

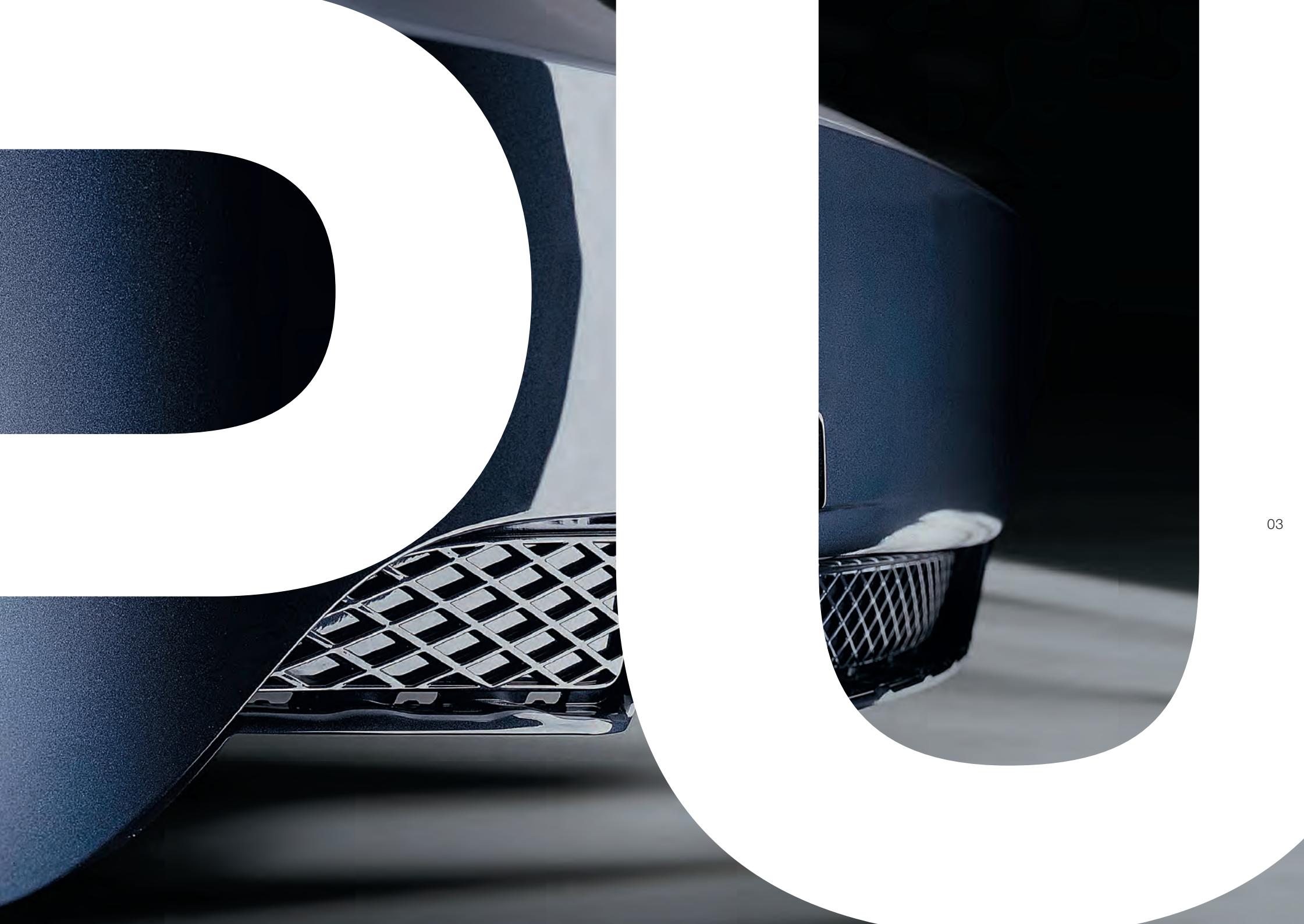
# BECAUSE PASSION FOR CARS RUNS THROUGH OUR VEINS

BASF polyurethanes for automotive enthusiasts



We create chemistry





03

# BECAUSE EVERY CAR DETAIL IS A STATEMENT

No matter if soft or hard, flexible or stiff, hidden or visible

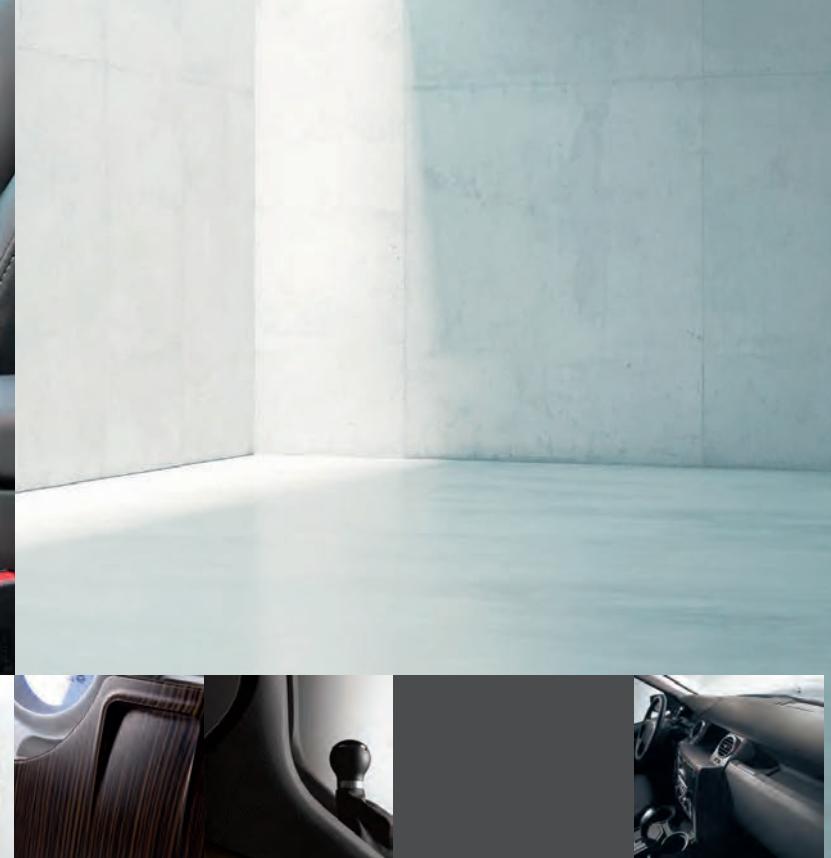
PURE  
EMOTION



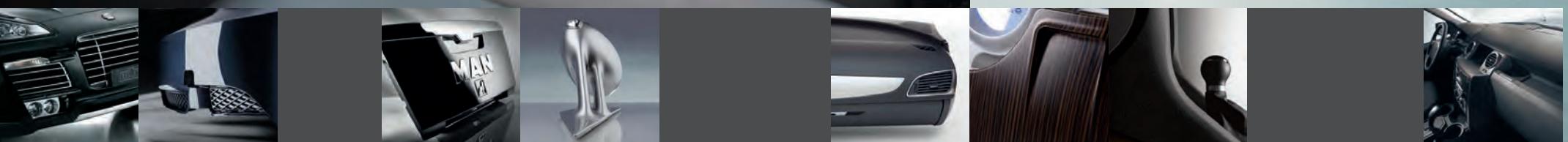
Polyurethane is a material of unlimited potential. It is so special because it contributes significantly to our quality of life wherever it is used. This is particularly true for the automotive industry: with their versatile properties and unlimited application possibilities, polyurethanes make today's mobility more efficient and safer, more comfortable and more beautiful. With BASF polyurethanes, car innovations in construction and design turn from ideas into ideal solutions - addressing the challenges in the automotive industry of today and tomorrow such as emission reduction, lightweight construction and fuel efficiency. BASF polyurethanes are fun – just like cars!

PURE

**AND WHAT IS MORE:** polyurethanes can be manufactured in different ways. They can be molded in many ways, sprayed, foamed, cast, thermoformed and maybe even printed in the near future. Especially BASF polyurethanes can be tailored to nearly every manufacturing condition – so that a speedy, efficient and cost-conscious production is possible, and that available around the globe. Polyurethanes by BASF can be adjusted to many different densities, they can be soft or hard, flexible or stiff, they resist hot and cold temperatures as well as many aggressive media. Whatever your specific needs: BASF connects new material developments and services in order to create system solutions which give you the competitive edge, and creates market potential for both of us.



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# EFFICIENCY



# BECAUSE THERE IS NOTHING MORE INDIVIDUAL THAN YOUR NEEDS

No matter if you are with a manufacturing company or an OEM

INNOVATION  
SAFETY  
DESIGN  
COMFORT  
HEALTH  
LIGHTWEIGHT

## IT'S ALL ABOUT INNOVATION, SAFETY, DESIGN, COMFORT, HEALTH AND LIGHTWEIGHT.

Your next car model on the market must be a living room on the road? Functional and stylish? Dedicated to safety? With special attention to sustainable solutions as well as uncompromising in fuel efficiency? These ideas have to be transferred into matched materials and processes. BASF supports you in turning your ideas into ideal solutions. We love to cooperate in innovation – and you benefit from the broadest chemistry knowledge on the market. Combined with services for design, simulation, in-house sample preparation and analytics.

# TOTAL COSTS SPEED SUPPORT GLOBAL SUPPLY EFFICIENCY SYSTEM SOLUTIONS

IT'S ALL ABOUT TOTAL COSTS, SPEED, SUPPORT, GLOBAL SUPPLY, EFFICIENCY AND SYSTEM SOLUTIONS.

You are looking for a competent partner for turning your ideas into ideal solutions? That are cost-efficient and reliable? You need global services and supply chains to assist you in your development and production? You need speed and efficiency, but you do not have all chemistry know-how on the spot? BASF does not only offer chemicals! Our global teams support you from the first idea to serial production. We understand that chemicals are only yielding their power in proper processes. Our specialist team of chemists, physicists, engineers and application technicians works together to develop new material systems in close collaboration with you – for shared success.

# BECAUSE A SYSTEM IS MUCH MORE THAN THE SUM OF ITS PARTS

No matter if it's about material know-how, application support, simulation, production or supply

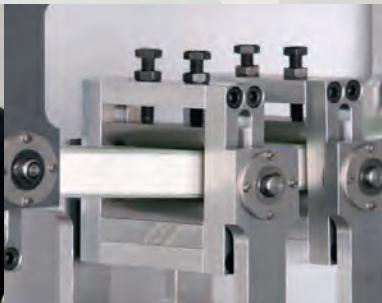
POLYUREthane



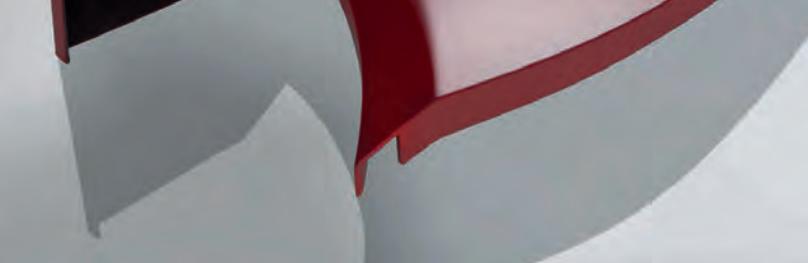
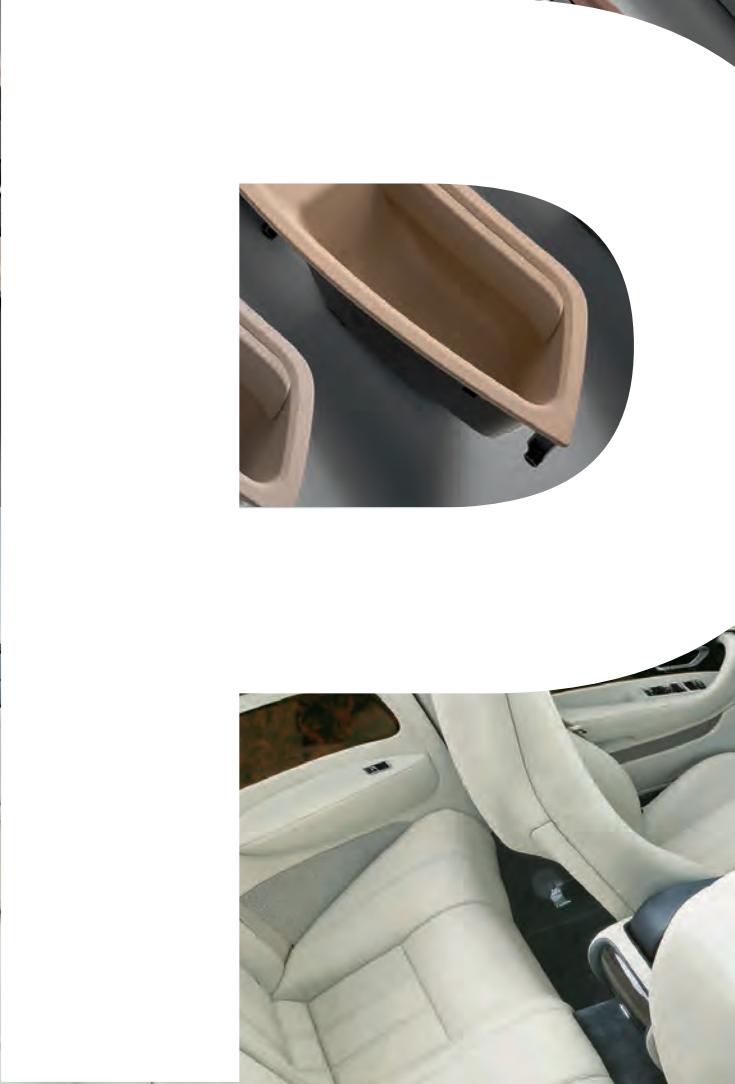
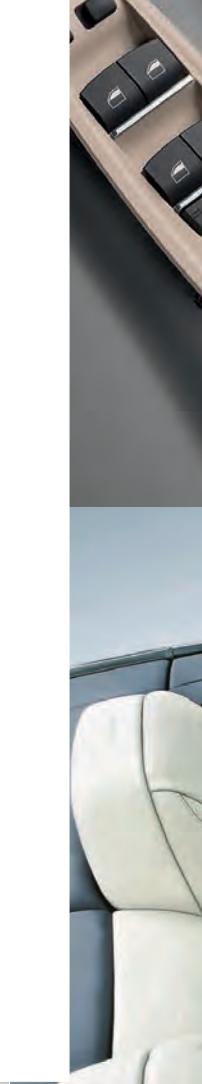
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BASF is the leading supplier for polyurethane systems, specialties and basic products. With our comprehensive product portfolio and tailored services we are the preferred partner for PU in the automotive industry. With a strong presence in Europe, North and South America, as well as in Asia our production sites can be found in all major areas – as well as our technical support and R&D centers. So we are able to deal with your requirements on the spot and wherever you are while relying on our global services network. And what is more: BASF is backwards-integrated with its world-scale polyol and isocyanate plants as well as its additives.

# WE ARE YOU



We understand that the job is not done with providing the necessary chemicals. Proper success is only complete with an optimized process, quality control and coordinated support. Our technical expertise and comprehensive customer services mean that our team literally becomes an integral part of your team. We offer special services through our labs and technical centers. We cover all key analytics - from mechanics via acoustics and emissions to simulation. This includes filling and crash simulation with the comprehensive CAE tool Ultrasim®. And we like to be challenged with tricky topics which we know often lead to future innovations. So that you can be sure that the ideal solution stands the tests of time and place – and of the unexpected crossing the street.





# ELASTOFLEX® W – FLEXIBLE FOAM SYSTEM

Because silence means comfort



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The flexible foam system Elastoflex® W decisively contributes to car comfort. Besides its well-known value for seating applications, guaranteeing comfortable feeling in the car's seat even at long and dynamic driving, it also contributes to the sound impression in the driver's cabin. In comparison to other acoustic solutions, Elastoflex® W performs not only as sound absorber, reducing reverberation effects, but also dampens sound from outside the car by visco-elastic energy dissipation. Current systems follow the latest demands on air quality in the driver's room controlled by external institutes according to e.g. VDA278 or chamber tests. Especially designed foams resist also high temperatures and media contact. These foams are widely used in direct contact to the engine as NVH (noise, vibration, harshness) and heat management solution.

# ELASTOFLEX® W

Flexible foam system



## SEATING

BASF provides full systems or special isocyanate solutions for comfortable seats with high productivity even at low densities down to 40g/l. The range of hardness adjustable directly on the application machines allows for different hardness zones in a seat, providing soft feel and strong seating support, even for long use and under dynamic loads.



## CARPET BACK-FOAMING AND SOUND BARRIERS

A thin layer of Elastoflex® W especially designed for sound absorption and sound permeation properties (dampening) with loss factors from 0.1 to 1.0 protects the driver from unwanted noise, vibration or heat from the engine compartment. Particularly systems with loss factors from 0.3 to 0.4 as requested by many OEMs are available. These systems outperform fiber-felt in light-weight and compression set. Solutions for open-mold injection or closed-mold injection are available with a strong focus on easy and fast processing even with complex inserts and very thin cavities.

# ELASTOFLEX® W – FLEXIBLE FOAM SYSTEM

Because silence means comfort



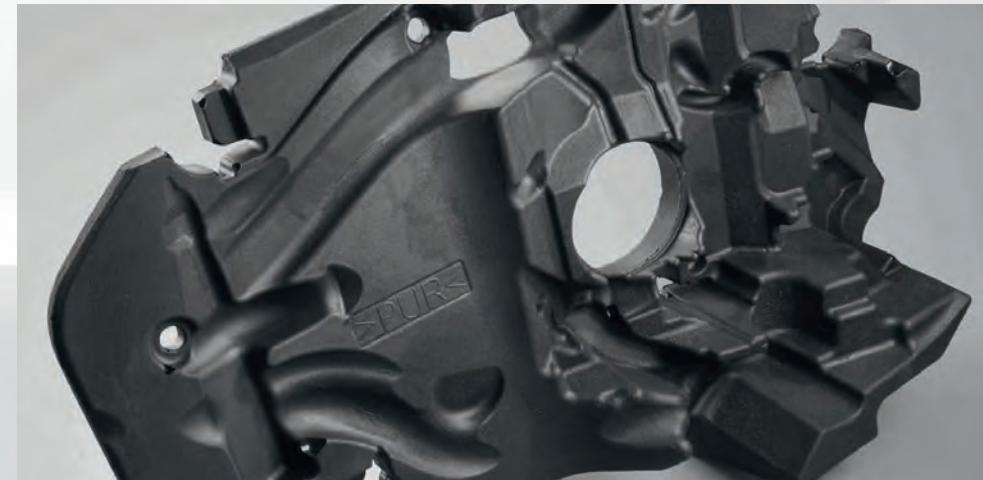
# ELASTOFLEX® W

Flexible foam system



## CAVITY FILLING

Since hollow structures tend to vibrate and cause noise, the increasing demand for cavity filling solutions is rising. Due to the liquid injection of PU and its direct expansion to a solid, lightweight foam, Elastoflex® W suits that purpose perfectly. Latest systems expand in 25 seconds closing the cavity directly during automotive installation.



## ENGINE COVER AND ACOUSTIC PLUG-IN PARTS

The engine is one of the most relevant sources for noise – for the driver as well as for pedestrians. Flexible foam solutions convince with excellent sound absorption properties at a low density of 80g/l. Systems like Elastoflex® W are equipped to withstand the high temperatures of the engine and are long-term resistant against many media. They are used as full engine cover below a cover sheet as well as smaller plug-in parts to reduce vibrations. Although PU foam inherently has self-extinguishing properties and fulfills general tests without flame retardants, now also special formulations are available to even fulfill harsh conditions as given e.g. in UL 94-V0.

# ELASTOFOAM® I – FLEXIBLE INTEGRAL SKIN FOAM

Because the skin goes deeper than the surface



Although having an open-cell foam core structure, Elastofoam® I has been developed to form an integral skin as decorative and protecting surface in a one-shot process. Using water as a chemical blowing agent or physical blowing agents, Elastofoam® I reproduces the texture of the mold surface perfectly. Mostly in combination with an appropriate coating these flexible integral systems provide a soft, pleasant touch combined with a UV-, scratch- and abrasion resistant surface of smooth haptic.

# ELASTOFOAM® I

Flexible integral skin foam



## STEERING WHEEL

Steering wheels made of the flexible integral foam Elastofoam® I have a soft, comfortable touch combined with a tough outer skin. They are wear resistant and durable, unaffected by sweat, sun cream or cleaning agents. Current systems offer a significant weight reduction down to 340g/l without loss of properties at demolding times down to 60 seconds, naturally at the latest emission standards.



## ARMRESTS, HANDLES, FLOOR MATS

Especially in utility vehicles the extraordinary durability of Elastofoam® I parts is appreciated. Pleasant flexibility and haptics are combined with easily cleanable, abrasion-, scratch- and impact-resistant surfaces. Parts can be produced in a cost-effective one-shot process with IMC coating (in-mold coating) which enables a broad range of applications in armrests also with functional joystick controls, handrails or floor mats.

# ELASTOFOAM® I – FLEXIBLE INTEGRAL SKIN FOAM

Because the skin goes deeper than the surface



# ELASTOFOAM® I

Flexible integral skin foam



## CABLE ENCAPSULATION

Elastofoam® I 4610 is the problem-solver for the encapsulation of cable harnesses in the engine compartment. For the manufacturing of easy-to-assemble, dimensionally stable cable harnesses as well as for the foam-in-place production of cable grommets to achieve absolutely longitudinal waterproofness, Elastofoam® I is the best choice. Due to high temperature and climate stability as well as tailored media resistance, Elastofoam® I has shown its reliability under extreme conditions for generations of car models.



## FILTER

Whenever harmful particles need to be removed from the air intake or engine fluids, filter producers rely on media- and temperature-resistant Elastofoam® I. Engine-specific panel or radial air filter gaskets of any shape, size and thickness can be produced by foam-in-place technology. The reactivity and rheological profile of these foam systems is adjusted to provide perfect wetting and adhesion to a wide range of filter materials, ensuring maximum productivity. Their perfect balance of hardness, elongation and compression set ensures a tight seal and long service life. For liquid filtration purposes BASF has developed oil and diesel resistant integral foams of advanced hardness for heavy-duty filter endcaps.



## ONE-SHOT ENGINE COVER

Elastofoam® I provides engines with a nice-looking cap distinguished by high durability and media resistance combined with acoustic properties to reduce noise from the engine. Elastofoam® I can be manufactured in a one-shot foaming process. It therefore expands the possibilities of the acoustic flexible foam Elastoflex® W that has to be fitted with an additional top hard cover. Since the integral foam surface is soft, Elastofoam® I contributes to reducing head impact in case of an accident with pedestrians. System solutions with diverse physical and water-based blowing agents are available as there are systems that fulfill UL94-V0 requirements.

# ELASTOSKIN® I – ELASTOMERS FOR SKINS

Because thin-skinned does not mean fragile

PU is known as the material of choice for high-quality looks as well as fine tactile, haptic skin surfaces. Combined with in-mold coating (IMC) Elastoskin® I provides surface parts with very fine grain textures resistant to UV light, scratch or impact as well as to cleaning agents, sun cream or sweat - even for multi-coloured parts. In comparison to competing materials, Elastoskin® I contains no plasticizers known to cause problems with migration, interaction with back-foaming, discolorations or emissions. Additionally, the respectively low mold temperature of 75°C and the absence of any chlorine, known to be problematic in waste, contribute to a sustainable energy consumption in production and waste combustion. The mechanical properties of Elastoskin® I are not influenced by either very low or high temperatures.



## SPRAY SKINS

Spraying of Elastoskin® I 4649 offers the opportunity to use open half-molds. After applying the in-mold coating (IMC) of the desired colors the skin is directly sprayed on top by a robot. Due to the controlled 3D application and targeted point operation, skins of high design flexibility are available including undercuts. Latest systems allow for reduced densities down to 750g/l at general wall thicknesses of only 1.0mm. Completed skins are removed from the open mold without having any release agents on the back side perfectly fitting to Elastoflex® E back-foaming.



## REACTIVE INJECTION MOLDING SKINS

In comparison to spraying, liquid PU systems like Elastoskin® I 4639 RIM can also be injected into a closed mold filling the gap. This process is faster, has no overspray, and offers a very even skin thickness. Due to the closed mold a very flat and even backside of the skin is possible – and that with a fast, 60 seconds demolding time.



## REACTIVE OVER-MOLDING SKINS

In contrast to spray and RIM processes, which provide separate skin parts, PU also offers the opportunity to be directly injected onto a carrier (e.g. of an I-panel). The specially designed system Elastoskin® I 4659 ROM allows to fill different gap thicknesses from 1.0 to 20mm and directly bonds to the carrier. New processes use two-side mold concepts where in a first step the carrier is produced via injection molding with a thermoplastic. After changing the front-side mold, Elastoskin® I is injected on top.

# ELASTOLLAN® – THERMOPLASTIC POLYURETHANE (TPU)

Because versatility leads to uniqueness



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Where conventional materials reach their limits, Elastollan® in vehicles can make all the difference. It is noted for its excellent haptics and mechanics, as well as its superior long-term durability and resistance to weathering. It gives freedom for a lot of design possibilities. Its strength lies in its versatility: the properties of Elastollan® can be readjusted and recombined time and again – depending on the application and the specific requirements of the component. For example, it shows high temperature as well as good media resistance and has superior dynamic properties. Its damping behavior is excellent as is its resistance against abrasion, scratch and wear.

# ELASTOLLAN®

Thermoplastic polyurethane (TPU)



## EXTERIOR TRIM

Advanced exterior trim parts can be realized with Elastollan® HPM. Its freedom of design and long-term durability together with attractive haptics and a high-class appearance are advantageous. The new material combines the properties of conventional TPU, such as good tensile strength and abrasion resistance, elasticity, excellent impact resistance at low temperatures and high media resistance, with new features: It has outstanding surface properties even at low wall thicknesses, is scratch-, UV- and weather-resistant and easy to clean.



## INTERIOR DOOR HANDLES, GEAR LEVER KNOBS, CUP HOLDERS

Many polymers suffer from aggressive media like sweat, sun cream or detergents. Elastollan® is not affected by these and offers a long-lasting, scratch-resistant surface with a smooth, flexible touch. Thanks to Elastollan®, interior door handles stand out for their high-quality look as well as good touch properties and long service life. Gear lever knobs made of Elastollan® offer a hand-friendly surface structure, are abrasion-resistant and show excellent mechanical and chemical strength.



## INSTRUMENT AND DOOR PANEL SKINS

The TPU slush material from the Elastollan® portfolio offers a plug-in solution in convenient skin slush production. In contrast to PVC, Elastollan® shows uniform properties in hot and cold environments, enabling safe airbag deployment at all conditions. Elastollan® contains no plasticizers, which are known to cause problems with emissions, discolorations and ageing. Depending on design, skin thicknesses down to 0.6mm are possible.

# ELASTOCOAT® C – CLEARCOAT FOR DECORATIVE SURFACES

Because wood can be protected in different ways



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Surface parts from wood are becoming more and more popular in car interiors. They have to be protected against sun and degradation. Elastocoat® C cold-cast systems and coatings offer a transparent, lightfast, scratch-resistant and also self-healing surface of particular flair.

# ELASTOCOAT® C

Clearcoat for decorative surfaces



## CLEARCOAT FOR WOOD PARTS

For protecting valuable wood parts, Elastocoat® C clear coating offers a transparent and lightfast solution. It is designed to avoid scratches and even self-heal smaller damages. Latest improvements deal with temperature resistance, reduced emissions and improved processing, which now allows for demolding at half of the original time (45 sec).

# ELASTOFLEX® E – SEMI-RIGID FOAM SYSTEM

Because design can be easy and carefree



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Although invisible, Elastoflex® E semi-rigid foams contribute extensively to the valuable appearance in car interiors, since the foam is behind most skin surfaces and causes a pleasant, soft and elastic touch. Though it needs to fill even smallest gaps between carrier and skin, e.g. in instrument and door panels as well as armrests and curbs, it spreads homogeneously at very robust processing. Elastoflex® E systems offer a high flowability at fast demolding times suitable for all skin types, individually designed for all special OEM requirements. Although applications are diverse, it is BASF's goal to provide one system for many parts in order to reduce customers' complexity and cost structure.

# ELASTOFLEX® E

Semi-rigid foam system



## INSTRUMENT PANEL

As instrument panels contain airbags they are safety-relevant parts with extreme requirements. Although the foam must fulfill high durability even at humid and hot environments, it must not hinder any airbag deployment. Elastoflex® E is well-suited for this purpose. The current portfolio, in closed- and open-mold technology, offers low density solutions down to 110g/l at fast demolding times, suitable also for gaps smaller than 5mm. Emissions are extremely low fulfilling new VDA278 and chamber test requirements. They fit to all kinds of surface skins and reduce plasticizer migration of PVC skins without discolorations. Precise laser weakening processes or knife cuts in the airbag section are achievable without being noticeable. Special soft grades fulfilling harsh heat and humid aging tests requested by some OEMs are also part of the portfolio.



## DOOR PANELS, ARMRESTS

Although the main target of Elastoflex® E is to provide systems suitable for many OEM requirements and interior applications as "one system for all", some more specialized grades for particular applications are provided. The main focus lies on fast, easy and very robust processing. Apart from the classic cavity foaming between carrier and skin, also front-side foaming with a subsequent lamination of surface materials (leather or textile) is possible.



## BIO-BASED FOAM SYSTEMS

Sustainable solutions are a recurring topic throughout the industry. A portfolio of bio-based systems is available from BASF using castor oil as non-food, renewable compound for Elastoflex® E.



# ELASTOFLEX® E – THERMOFORMABLE FOAM WITH ISO 116 ADHESIVES

Because blocs can also be light and quiet

PU systems are in many cases injected into a cavity as a reactive liquid mixture and foam or cure directly in desired shape. However, PU systems can also be foamed and cured in blocs batch-wise or continuously. Elastoflex® E 3943 is foamed as free-rise blocs and offers a very open-cell foam at an extreme low density of 12-35g/l. Since these foam types are thermoformable, they can be shaped in a common hot press and bonded to diverse surface materials in a continuous process using the specially designed adhesive series ISO 116. Components benefit from the very light material with excellent sound absorption also at low part thicknesses suitable for formed 3D parts with deep contours at high stiffness.

# ELASTOFLEX® E

Thermoformable foam with ISO 116 adhesives



## HEADLINER

Car headliners are the biggest surface to absorb sound and reduce reverberations, though available space and thickness is limited. Elastoflex® E 3943 perfectly fits to this application. It provides acoustic active headliner parts of high stiffness and very low emissions at an extreme low density of 22-35g/l. In combination with the adhesive series ISO 116 parts with several top floors are available at high productivity ranges and low scrap rates.



## HOODLINER

As the headliner absorbs sound in the passenger cabin, special hoodliner systems reduce noise from the engine room. Due to the closeness to the engine special hoodliner systems are equipped with flame-retardant additives even to fulfill TL52685. Today's latest developments allow for densities of 12-18g/l.

# ELASTOFLEX® E AND ELASTOLIT® D – SEMI-STRUCTURAL FOAMS

Because light parts can also be strong



The low-density Elastoflex® E and Elastolit® D semi-structural foams are designed for producing very light and stiff composite as well as sandwich structures for various interior and exterior applications such as load floors, interior lining parts, roof modules and engine hoods. Reinforced with long-glass fibers in state-of-the-art composite processes, thin-walled parts with good mechanical properties yet light in weight can be realized. Such composite substrates can be combined with various surface materials like textiles or thermoplastic films, either by back-foaming or glueing.

# ELASTOFLEX® E AND ELASTOLIT® D

Semi-structural foams



## SEMI-STRUCTURAL HONEYCOMB-SANDWICH SOLUTIONS

Elastoflex® E 3532 is the ideal resin to realize extremely lightweight honeycomb-sandwich structures due to easy and fast processing. No matter which part size, using our thermo-activated systems ensures thorough wetting of the fibers, a firm bond with the sandwich core and a rapid curing. Due to its excellent mold-release properties, tailored rheological profile and low-temperature curing mechanism, a resource-saving efficiency in the whole production process is given.



## SEMI-STRUCTURAL COMPOSITES

Lightweight composite structures for commercial vehicles often require remarkable temperature stability and long-time aging performance for applications close to the engine. Hoods and panels, made of a special Elastoflex® E, a glass-fiber reinforced semi-structural foam, withstand such extreme climate conditions. This composite-foam provides thermal insulation but also excellent composite impact resistance for highly stressed exterior components. Perfect adhesive properties enable the back-foaming of colored Class A surfaces and the integration of fasteners and inserts, resulting in a highly-efficient production process.

# ELASTOLIT® R AND COLO-FAST® R – REACTION INJECTION MOLDING (RIM) SYSTEMS

Because even big parts can be processed quickly



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Elastolit® R and COLO-FAST® R are compact systems with exceptional flowability for extensive and complicated components like automotive glazing encapsulation, body panels or structural parts. Typically, they are processed in closed injection processes like RIM (reaction injection molding) and RTM (resin transfer molding). Therefore, these materials are adjusted to high reactivity and very short demolding times. Depending on the part requirements, they can be either tough-elastic or rigid and high-strength. The latter are often combined with reinforcing short fibers to achieve special properties. High-quality parts with a UV- and weather-resistant surface can be obtained, but even paintability to achieve Class A surface requirements is given.

# ELASTOLIT® R AND COLO-FAST® R

Reaction Injection Molding (RIM) systems



## WINDOW ENCAPSULATION

The aromatic Elastolit® R 8919 and aliphatic COLO-FAST® R 8959 for automotive glass encapsulation provide a high-quality surface with tailored UV- and weather-resistance. Outstanding resin flowability enables the encapsulation of large glass panes with a high degree of design freedom in shape, thickness and geometry (incl. flush design). The perfect adhesion to glass and inserts (metals and plastics) of these systems supports the integration of various functions and reduction of process steps. For the encapsulation of extensive, complex-shaped glass panes, BASF developed the WST® process, together with tailored formulations for open-mold processing.



## BODY PANELS

Due to their outstanding flowability, hard and tough-elastic Elastolit® R as well as high-strength Elastolit® K systems, tailor-made for the production of body panels using the RRIM process, permit even the most challenging designs. The components are distinguished by their superlative quality combined with low weight. They can be readily painted thanks to their Class A surface. Their excellent price/ performance ratio contributes significantly to the success of small-series components in cars and commercial vehicles.



## STRUCTURAL COMPONENTS

The solution for endless-fiber-reinforced structural components is Elastolit® R 8819 which can be processed by RTM or wet-pressing technologies. This compact reactive resin has a long infusion time coupled with fast curing. It shows excellent fiber impregnation performance and compatibility with conventional fibers. Elastolit® R provides a wide processing window at short demolding times as well as outstanding mechanical properties including excellent fatigue strength and high damage tolerance.



**OUT  
PU  
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# BECAUSE PU IS UNBELIEVABLY VERSATILE

No matter if for interior, exterior, electronic or powertrain parts

## EXTERIOR

STRUCTURAL COMPONENTS: ELASTOLIT® R PAGE 33

WINDOW ENCAPSULATION: ELASTOLIT® R / COLO-FAST® R PAGE 33

SEMI-STRUCTURAL HONEYCOMB OR COMPOSITES:  
ELASTOFLEX® E / ELASTOLIT® D PAGE 30-31

TRIM PARTS: ELASTOLLAN® PAGE 23

BODY PANELS: ELASTOLIT® K / ELASTOLIT® R PAGE 33

## POWERTRAIN

HOODLINER: ELASTOFLEX® E PAGE 29

ENGINE COVER:  
ELASTOFLEX® W / ELASTOFOAM® I PAGE 15 / 19

FILTER: ELASTOFOAM® I PAGE 19

## ELECTRONICS

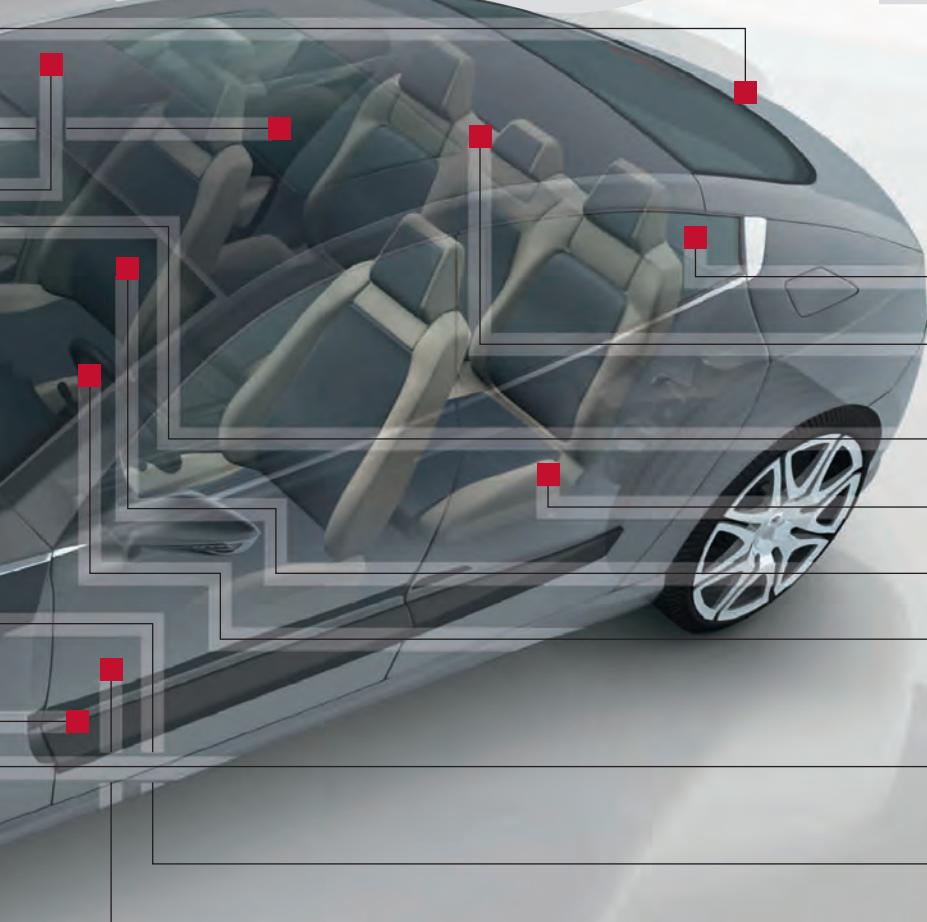
CABLE ENCAPSULATION: ELASTOFOAM® I PAGE 19

## WELCOME TO THE IDEAL CAR MADE OF POLYURETHANES BY BASF

So now it is up to you: How can we help you to develop the ideal car component? For not only are BASF polyurethanes extremely versatile. They can also be manufactured into a wide variety of car applications – from stylish, comfortable interior parts via safety-relevant exterior ones to intricate electronic elements and high-performance powertrain components. Polyurethanes are as essential to automobiles as the wheels themselves. Our polyurethanes keep you on course. In almost all vehicles around the world. In numerous applications – now let's create the ideal solution together!



# OUTPUT



## INTERIOR

SEMI-STRUCTURAL HONEYCOMB:  
ELASTOFLEX® E PAGE 30

HEADLINER: ELASTOFLEX® E PAGE 29

ARMRESTS, HANDLES, FLOOR MATS:  
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HANDLES, KNOBS, HOLDERS: ELASTOLLAN® PAGE 23

SEATING: ELASTOFLEX® W PAGE 13

STEERING WHEEL: ELASTOFOAM® I PAGE 17

SKINS, SURFACES, WOOD COATINGS:  
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ACOUSTICS: ELASTOFLEX® W PAGE 15

**Note**

The data contained in this publication are based on our current knowledge and experience. In view of the many factors that may affect processing and application of our product, these data do not relieve processors from carrying out own investigations and tests; neither do these data imply any guarantee of certain properties, nor the suitability of the product for a specific purpose. Any descriptions, drawings, photographs, data, proportions, weights etc. given herein may change without prior information and do not constitute the agreed contractual quality of the product. It is the responsibility of the recipient of our products to ensure that any proprietary rights and existing laws and legislation are observed. (May 2019)

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