help customers to generate added value on a long term basis and stay competitive at all times. Underlying this mission statement is the belief that continued success comes not just from high quality products, but from the development of total integrated solutions.



## **THE SIKA PROFESSIONAL SOLUTIONS**

Based on a range of leading technologies, Sika offers customized solutions for commercial vehicle manufacturers. Together with our customers we develop new systems for innovative design, to improve quality and to reduce production cost.

To meet those needs we have put together the Sika package for integrated professional solutions, which consists of three elements:

## **TECHNOLOGY**

Technology forms the platform for advanced, high-performance products. Sika has developed a comprehensive range of process materials, delivering complete system solutions for industry in its core competencies: sealing, bonding, damping, reinforcing and protecting.

## **SERVICE**

Our worldwide R&D Technology Centers, System Engineering and Technical Services as well as Acoustic Engineering and Design, provide world-class technical support to the transportation industry. The offering from Sika lasts from adhesion test over defining and developing of integrated solutions for specific customer requirements. The implementation and innovative solution development is supported by Sika and a broad network of partners. The local, regional and global structures enable Sika to provide this unique support to our customers.

## **PEOPLE**

Our team of highly trained and experienced Sika professionals are present in more than 70 countries with own subsidiaries around the world to assist customers in developing and implementing solutions.

# QUALITY FIRST

Sika is committed to a comprehensive quality and service culture. “Quality First” is the standard by which every production process, workplace and member of staff is measured. So it comes as no surprise to learn that the quality systems of all Sika companies are certified with the ISO 9001 series of international standards. Our understanding of quality of service means meeting the needs and wishes of our customers as promptly and efficiently as possible.

## ECOLOGY AS AN OPPORTUNITY

Sika operates according to the principle that responsibility for the environment and safety is an integral part of every managerial task and a concern of each employee. In particular, we care for the environment and pay attention to the safety of everybody dealing in:

- Research and development
- Procurement, production, storage, transportation and disposal
- Product application in construction and industry

Sika is committed to introducing and maintaining an Environmental Management System according to ISO 14001 globally. At this time, 51 companies - representing around 90% of group sales - operate in conformity with this environmental standard. Sika sees the challenge for environmental improvements as a genuine market opportunity. Today's ecological issues are the driving force behind a large part of all R&D projects.



# SIKA TRANSPORTATION MARKET FIELDS

Transportation is the most established customer group within business unit Industry. It consists of four market fields; Bus, Truck and Trailer, Rail and Speciality Vehicles. At these commercial vehicle manufacturers, we concentrate on our core competencies: bonding, sealing, damping, reinforcing and protecting. We offer solutions which meet customer demands for higher safety, comfort and lower operating costs combined with improved reliability and durability. Our contribution not only consists of products, but a full range of support from planning to production and repair. Key elements to our success are a customer focused organization, world wide presence of Technical Departments together with well trained sales force and last but not least a product portfolio which meets the customer requirements.

## **BUS AND COACH**

Bus and coach operators demand extended reliability and durability with continuous reduction of vehicle operating and repair costs. Government legislation drives lower vehicle emissions and improved passenger and driver safety. Apart from obvious demands for long term durability and resistance to harsh climates, additional requirements include low weight (vehicle handling and fuel economy) and structural integrity. Round the clock operation in extreme temperature conditions create high expectations on all areas of the vehicle.

## **TRUCK AND TRAILER**

Truck and trailer manufacturers are developing solutions for world transportation needs at an ever increasing rate. It is a competitive and challenging environment. Truck operators demand ever lower operating and repair costs, combined with improved reliability and durability. Mandatory legislation is enforcing lower vehicle emissions and improved safety. Maximized uptime, in conjunction with enhanced driver comfort and environmental aspects, throughout the vehicle life time are standard expectations. This presents demanding challenges to both design and manufacturing engineers.



## RAIL

The rail market demands a variety of established, innovative and high performance solutions for all internal, external bonding and sealing applications on the various types of rail vehicle being manufactured today.

The extensive range of technologies currently available allows for greater freedom of design, process simplification resulting in reduced cycle times, weight reduction and lower energy consumption. For the numerous applications within the cab or passenger carriage, universally approved and certified products for all bonding and sealing applications are available.

## SPECIALITY VEHICLES

The speciality vehicle market demands reliable, durable and cost effective vehicles. Recreational, military, emergency, agricultural and construction vehicle manufacturers together with trailers, vehicle converters and container producers must constantly find solutions that enable them to improve production efficiency, reduce vehicle weight and part complexity as well as increased safety and the longevity of the end product.

Traditional methods of fastening restrict design and aesthetic scope forcing manufacturers to identify and implement alternative solutions.



# 1-C POLYURETHANE TECHNOLOGY

## WHAT IS 1-C POLYURETHANE TECHNOLOGY?

Sika's 1-C polyurethane (PUR) product ranges, Sikaflex® and SikaTack®, consist of polymer based adhesives and sealants that cure on exposure to atmospheric moisture forming a flexible, high performance durable elastomer.

## HOW TO USE IT?

1-C Polyurethanes are generally of paste-like consistency with good non-sag properties. They are applied in bead form using a manual or powered cartridge/unipack gun. Alternatively, pump operated application equipment is used for pails and drums. Various features are available to cover customer demands:

- Ambient applied 41°F to 95°F (5°C to 35°C) moisture curing systems
- Hot applied 104°F to 185°F (+40 °C to +85 °C) moisture curing systems with high initial strength
- Accelerated systems where Booster paste is added to the product providing rapid strength development combined with long open time

## WHERE IS IT USED?

1-C PUR's are suitable for use where materials with different coefficients of thermal expansion are bonded and where static and/or dynamic stresses need to be distributed. These products have good tolerance compensation capabilities. The areas of application covered are: bonding and sealing in bus, truck and trailer, rail and special vehicle production. Examples include:

- General sealing applications (interior and exterior)
- Direct Glazing
- Side panel bonding
- Roof bonding and sealing
- Floor bonding
- Front and rear mask bonding
- Body assembly

## PRODUCT EXAMPLES

### FEATURES AND BENEFITS

■ Sikaflex®-201 US	- General purpose sealant
■ Sikaflex®-211 US	- Mutli-purpose sealant
■ Sikaflex®-221	- Multi-purpose sealant/adhesive
■ Sikaflex®-227	- Fast skinning elastic adhesive/ sealant
■ Sikaflex®-232	- Elastic adhesive/sealant with high green strength
■ Sikaflex®-252	- General purpose elastic adhesive
■ Sikaflex®-255 FC	- High strength elastic adhesive
■ Sikaflex®-265	- Direct glazing adhesive
■ Sikaflex®-268	- High performance elastic sealant/ adhesive
■ Sikaflex®-268 PowerCure	- Accelerated high performance adhesive/sealant
■ Sikaflex®-271 + Sika Booster 20W	- Fast curing adhesive system
■ Sikaflex®-271 PowerCure	- Fast curing high strength adhesive system
■ SikaTack®-Ultrafast US	- High strength elastic assembly adhesive



## TECHNOLOGICAL BENEFITS

The combination of long lasting elasticity and flexibility combined with the excellent mechanical properties and high strength makes the material suitable for many different applications. Specific advantages depending on product and system include:

- Ease of use
- Excellent working characteristics
- Short curing time
- Overpaintability
- Corrosion prevention
- Passive low odor
- Solvent and PVC free
- Black primerless application possible

# POLYURETHANE HYBRID TECHNOLOGY

## WHAT IS POLYURETHANE HYBRID TECHNOLOGY?

Sika's PUR hybrids are isocyanate free, moisture curing adhesives and sealants based on silane terminated polyurethane technology. These products have near comparable physical properties to PUR adhesives and sealants, providing very good adhesion with limited pre-treatment on a wide range of substrates used in bus, truck and trailer, rail and speciality vehicle market.

## HOW TO USE IT?

Sika's PUR hybrids are generally of paste-like consistency with good non-sag properties. They are applied with a manual or powered cartridge/unipack gun. Alternatively, pump operated application equipment is used for pails and drums.

Different features are available to cover customer needs.

- Ambient applied 41°F to 95°F (+5 °C to +35 °C) moisture cured systems
- 2-C reactive systems which cure by homogeneous mixing of component A and B

## WHERE IS IT USED?

The areas of application for PUR hybrids are much the same as for 1-C polyurethanes and cover bonding and sealing in bus, truck, rail and speciality vehicle production.

Examples include:

- General sealing applications (interior and exterior)
- Side panel bonding
- Roof bonding and sealing
- Floor bonding
- Front and rear mask bonding
- Body assembly (sandwich panels)



## PRODUCT EXAMPLES

### FEATURES AND BENEFITS

- **Sikaflex®-505\*** – General purpose MS adhesive/sealant
- **Sikaflex®-505 UV\*** – High viscous MS adhesive/sealant
- **Sikaflex®-505 UV HV\*** – Isocyanate free, fast skinning sealant
- **Sikaflex®-515** – High performance silane-terminated polymer sealant
- **Sikaflex®-519** – Elastic adhesive/sealant with high green strength
- **Sikaflex®-521 UV** – Weathering resistance sealant
- **Sikaflex®-552** – High strength silane-terminated polymer structural assembly adhesive
- **Sikaflex®-715** – Semi self-sealing roof membrane sealer

\*MS Polymer Technology

## TECHNOLOGICAL BENEFITS

PUR hybrid technology delivers all the benefits of elastic bonding comparable to Sika's polyurethane systems. Specific product advantages include:

- Excellent adhesion to a wide range of substrates with minimal surface preparation
- Good weathering and UV resistance
- Outstanding mechanical properties
- Classification free, no isocyanate content
- Excellent working characteristics
- Overpaintability
- Corrosion prevention
- Passive low odor

# 2-C POLYURETHANE ADHESIVE TECHNOLOGY

## WHAT IS 2-C POLYURETHANE ADHESIVE TECHNOLOGY?

SikaForce® is a 2-C adhesive system, consisting of a polyol resin and a catalyzed hardener. The two parts are mixed together at a fixed ratio initiating the cure mechanism. SikaForce® 2-C polyurethane adhesives cure independently of atmospheric moisture and are solvent free.

## HOW TO USE IT?

SikaForce® can be dispensed manually from cartridges through a static mixer or from drums and pails using readily available two component equipment. These products can be further automated for very accurate, high volume production by linking to multi-axis robotic systems.

## WHERE IS IT USED?

SikaForce® adhesives are used to bond a variety of components:

- Bus roof panels
- Refrigerated trailer cappings
- Recreational vehicle grab handles and gas bottle covers
- Truck side skirts
- Potting of electronic equipment i.e. ABS braking systems
- Sandwich panel construction
- Honeycomb panels for rail vehicles



## PRODUCT EXAMPLES FEATURES AND BENEFITS

- **SikaForce®-7570** – Fast and flexible assembly adhesive
- **SikaForce®-7710** – General purpose sandwich panel adhesive
- **SikaForce®-7720** – Two component non sagging assembly adhesive
- **SikaForce®-7780** – Flexible bonding and filling compound

## TECHNOLOGICAL BENEFITS

SikaForce® provides a unique combination of elasticity and high shear strength, this versatility makes it suitable for numerous bonding applications:

- Provides good gap filling properties
- Enhanced freedom of design
- High impact and tear propagation resistance
- Can withstand high dynamic stress
- A variety of open and fixture times
- Capable of bonding dissimilar substrates
- Excellent aging and chemical resistance

# 2-C ACRYLIC ADHESIVE TECHNOLOGY

## WHAT IS 2-C REACTIVE ACRYLIC TECHNOLOGY?

The SikaFast®-3000 series is a range of fast curing, low to high modulus, structural adhesives based on methyl methacrylate mixed at a 10:1 or 1:1 volumetric ratio. The products cure by polymerization after homogeneous mixing of both components. The reaction is completely independent of moisture. Rapid strength build up is a key characteristic of this type of adhesive.

## HOW TO USE IT?

SikaFast®-3000 adhesives are applied to a substrate with bond line thickness of no more than 3 mm. The parts should be mated within the specified skin time and no stress applied until curing is complete. The products are packaged in cartridges, hobbocks and drums for semi-automated or robotic bulk dispensing.

## WHERE IS IT USED?

SikaFast®-3000 acrylic adhesives are approved for bonding:

- A wide variety of metal assemblies
- Brackets and components
- Thermoplastic and thermoset composites



## PRODUCT EXAMPLES FEATURES AND BENEFITS

- **SikaFast®-3100 Series** – 10:1 toughened structural methacrylate adhesive with or without shims
- **SikaFast®-3300 Series** – Fast curing, 10:1 toughened structural methyl methacrylate adhesive
- **SikaFast®-3500 Series** – Fast curing, 1:1 toughened, high strength structural methyl methacrylate adhesive

## TECHNOLOGICAL BENEFITS

SikaForce®-3000 adhesives offer excellent adhesion to a variety of substrates and have several key features:

- Fast setting/rapid curing, with a variety of open times
- Excellent for bonding similar materials
- Maintains flexibility at low temperatures
- Good fatigue endurance; impact, peel and shear resistance
- Good property retention over a wide temperature range
- Little or no surface preparation
- Non-sagging

# EPOXY BASED TECHNOLOGY

## WHAT IS EPOXY BASED TECHNOLOGY?

Sika's 1-C and 2-C epoxy based product range, Sika Power®, consists of body shop adhesives and sealants. The range of products includes multiple heat curing formulations offering different physical properties combining the flexibility and toughness of polyurethane with the high mechanical strength of epoxy.

## HOW TO USE IT?

The SikaPower® range offers different rheologies optimized for every application or process. SikaPower® materials are designed to be applied in manual or automated (robotic) processes.

The application properties result in full freedom of design depending on application and function.

## WHERE IS IT USED?

Sika's epoxy based technology is designed for use in industrial processes where high bake facilities are available, such as e-coat ovens. Sika Power® is applied in body or paint shop areas for various structural, semi-structural and sealing applications.



## PRODUCT EXAMPLES FEATURES AND BENEFITS

- **SikaPower®-468G** – Toughened low viscous structural metal adhesive
- **SikaPower®-480** – Toughened structural metal adhesive for spot weld bonding
- **SikaPower®-497** – Toughened low viscous crash resistant structural adhesive
- **SikaPower®-1200** – Toughened fast curing, tough and high strength assembly adhesive
- **SikaPower®-1277** – Toughened structural and crash resistant adhesive
- **SikaPower®-4508** – Toughened heat curing paint shop adhesive and sealant
- **SikaPower®-4588** – Toughened structural metal adhesive

## TECHNOLOGICAL BENEFITS

The SikaPower® range has enhanced properties for anti-flutter, hem flange bonding, sealing and structural assembly applications. Specific advantages depending on product and system include:

- Good adhesion on bare and oily substrates
- High shock and vibration absorption
- Reduce or substitute mechanical fixtures
- Excellent wash out resistance
- Pre-curing enables process optimization
- Corrosion prevention
- Allows design freedom and enhancement
- High toughness for excellent peel, fatigue and impact resistance

# SOLVENT AND WATER BASED DISPERSIONS TECHNOLOGY

## WHAT ARE SOLVENT AND WATER BASED DISPERSIONS?

Sika's solvent and water based dispersions range, SikaSense®, consists of acrylic and polyurethane resins. Available in 1- and 2-C form, the adhesives provide excellent adhesion to most substrates used in the bus, truck and trailer, rail and speciality vehicle markets.

## HOW TO USE THEM?

Solvent and water based dispersions are applied by spray, roller, spatula or spreader. For one and two sided lamination processes, products are used with various coating weights, depending on substrate and open time requirements. The addition of a second component can be used to increase physical characteristics such as heat resistance, strength and curing time.

## WHERE ARE THEY USED?

Due to their high initial grab when substrates are brought together, SikaSense® dispersions are used for various applications within the bus, rail, truck trailer and speciality vehicle markets.

Examples include:

- Floor lamination – like PVC, EPDM, carpets
- Luggage racks and compartments
- Decorative lamination
- Roof liner
- Trim and door panel
- Instrument panels



## PRODUCT EXAMPLES FEATURES AND BENEFITS

- **SikaSense®-4300 FD CA** – Water-based high performance contact adhesive system
- **SikaCure®-4900 CA** – Curing agent for water-based dispersion adhesives

## TECHNOLOGICAL BENEFITS

SikaSense® dispersions are used to bond decorative and load bearing finishes from small to large areas by overcoming natural tendencies for stress relief. Other advantages include:

- Long open times
- Solvent and VOC free water based versions
- High resistance to heat and plasticizer migration
- No combustible or flammable emissions
- Can be repositioned after bonding
- High green and final bond strength
- Good temperature and water resistance

# REACTIVE HOT MELT TECHNOLOGY

## WHAT IS REACTIVE HOT MELT TECHNOLOGY?

Sika's reactive hot melt (RHM) product range, SikaMelt®, combines the properties of hot melts with those of reactive polyurethanes. They are solid at room temperature and need to be heated to their melting point prior to application. Sufficient early strength is attained when the material passes from the liquid to the solid state as it cools. By reaction with atmospheric moisture the adhesive is then transformed from a fusible thermoplastic into an infusible elastomer, making it more resistant to high temperatures than non-reactive hot melts.

## HOW TO USE IT?

Sika's reactive hot melt adhesives are heated to temperatures of 248°F to 320°F (120°C to 160 °C) for application. Within this temperature range, they exhibit a liquid free-flowing consistency. They are applied by spray, roller or in extruded bead form at coverage rates determined by the specific application.

## WHERE IS IT USED?

Reactive hot melt adhesives are typically used to bond GRP, pre-treated metals, polystyrenes, wood, plastics, textiles or fibrous materials that are exposed to higher temperature. These include:

- Sandwich panel construction
- Semi-structural components, brackets, clips, interior trim
- Interior textiles i.e. headliners
- Laminating polyurethane foams
- Non-polar substrates i.e. polypropylene, polyethylene



## PRODUCT EXAMPLES FEATURES AND BENEFITS

- **SikaMelt®-9670** – Reactive hot melt for assembly applications
- **SikaMelt®-9677** – Multi-purpose PUR hot melt for sandwich panel bonding
- **SikaMelt®-9677 RD** – Tinted multi-purpose PUR hot melt for sandwich panel bonding
- **SikaMelt®-9675 OT** – Sandwich panel PUR hot melt with very long open time

## TECHNOLOGICAL BENEFITS

Due to high initial strength which results from the physical cure mechanism and the reaction with moisture, the material develops a non-reversible bond with high temperature resistance and strength. SikaMelt® adhesives offer a number of advantages:

- Faster production due to high early strength
- Significantly improved creep and heat resistance
- A wide selection of open and curing times
- High final strength
- Bonds well to a wide variety of substrates
- Very low fogging and emission levels

# HOT MELT ADHESIVE TECHNOLOGY

## WHAT IS HOT MELT ADHESIVE TECHNOLOGY?

Sika's non-reactive hot melt adhesive technology, SikaMelt®, consists of physically curing products based on various thermoplastic polymers. Hot melt adhesives are 1-C solvent-free products, that become solid at room temperature and need to be heated to their melting point prior to application.

## HOW TO USE IT?

Sika's hot melt adhesives are heated to temperatures of 284°F to 392°F (140°C to 200°C) for application. Within this temperature range, they are of liquid consistency and are applied by roller or spray equipment. The bond is made immediately after application, applying light pressure to the components to ensure full surface contact. Pressure Sensitive Adhesive (PSA) hot melts constitute a special category of hot melt adhesives. The surface of these PSA hot melts remain permanently tacky and the bond is formed by pressing the adhesive coated component against the substrate.

## WHERE IS IT USED?

Hot melts are typically used to bond plastics, textiles or fibrous materials that are not exposed to extremes of temperature. These include: assembly joints in car cabins, e.g. air ducts, fresh-air filters, polypropylene components, (no surface preparation needed) seals in refrigeration units.

PSA hot melts are particularly suitable for imparting self-adhesive properties to lining or cladding materials that are not subject to restoring forces, e.g.:

- Carpets
- Trim panel
- Insulation materials and sound-deadening pads



## PRODUCT EXAMPLES

### FEATURES AND BENEFITS

- **SikaMelt®-9285** – Multi-purpose pressure sensitive hot melt adhesive

## TECHNOLOGICAL BENEFITS

Due to high initial strength which results from the physical cure mechanism, the material hardens by passing from the liquid to the solid state. Adhesive joints made with hot melts can be separated and then reassembled simply by reheating the material above its melting point. SikaMelt® adhesives offer a number of advantages:

- Faster production thanks to instant bonding
- Bonding of polypropylene components with no surface preparation
- Simple to use – eliminates risk of processing errors
- Low fogging and emission levels
- Good resistance to aging
- Solvent-free
- Unlimited open time (PSA)

# BUTYL RUBBER TECHNOLOGY

## WHAT IS BUTYL RUBBER TECHNOLOGY?

Sika's butyl rubber products, SikaLastomer®, are used as sealants. The two types available are pumpable and preformed tapes. Butyl rubbers are designed for use as sealants only; they do not set or harden by chemical reaction but remain soft and malleable.

## HOW TO USE IT?

The bulk butyl rubbers are of thick paste-like consistency, and are applied in bead form at various thicknesses by cartridge gun or pump operated application equipment. The preformed profiles tapes are pressed into position by hand after first removing the backing foil.

## WHERE IS IT USED?

Since butyl rubbers do not harden, they can be used to seal components that are designed for subsequent disassembly such as:

- HVAC units (heating, ventilation, air-conditioning)
- Door shedders
- Back filling for gasket glazing
- General access panels
- General fast sealing



## PRODUCT EXAMPLES

### FEATURES AND BENEFITS

- **SikaLastomer®-68** – Ethylene propylene copolymer tape
- **SikaLastomer®-90** – Isobutylene tripolymer tape
- **SikaLastomer®-95** – Isobutylene tripolymer tape
- **SikaLastomer®-511** – Non-skinning butyl sealant
- **Sika® MultiSeal Plus** – Multi-purpose high tack self-adhering tape

## TECHNOLOGICAL BENEFITS

SikaLastomer® can be used in a variety of applications:

- Sealed components can be disassembled as required
- Good adhesion to a wide variety of substrates with no special preparation
- Outstanding moisture resistance
- Effective passive corrosion protection
- Speedy and simple application

# ENGINEERING SILICONE TECHNOLOGY

## WHAT IS ENGINEERING SILICONE TECHNOLOGY?

Sika's engineering silicone technology, Sikasil®, are 1- and 2-C sealants and adhesives which exhibit excellent adhesion to a wide range of substrates with minimal surface preparation. The 1-C range of products is comprised of acetoxy and neutral curing systems. Sika's 2-C silicone adhesives offer a significantly higher reactivity compared to the 1-C products.

## HOW TO USE IT?

1-C engineering silicones have a paste like consistency and cure with moisture. 2-C products require no moisture to cure. The reaction starts immediately after mixing the two parts by using static or dynamic mixers. A variety of products are available:

- Pot life between less than 5 minutes and up to 1 hour
- Rapid curing combined with a long mixed open time

## WHERE IS IT USED?

Silicones are the products of choice if resistance to high temperatures, UV stability and good fire behavior is required. Typical sealing and bonding applications include:

- Parts exposed to varying temperature extremes
- Transparent substrates directly exposed to UV radiation
- Areas requiring a high fire rating
- Structural sealant glazing



## PRODUCT EXAMPLES

### FEATURES AND BENEFITS

- **Sikasil® AS-70** – High strength 1-component industrial assembly sealant and adhesive
- **Sikasil® AS-700** – Heat stable 2-component silicone with neutral odor
- **Sikasil® AS-785** – High performance, fast curing assembly 2-component sealant/adhesive
- **Sikasil®-GP** – General purpose acetoxy cure silicone sealant
- **Sikasil®-N Plus US** – Neutral cure silicone assembly sealant

## TECHNOLOGICAL BENEFITS

One major advantage of all types of silicones sealants and adhesives is their inherent UV resistance. Other advantages include:

- Wide adhesion range with minimal surface preparation
- Heat resistance up to 572°F (300°C) possible
- Good fire resistance
- Broad service temperature range from -40°F to 450°F (-40°C to +232°C)
- Consistent mechanical properties and viscosity with varying temperatures
- Shelf life up to 24 months

# ACOUSTIC SOLUTIONS TECHNOLOGY

## WHAT ARE ACOUSTIC SOLUTIONS?

Sika's acoustic solutions technologies encompass an extensive range of product to reduce air and structure borne noise and vibration, primarily in the transportation industry. The products are based on various technologies such as butyl rubber, polyurethane foam and thermoplastics. The diversity of Sika's acoustic solutions is such that each product group must be considered separately in terms of its chemical structure and reaction mechanism. These products are sometimes also referred to as NVH-systems (noise, vibration and harshness). Each solution is a custom designed collaboration between the acoustic engineering teams of Sika and the OEM in the bus, truck, rail and specialty vehicle market.

## HOW TO USE THEM?

There are two different ways of improving acoustic comfort. The first one is to block or deflect noise transmission, the second one is to dampen or absorb sound energy. Sika's acoustic solutions include the following:

**SikaBaffle®** is a line of products based either on thermoplastics or rubber. The thermoplastics are injection moldings designed for specific applications, developed with 3-D CAD design tools. They expand with heat to insulate and seal the vehicle cabin against noise, dust and moisture. The rubber based products are extruded, self-adhering and ideal for sealing smaller cavities.

**SikaDamp®** products are two layer lightweight acoustic pads based on butyl rubber. They are used to dampen vibrations in vehicle body panels and are available with different acoustic ratings to suit specific types of application.

**SikaFoam®** is a 2-C polyurethane foam which expands on application to fill vehicle cavities and seal against noise, dust and moisture ingress.

**SikaSeal®** products are heat curing materials based on butyl rubber, used for anti-flutter and sealing applications on vehicle body shells. They are available as preformed profiles or in bulk for pumped application, with or without expansion capability.



## PRODUCT EXAMPLES FEATURES AND BENEFITS

- **SikaBaffle®-229** – Co-extruded, rubber-based, expandable sealant
- **SikaBaffle®-440** – Heat-reactive, high expansion acoustic cavity sealer
- **SikaDamp®-630** – Lightweight, elastomeric, constrained layer vibration damping treatment
- **SikaFoam®-1241 AP** – Low MDI, low density NVH polyurethane foam
- **SikaSeal®-710** – Universal mastic sealant/adhesive

## TECHNOLOGICAL BENEFITS

Primarily applied in body and paint shop areas specific advantages include:

- Reduction of noise and vibration in vehicle interiors
- Passenger cabins feel extremely quiet and comfortable
- Insulation of interiors against noise, water, moisture and dust
- Ease of application
- Supports clean paint shop environment
- Design freedom with several technology options
- Co-engineering and design support with CAD/FEM from initial development phase
- Weight reduction compared to traditional solutions

# REINFORCEMENT TECHNOLOGY

## WHAT IS REINFORCEMENT TECHNOLOGY?

Sika's reinforcement technology combines heat activated epoxy based reinforcement materials, SikaReinforcer®, and a modified PA injection molded carrier, SikaStructure®.

SikaReinforcer® is a structural foam that bonds the SikaStructure® part into the body shell. The system is used to improve torsional stiffness, structural integrity, NVH performance and fatigue resistance.

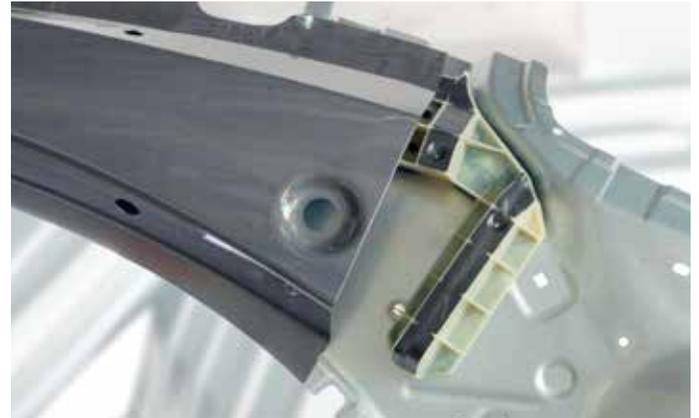
## HOW TO USE IT?

Sika's reinforcement technology is a custom designed solution developed jointly by the engineering teams of both, Sika and OEM's in the transportation industry. Reinforcement parts are mounted into the body structure during assembly in the body shop. During the baking process the SikaReinforcer® foam expands and bonds the SikaStructure® part into the cavity.

## WHERE IS IT USED?

Sika's reinforcement technology is a light weight solution fitted to various cavity areas on a vehicle body to increase torsional rigidity, enhance passenger comfort, and improve fatigue resistance. Typical areas of application include:

- ABC-pillars
- Rocker panel
- Cross members
- High load bearing areas
- Areas exposed to high fatigue



## PRODUCT EXAMPLES FEATURES AND BENEFITS

- **SikaReinforcer®-941** – Injection molded and heat expandable, reinforcing system to increase the structural integrity of body frame cavities
- **SikaPower®-1277** – Toughened structural and crash resistant adhesive

## TECHNOLOGICAL BENEFITS

The SikaReinforcer® and SikaStructure® systems provide a large number of options to improve vehicle performance.

- Optimized weight of body shell without sacrificing stiffness or crash strength
- Increase passive safety through localized strengthening of body shell assembly
- Passenger cabins feel extremely quiet and comfortable
- Insulation of interiors against noise, water, moisture and dust
- Ease of application
- Co-engineering and design support with CAD/FEM from initial development phase

# UNDERBODY ACOUSTIC COATING TECHNOLOGY

## WHAT IS UNDERBODY COATING TECHNOLOGY?

Sika's underbody product, SikaGard®, is a sprayable, water-based, acrylic dispersion. After drying, the product forms an elastic coating to dampen the structure borne sound emitted by metal or hard plastic sheets. Further SikaGard® provides an anti-stone chip coating to vulnerable parts of the vehicle and enhances the corrosion performance of pre-applied coatings.

## HOW TO USE IT?

SikaGard® can be applied by light airless spray equipment or by air-mix guns. The material shall be sprayed in a continuous coat. If a very high layer thickness is required, it is recommended to let layers dry in between.

## WHERE IS IT USED?

SikaGard® is used for sound reduction of, e.g. trains, busses, recreational vehicles, engine supports in cars, vehicle parts (doors, motor covers, etc.), air ventilation systems, containers. It also provides protection to vulnerable parts of the vehicle such as sills, wings, wheel arches and valances from stone chips.

Examples include:

- Wheel house covering
- Various underbody areas for anti-chip applications
- Internal applications to dampen structure borne noise



## PRODUCT EXAMPLES FEATURES AND BENEFITS

- **SikaGard®-6682** – Water based, sound deadening anti-stone chip coating

## TECHNOLOGICAL BENEFITS

SikaGard® products offer improved durability of the vehicle thanks to its stone chip protection capabilities. Noise is more and more an issue for vehicles used in public transportation. Our SikaGard® products can help to reduce the noise level and help to meet the tough noise level regulations. Specific product advantages include:

- Overpaintable
- Easy application
- Different textures possible
- Wide adhesion range
- High resistance to weathering and abrasion
- Sound deadening

# FOCUSING ON THE CUSTOMER

Sika develops bonding, sealing, damping and reinforcing solutions in close cooperation with our customers in the transportation industry. To Sika, this means not only developing best-in-class technology solutions to match our customer's technical and commercial requirements, but also ensuring appropriate performance throughout the design, prototyping, validation and full production phases. Specialists in Sika's R&D (Research and Development), Technical Service, Systems Engineering and Application Technology concentrate on devising Research and Development appropriate client-oriented solutions.

## **TECHNOLOGY CENTERS**

Sika Technology Centers are focused on the development of new materials. This allows Sika to actively promote technology development within the transportation market, and to add value to the activities of our customers.

## **TECHNICAL SERVICE**

Sika Technical Service teams are located around the world, and are dedicated to provide best practice selection, validation and application of Sika materials. By being located close to our customers, Sika Technical Service can ensure optimum local language communication and understanding throughout the technical application development process to ensure best possible results for our customers.

## **CAD/CAE SUPPORTED DEVELOPMENT**

Sika concentrates on Computer Aided Design and Engineering of structurally reinforcing process materials. As our customers increasingly use static and dynamic simulation tools to design, develop and validate new vehicle structures, Sika has the expertise and competence to support vehicle development programmes in the appropriate software coding utilized by our customers.

## **SYSTEM ENGINEERING**

Application Technology is a key success factor in the use of adhesives and sealants. Sika's System Engineering Competence Center focuses on this important task and develops application parameters and systems aimed at holistic solutions for our clients. This includes pumping and application systems as well as automated robotic equipment specifically designed to meet individual customer needs.

## **ACOUSTIC TEST CENTER**

In our Acoustic Test Center we are able to evaluate and optimize the acoustic performance of our products. The ability of this facility to house very large vehicle structures, combined with sophisticated equipment such as a chassis dynamometer, wind testing rig and E-coat/KTL oven, provides our customers with ideal support to achieve dependable and accurate results in vehicle development programmes.

## **LOCAL SERVICE AND SUPPORT**

With major sales, service and logistics operations around the globe, Sika provides customers with world scale customer service, sales and logistics support via local dedicated teams in local languages.



# GLOBAL BUT LOCAL PARTNERSHIP



Sika® is a globally active company supplying the specialty chemicals markets. It is a leader in processing materials used in sealing, bonding, damping, reinforcing and protecting load-bearing structures in construction (buildings and infrastructure construction) and in industry (vehicle, building components, equipment production, solar and wind power).

Sika's® product lines feature high-quality concrete admixtures, specialty mortars, sealants and adhesives, damping and reinforcing materials, structural strengthening systems, industrial flooring and membranes. Subsidiaries in more than 101 countries worldwide and approximately 18,000 employees link customers directly to Sika®.

## **NORTH AMERICAN PLANT LOCATIONS**

Lyndhurst, New Jersey  
Marion, Ohio  
Grandview, Missouri  
Montreal, Quebec

## **SIKA INDUSTRY**

30800 Stephenson Highway  
Madison Heights, MI 48071  
(248) 577-0020

## **SIKA CANADA**

601 - Delmar Avenue  
Pointe Claire, Quebec, H9R 4A9  
(514) 697-2610

## **CONTACT US:**

[www.sikaindustry.com](http://www.sikaindustry.com)

## **CUSTOMER SERVICE**

(800) 688-7452

## **TECHNICAL SERVICE**

[tsmh@us.sika.com](mailto:tsmh@us.sika.com)

SIKA warrants this product for one year from date of installation to be free from manufacturing defects and to meet the technical properties on the current Product Data Sheet if used as directed within shelf life. User determines suitability of product for intended use and assumes all risks. Buyer's sole remedy shall be limited to the purchase price or replacement of product exclusive of labor or cost of labor. **NO OTHER WARRANTIES EXPRESS OR IMPLIED SHALL APPLY INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SIKA SHALL NOT BE LIABLE UNDER ANY LEGAL THEORY FOR SPECIAL OR CONSEQUENTIAL DAMAGES. SIKA SHALL NOT BE RESPONSIBLE FOR THE USE OF THIS PRODUCT IN A MANNER TO INFRINGE ON ANY PATENT OR ANY OTHER INTELLECTUAL PROPERTY RIGHTS HELD BY OTHERS.** Sale of Sika products are subject Sika's Terms and Conditions of Sale available at <http://usa.sika.com/> or by calling 201-933-8800.

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**BUILDING TRUST**

