



 **BORGERS**
COMFORT FOR YOUR CAR

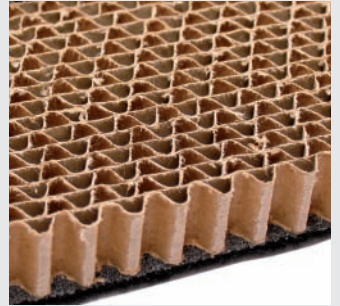
Borgers develops and produces acoustically efficient textile components for vehicles. These particularly lightweight trims and insulations are used in both the interior and exterior of passenger cars and commercial vehicles. Besides design based components for passenger

and luggage compartments, the product range also includes insulations for the entire interior as well as wheel arch liners and undershields (exterior).

Materials and concepts:

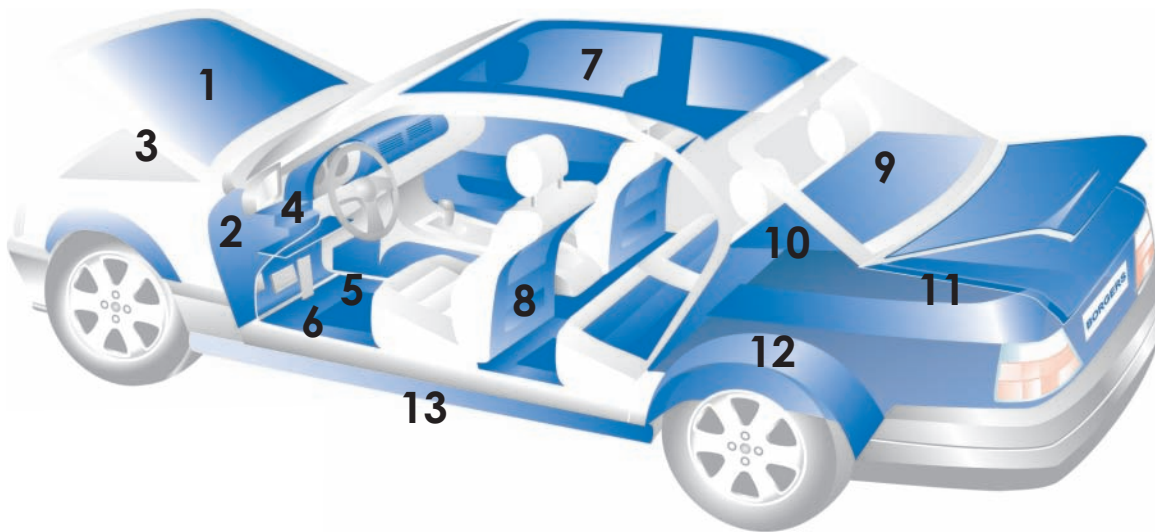
With regard to their functionality we distinguish between materials for insulation, absorber, trim and carrier components as well as decor materials:

- **triflex^{advanced}**: thermoset bonded material made from plant, glass and/or mineral fibres
- **iboPUR**: heat resistant insulations made of PUR foam
- **iboFoam**: used as an integral and flexible foam for a range of absorber components
- **Propylat^{NVH}**: thermoplastically bonded insulation material made from cotton fibres with low to medium density
- **Propylat^{TRIM}**: thermoplastically bonded, microporous trim and substrate material made from plant, mineral and/or chemical fibres with high density
- **LowMass**: development philosophy and umbrella brand for components with maximum weight reduction, e. g. sandwich constructions with lightweight core layers consisting of paper honeycomb and stabilising layers of fibre.
- **lboldours**: decor fleece with a velour-like surface
- **duroptex**: thermoset bonded material made from plant, glass and/or mineral fibres (hexa-free)



Paper honeycomb, core of particularly light and sturdy carrier components

Products for passenger cars



1 Bonnet liners are manufactured from the well proven and optimised material triflex^{advanced}. The material iboPUR is used as an alternative.

- + very good airborne sound absorption
- + low weight



2 Depending on the requirements, **outer dash insulations** made of triflex^{advanced} or iboPUR are fitted with additional aluminium heat shields. Here the separation of the heat shield from the fibre or foam component provides particular advantages.

- + improved airborne sound absorption due to the gap between the fiber or foam component and heat shield
- + optimised heat resistance
- + minimisation of required aluminium
- + low weight
- + very long life span



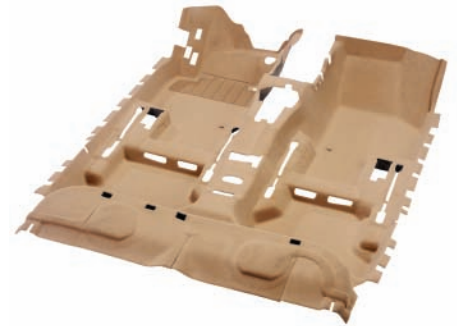
3 Absorbers for the engine compartment, which are exposed to damp, dirt and engine oil, for example, are made of integral foam. This special foam features a density which decreases from the outside to the inside. Thus the surface works like a skin, which prevents the penetration of dirt whilst the porous core provides the acoustic effect.



4 In the case of **inner dash insulations**, heavy layer masses are minimised or even completely replaced by the use of renewable resources in the Propylat^{NVH} material. However, if requested by the customer, insulations on the basis of heavy layers or low-expansion foams can also be used to achieve the maximum acoustic insulation effect.



5 Floor carpets are manufactured from the well proven Propylat^{TRIM} material and offer a multitude of decor options. However, the decor materials (colours or tufting) are predominantly used.



6 Together with floor carpets, **floor absorbers** form functional, acoustically efficient floor systems. Here fibre materials increasingly replace the conventional foam solutions, whose original advantages over textile components – above all the consistent density at varying thicknesses – were completely compensated for by process technological innovations in the manufacturing of Propylat^{NVH}-absorbers.

- + low oil price dependency
- + low weight
- + minimal use of material
- + use of renewable resources

7 A lot of weight is saved in headliners due to LowMass products. **Headliner elements**, e. g. for sun and panoramic roofs, are designed as paper honeycomb-glass sandwiches in particularly light and strong constructions.



8 Thermoset bonded fibre materials like triflex^{advanced} and duroptex make it possible to construct **seat back trims** with high sides, fold-over laminations and complex spatial forms. The thermoplastic Propylat^{TRIM} concepts are ideally used for seat back trims with inserts.

- + low weight
- + recycled natural fibres as resource
- + low oil price dependency

9 The demands on **parcel shelves** vary greatly, according to the type of vehicle. In the compact car category, rigidity and stability come to the fore, in sedan cars parcel shelves have turned into complex systems as they contain various add-on parts such as roller blinds or loudspeakers. As one of the leading manufacturers of parcel shelves, Borgers successfully fulfils high and varied demands with the combination of innovative construction concepts and the use of selected natural and synthetic fibres.

- + high heat resistance
- + multitude of decor options
- + low weight
- + high stability



10 PUR flexible foams are used for many **absorbers in the passenger and luggage compartments**. With their custom-fit shapes the foam parts close acoustic “holes” inevitably present in any car body. That way flexible foam insulations, e. g. under parcel shelves, contribute perceptibly to the “cosy” atmosphere in luxurious sedan cars.



11 As the leading systems supplier of **luggage compartment trims**, Borgers develops – in close co-operation with the customer – the tailor-made luggage compartment concept for any vehicle – be it sedan, estate, SUV or convertible. The particular characteristics of Borgers luggage compartments are:

- + light, strong and flexible material concepts
- + top quality surface materials
- + acoustic efficiency
- + creative luggage management
- + innovative and patented solutions, e. g. for convertibles
- + intelligent storage solutions
- + integration of the most diverse functional attachments



12 Borgers invented the **textile wheel arch liner**, which is today's standard from the compact to the luxury car. Depending on the actual design of the material concept, textile wheel arch liners offer the most diverse advantages; however, they all have the following significant advantages in common, compared to the previously customary injection moulded components:

- + perceptible noise reduction in the passenger compartment, particularly regarding tyre noise, water splash on wet roads, and stone impact
- + reduced spray formation
- + additional protection against corrosion
- + reduced weight
- + increased abrasion resistance and impact strength



13 The **textile undershield** is the up-to-date innovative solution for the underfloors of vehicles. It passes on the advantages of the textile wheel arch liner to the entire underfloor. The result is an optimal system, which is far superior to conventional underfloors in terms of functionality, economy and resource conservation.

- + weight saving
- + protection against corrosion
- + improved acoustical characteristics
- + use of recycled resources
- + waste-free manufacture
- + increased cost efficiency
- + long life span due to increased abrasion resistance and impact strength
- + improved aerodynamics
- + reduced spray formation



Products for commercial vehicles



1 Depending on design, insulation components like **engine casings and transmission tunnels** made from triflex^{advanced} meet different requirements and are even used in the particularly demanding engine compartments of commercial vehicles.

- + self-extinguishing construction
- + very good airborne sound absorption
- + low weight
- + recycled natural and mineral fibres as resources



2 In addition to the familiar acoustic functionality, Borgers' modular **driver's cab systems** offer a multitude of practical every-day uses. These comprise everything for the arrangement of the "mobile apartments", from coat hooks via variable, track based storage and assembly systems made from triflex^{advanced} to LowMass bed constructions. The natural fibres contained in triflex^{advanced} like cotton, for example, absorb or release air humidity as required and thus provide an evenly pleasant room climate.

3 **Headliner storage compartments** are directly situated in the access and visual range of driver and passengers, thus forming the most important part of the overall storage capacity of a truck cabin. With regard to design and comfort, they are subject to the highest demands, which are met by top quality soft touch surfaces, e. g. from foam-backed PVC sheets as well as absolutely precise gaps and comfortable closing devices, mostly using gas struts. The self-supporting constructions are manufactured by using the SRIM process, which allows for huge weight savings by doing without steel reinforcements, for instance.



4 **Dashboards**, as in this case for a large coach, are an essential part of the driver's workplace. Accordingly, our products are practical, convenient, ergonomic and hard-wearing. We meet the high demands on surface design with precise gaps and appealing back-foamed decor materials like ABS sheets. As complete driver-information systems, vehicle computers, navigation systems and even refrigerators are installed in these cabins, we offer solutions in a modular configuration and at the same time particularly easy to maintain.



Since its foundation in 1866 **BORGERS** has mostly been a supplier to the automotive industry, even though then it was coaches which were fitted with wadding. At the same time, Borgers is actually one of the oldest recycling companies, as even then company founder Johann Borgers used shredded fibres in manufacturing, i.e. raw material obtained from second-hand textiles and leftovers from the clothing industry.

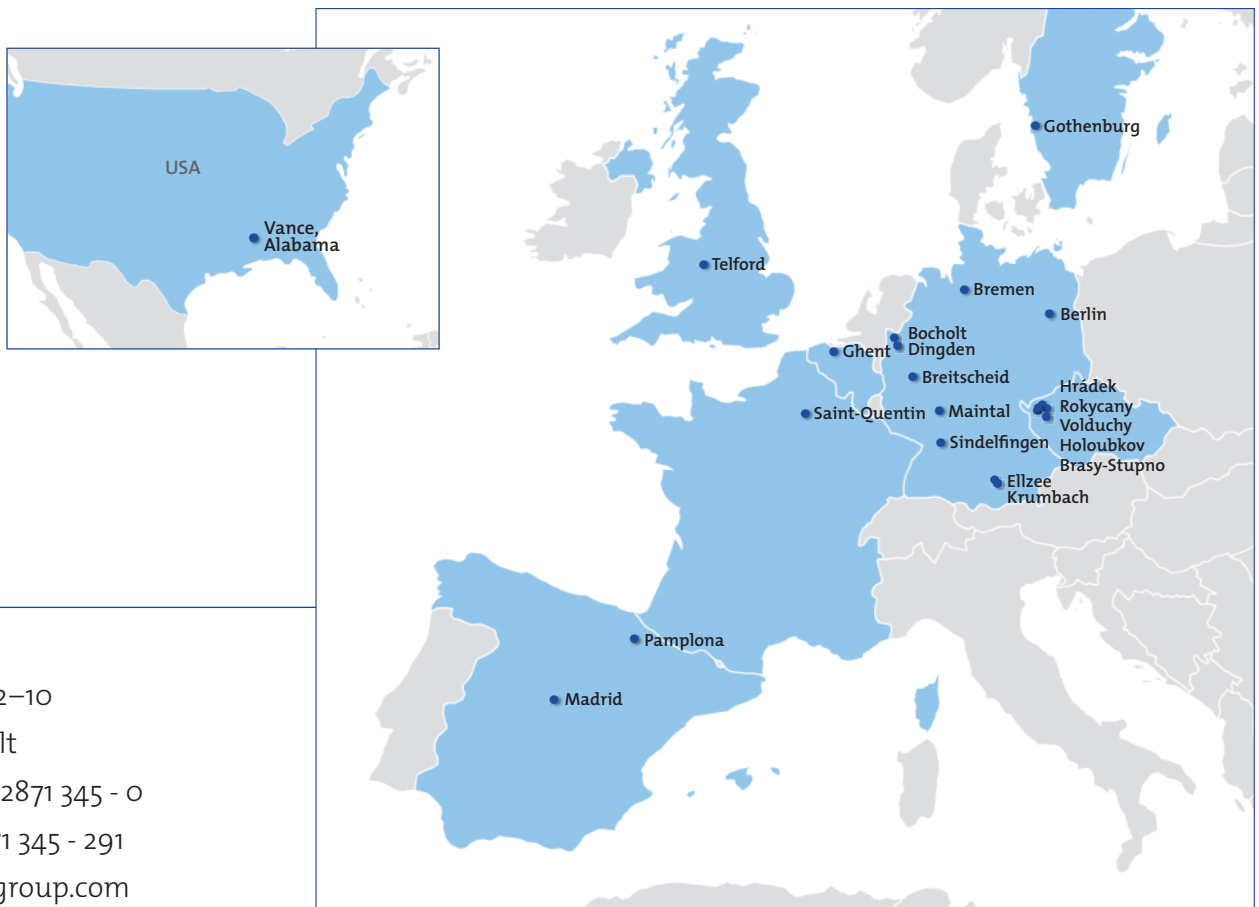
“Central development and local manufacturing is the principle which makes Borgers a flexible and reliable partner of the automotive industry, with sites and co-operations throughout the world. Performance is reflected in the steady growth of turnover and workforce. The Group also included the engineering specialists Olbrich and R+S Technik.

In order to be able to offer our customers consistently top quality solutions, Borgers operates a research and development centre at its headquarters in Bocholt. Here materials are developed which set standards in flexibility and resilience, as well as processes which consider nature and environment even more than before and also concepts to use these materials and processes in an optimal way.

The high company standard has been confirmed by the certification of our quality management according to ISO 9001 and ISO/TS 16949, with the decisive factors being the smooth in-house activities, our close orientation towards the customer as well as the involvement of our suppliers in the production processes.

In addition, environmental awareness is an essential element of our corporate policy. We aim to use resources with the highest possible efficiency and minimise the use of energy, water, raw materials and supplies. This is primarily done by using renewable resources and recycling. Owing to this ecological concentration our environmental management has been certified according to ISO 14001.

With more than 5,000 employees today the entire Group achieves a gross turnover of about half a billion Euros. With its headquarters in Bocholt in Westphalia, Borgers AG is still in possession of and managed by the founder's family, now in its 5th generation.



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