ACOUSTIC SYSTEMS
QUIETER RIDES
START WITH SIKA
LIGHTER | STRONGER | SAFER | QUIETER | 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, no matter what form they take.

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 acoustic systems in an early project stage, we help our customers to enhance global projects with high performance as well as EHS-friendly products fitting your specific requirements.

YOU NEED TO FIND WAYS TO MAKE YOUR NEXT VEHICLE LIGHTER, STRONGER, SAFER, QUIETER OR GREENER.
ACOUSTIC SYSTEMS

Overview

CAVITY SEALING
The Right Materials with the Right Design at the Right Place

SIKABAFFLE® AND SIKASEAL® SOLUTIONS use lightweight, pre-shaped molded, extruded, die-cut parts and bulk pumpables within the primary body structure to effectively block common noise transmission paths.

SikaBaffle® and SikaSeal® product families include thermoplastic and elastomeric-based formulations. They are designed to be heat activated and expanded inside vehicle body cavities.

BENEFITS
- 100% sealing, preventing noise, water and moisture entering the vehicle
- Applicable in the body shop with a wide curing temperature range
- Effectively resistant to multi-bake curing
- Design solutions for both acoustics and water sealing concepts
- Full range of design options through injection molding, extrusions and bulk pumpables

THE RIGHT MATERIALS AT THE RIGHT PLACE
SikaBaffle® and SikaSeal® represent a full range of products designed to improve vehicle acoustic performance by effectively sealing the car body and reducing noise transmission. Materials can be processed as injection molded parts to seal complex cavity shapes; alternatively simple designed extruded parts can be applied. Our new bulk pumpable baffle solution is applicable in the Body Shop and is ideal for automated application in areas requiring narrow cavity filling.

PRODUCT KEY
- Sealing
- Damping

ENGINEERED INJECTION MOLDED PARTS
Solutions that are applicable to protect any body cavity section from noise propagation and elements intrusion. Watertight for lower-body areas, acoustic concepts for upper-body dry areas.

EXTRUSION TECHNOLOGY
Foam only applications targeting small to medium-sized cavities. Adding versatility, adaptability and design flexibility.

BULK PUMPABLE TECHNOLOGY
One-component bulk sealants for narrow cavities. Design flexibility supporting full automation concepts.

MONOLAYER DAMPING
Highly versatile for flat, curved, crimped, vertical and overhead use. Can be applied throughout the body production process.

CONSTRAINED LAYER DAMPING
Best-in-class acoustic performance, highly effective on doors and panels. Hybrid versions combine acoustic damping and panel stiffening in a single product.

ULTRA LIGHTWEIGHT DAMPING
Constrained layer expandable material system which achieves up to 80% weight savings with exceptional acoustic performance possible.

SIKADAMP® solutions comprise a broad family of sound deadeners based on elastomers or bitumen, which can also be coupled with a constraining layer. Designed for best-in-class weight-to-performance ratios, while still providing industry-leading damping performance, SikaDamp® can be applied at any point during vehicle assembly or be installed at the stamping location.

BENEFITS
- Full range of solutions that allow effective structure-borne noise reduction of car body elements
- Improved targeted acoustics without compromising weight
- Hybrid versions available for damping performance and panel stiffening in one product
- Ultra lightweight products
- Automated application processes add value and performance

HIGHLY TARGETED, HIGHLY EFFECTIVE
SikaDamp® is versatile in application as a magnetic, self-adhesive, melt-adhesive or peel-and-stick product in standard and custom shapes. Placement and shape of parts can be highly tuned through laser-vibrometer analysis of the entire body panel system, which allows for targeted, cost-efficient use, while achieving maximum damping effect.
SIKABAFFLE® AND SIKASEAL® products can be processed as highly engineered 3D parts which optimize material usage and enhance performance at the best cost-to-volume ratio. Extrusion and bulk pumpable technology can be used as an alternative targeting applications on narrow-sized cavities; simply designed parts can be added readily even during late stages of development.

SIKABAFFLE® AND SIKASEAL® PORTFOLIO

<table>
<thead>
<tr>
<th>Product</th>
<th>SikaBaffle®-400 series</th>
<th>SikaSeal®-700 series</th>
<th>SikaBaffle®-200 tape series</th>
<th>SikaSeal®-800 bulk series</th>
<th>SikaBaffle®-27x repair series</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applications</td>
<td>Acoustic, water sealing, fuel resistant</td>
<td>Water sealing</td>
<td>Acoustic, water sealing</td>
<td>Acoustic, water resistant</td>
<td>Repair</td>
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<tr>
<td>Technology</td>
<td>Thermoplastic</td>
<td>Thermoplastic</td>
<td>Rubber</td>
<td>1C Rubber</td>
<td>2C PU</td>
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<tr>
<td>Curing temperature (°C)</td>
<td>140 to 210 °C</td>
<td>160 to 200 °C</td>
<td>160 to 205 °C</td>
<td>155-205 °C</td>
<td>ambient temp.</td>
</tr>
<tr>
<td>Adhesion</td>
<td>Steel</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>Aluminum</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>Plastics</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Expansion Rate (% volume)</td>
<td>250 to 2000 %</td>
<td>&gt;1600 %</td>
<td>600 to 1200 %</td>
<td>&gt;500 %</td>
<td>&gt;2000 %</td>
</tr>
<tr>
<td>Design options</td>
<td>Injection molded or extruded</td>
<td>Injection molded or extruded</td>
<td>Extruded</td>
<td>Bulk pumpable</td>
<td>Aerosol can</td>
</tr>
</tbody>
</table>

SIKAMID®

Sikamid® is the proprietary material used to create supporting carriers for sealing and acoustic parts. It is available in a variety of colors formulated to meet the specific mechanical, thermal and processing requirements of each application.

REPAIR SOLUTIONS

SikaBaffle® Repair can be used for manual application in vehicle production as well as for repair and service solutions. SikaBaffle® Repair is available as a ready-to-use, 2C polyurethane foam that cures quickly at ambient temperature and reliably seals cavities against noise, air, water and dust.

APPLICATIONS

Typical applications for SikaBaffle® and SikaSeal® products include pillars, roof sections, cowl and rocker areas. These products enable complete sealing of vehicle body cavities, with watertight solutions for the lower body and acoustic solutions for dry upper body areas.
COMFORT - THE EAR PLAYS A CENTRAL PART

Some people can tell the make of a car from the slamming of the door alone. In the development process of new vehicles, vehicle sound design is gaining importance in terms of shaping its character, comfort optimization and value perception.

Customers’ requirements are specifically geared towards eliminating or reducing low-frequency background noise, in order to increase acoustic comfort during driving. At the same time, the added value for our customers is in the cost effectiveness of the materials used and their weight-reducing effect.

SIKADAMP® products - from the first idea through simulation and prototyping - are developed and manufactured tailored to seal body structure and reduce structure-borne sound.

### SIKADAMP® ACoustic PORTFOLIO

<table>
<thead>
<tr>
<th>Product</th>
<th>SikaDamp®-100 series</th>
<th>SikaDamp®-200 series</th>
<th>SikaDamp®-300 series</th>
<th>SikaDamp®-600 series</th>
<th>SikaDamp®-700 Ultralight series</th>
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<tbody>
<tr>
<td>Technology</td>
<td>Bitumen non magnetic</td>
<td>Bitumen magnetic</td>
<td>Bitumen-free product line</td>
<td>Butyl</td>
<td>Expandable bitumen</td>
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<td>Bottom Layer</td>
<td>Self-adhesive or Meltsheet</td>
<td>Self-adhesive or Meltsheet</td>
<td>Self-adhesive or Meltsheet</td>
<td>Self-adhesive</td>
<td>Self-adhesive or Meltsheet</td>
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<tr>
<td>Place of Application</td>
<td>Body, Paint, Trim shop</td>
<td>Body, Paint, Trim shop</td>
<td>Body, Paint, Trim shop</td>
<td>Body, Paint, Trim shop</td>
<td>Paint, Trim shop</td>
</tr>
<tr>
<td>Steel</td>
<td>(+)</td>
<td>(+)</td>
<td>(+)</td>
<td>(+)</td>
<td>(+)</td>
</tr>
<tr>
<td>Aluminum</td>
<td>(+)</td>
<td>(+)</td>
<td>(+)</td>
<td>(+)</td>
<td>(+)</td>
</tr>
<tr>
<td>Plastics</td>
<td>(+)</td>
<td>(+)</td>
<td>(+)</td>
<td>(+)</td>
<td>(+)</td>
</tr>
<tr>
<td>Function</td>
<td>Acoustic, Hybrid acoustic/stiffening</td>
<td>Acoustic, Hybrid acoustic/stiffening</td>
<td>Acoustic, Hybrid acoustic/stiffening</td>
<td>Acoustic, sheet metal hole sealing</td>
<td>Lightweight acoustic</td>
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<tr>
<td>Surface weight</td>
<td>2-5 kg/m²</td>
<td>3-8 kg/m²</td>
<td>2-8 kg/m²</td>
<td>2-4 kg/m²</td>
<td>1-3 kg/m²</td>
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<tr>
<td>Loss Factor</td>
<td>0.10-0.35</td>
<td>0.10-0.35</td>
<td>0.10-0.35</td>
<td>0.15-0.45</td>
<td>0.15-0.35</td>
</tr>
<tr>
<td>Design options</td>
<td>Die-cut, automated application</td>
<td>Die-cut, automated application</td>
<td>Die-cut, automated application</td>
<td>Die-cut, automated application</td>
<td>Die-cut, automated application</td>
</tr>
</tbody>
</table>

#### SIKADAMP® AUTOPAD

Butyl-based system especially designed for automated application of sealing elements for sheet metal holes; also providing corrosion protection, water tightness and targeted noise damping function.

#### SIKADAMP® HYBRID

Advanced material system that adds stiffness and improves the structural noise performance of the treated components such as door panels. It combines the high acoustic performance of SikaDamp® with the panel stiffening effect of SikaReinforcer®.
OPTIMIZING COMFORT AND FUNCTIONALITY

THE FULL RANGE of Sika’s Acoustic Systems provide more flexible and efficient solutions that can be optimized and tuned throughout the development process to accommodate the NVH impact of design decisions.

QUIETER RIDES WITH SIKA’S ACOUSTIC SOLUTIONS

SIKABAFFLE® ACOUSTIC
Acoustic designs which combine the advantages of materials with designs to enhance acoustic performance for airborne noise, tailored to specific body locations while also being able to be used in any location of the vehicle.

SIKADAMP® HIGH DAMPING PERFORMANCE
Butyl or bitumen based HDP products specially formulated and coupled with a constrained layer designed to achieve highest damping effect to reduce structure borne noise.

AUTOMATED APPLICATION
SikaDamp® products can be optimized and robotically applied. An automated system which combines the benefits of damping pads performance and LASD application.

SikaSeal® pumpable baffle is the ideal solution to seal long narrow cavities when highly automated application is required. This bulk solution can be applied in the body shop using standard application conditions and equipment.

LIGHTWEIGHTING WITH DESIGN FLEXIBILITY

LIGHTWEIGHTING WITH DESIGN FLEXIBILITY
With weight reduction a recognized key driver in the automotive design process, engineers are increasingly creative in their efforts to meet lightweight goals. Cutting the weight, however, can create unanticipated noise issues late in vehicle development. Sika’s lightweight solutions provide reduced weight with no performance compromise.

ULTRA LIGHTWEIGHT DAMPING MATERIALS
Our newest innovation in damping offers up to 80 % weight reduction as compared to similar and competitive products. Targeted damping is a highly effective way in eliminating noise associated with vibration in body panels. SikaDamp® Ultralight is a constrained layer material which provides highly effective damping. In application, typically area weights of 5 kg/m² can be reduced to 1,1 kg/m² while achieving higher acoustic performance.

HIGH-EXPANSION CAVITY SEALING MATERIALS
Our newest SikaBaffle®-400 family is available with a very high-expansion rate, which enables designs that use less material without compromising the sealing and acoustic performance. In some cases material usage can be reduced by >20 % over conventional solutions.

THE FUTURE IS NOW - 3D PRINTING AS A DESIGN ADVANTAGE
Applications of additive manufacturing technology at Sika include design validation and creation of functional parts. 3D printed molds can be used to generate parts for validation, prototyping and small series. Additive manufacturing is an effective solution for functional and performance testing, optimized design and rapid prototyping.
STATE-OF-THE-ART

In our state-of-the-art acoustic test facilities, Sika engineers and application experts perform virtual and physical testing, analyze the results and propose solutions that deliver optimal weight-to-performance ratios for each application and acoustics treatment package for vehicles.

THE SIKA TECHNOLOGY CENTERS (STC)

have been designed to support the development, validation and optimization of sealing, damping, bonding and reinforcing products and solutions.

A centerpiece of the STCs are the Acoustic Test Centers. Each has a comprehensive range of material testing capabilities, which includes sound absorption, vibration damping and sound transmission loss. Additionally, vehicle subsystems and full vehicles can be evaluated for noise and vibration.

Sika Acoustic Test Centers also include scanning laser vibrometers, psycho-acoustic equipment, and vehicle body leakage testers to assess the effectiveness of the acoustic systems in support of product development and customer programs.

STC EFFORTS focus on the latest automotive megatrends in terms of comfort and new challenges with the increasing importance of new energy vehicles.

ACOUSTIC TESTING

State-of-the-Art Technology Centers

FULL VEHICLE NVH TESTING CAPABILITIES

The focal point of the Acoustic Test Centers is the vehicle chassis dynamometer, housed in a hemi-anechoic environment. Full vehicle NVH testing under a controlled environment can be conducted. To demonstrate real-world driving performance, testing can be done either indoors with a variety of simulated road surfaces or on a dedicated test track.

TARGETED STRUCTURAL NOISE OPTIMIZATION

For structure borne noise Laser Doppler Vibrometer (LDV) studies can be performed to optimize damping package layouts. Reduced weight without compromising acoustics, optimized acoustic performance without unnecessary costs.

OLF - A SIKA FIRST TECHNOLOGY

The newly developed OLF (optical determination of loss factor) measuring technique enables the precise measurement of the damping characteristics of single and multiple layer materials at different temperatures and in high-resolution over a broad frequency range.
AT SIKA, WE BELIEVE that a truly innovative company is one that starts with a culture within which a passion for innovation and creativity thrive. An innovative company should also take a customer-focused view; one that anticipates customer needs with a thorough understanding of key market trends.

LIGHTER
We have a full range of products which enable our customers to make their vehicles lighter. For example, we were the first to engineer body shop adhesives (SikaPower®), which enable mixed-material bonding of lighter materials such as aluminum, carbon fiber reinforced plastic, as well as traditional and high strength steels.

STRONGER AND SAFER
We were the pioneer in vehicle exterior parts bonding with our Sikaflex® + Booster and SikaForce® products and our SikaReinforcer products, which not only help stiffen the vehicle for better overall dynamics but also improve crash performance and increase vehicle occupant safety.

QUIETER
We provide solutions that make vehicles quieter. SikaBaffle® seals noise pathways, while SikaDamp® reduces the body panel vibration that contributes to audible noise in the vehicle. Both products are engineered for best-in-class weight-to-performance ratio. Used together, or separately, our industry-leading acoustics solutions improve vehicle occupant comfort.

GREENER
We were the first to establish water-based pre-treatments and polyurethane hotmelts with low monomeric isocyanate content and reactive polyolefin hotmelts free of classification to the automotive interior market – a more environmentally friendly approach that easily outperforms the industry’s previous generation of products.

VALUE-ADDED INNOVATION
We continuously develop new, cost-effective solutions, which allow our customers to use less material or reduce complexity in their manufacturing process. SikaPower® structural adhesives, for example, allow the reduction of welds in vehicle body sections, while strengthening overall crash durability. Anticipating megatrends we also offer a full range of solutions for assembly of e-mobility components and vehicles.

INNOVATION, IT STARTS WITH PASSION

START WITH SIKA

MORE THAN 50% OF ALL VEHICLES USE SIKA PRODUCTS AND TECHNOLOGIES

MORE THAN 30 MILLION VEHICLES PRODUCED ANNUALLY WORLDWIDE CONTAIN SIKA LAMINATION ADHESIVES

MORE THAN 25 MILLION PLUS VEHICLES MADE STRONGER AND SAFER EACH YEAR WITH OUR BODY SHOP ADHESIVES

MORE THAN 30% WEIGHT REDUCTION IN THE CAR BODY CAN BE ACHIEVED WHEN SIKA® PROPRIETARY HIGH-STRENGTH BONDING SOLUTIONS ARE USED IN CONJUNCTION WITH LIGHTWEIGHT MATERIALS AND THINNER MATERIAL CONSTRUCTION

MORE THAN 70 MILLION CAR WINDOWS ARE BONDED DURING ASSEMBLY USING SIKAFLUX®

SIKA HAS 20,000+ EMPLOYEES IN OVER 100 COUNTRIES

MORE THAN 700 MILLION PARTS BASED ON OUR SIKABAFFLE®, SIKA DAMP® AND SIKAREINFORCER® TECHNOLOGIES ARE SUPPLIED ANNUALLY TO THE GLOBAL AUTOMOTIVE INDUSTRY

MORE THAN 30% INTERIOR NOISE REDUCTION IN VEHICLES THANKS TO SIKA’S ACOUSTIC SOLUTIONS
GLOBAL REACH BUT LOCAL PARTNERSHIP

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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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