

Industry Information

# Adhesive solutions for the automotive industry

Your partner in bonding

**Jowat**  
Klebstoffe





# Automotive industry





# Permanently in high demand

Powerful bonding solutions for vehicles.

Powerful and flexible bonding solutions are an integral part of manufacturing processes in the automotive industry. Modern bonding technologies ensure an optimal joining of the most diverse materials and facilitate increasingly lighter vehicles with higher energy efficiency and therefore reduced emissions. Jowat adhesives play a major role in meeting these requirements in many applications in the manufacture of vehicles.

## Automotive industry

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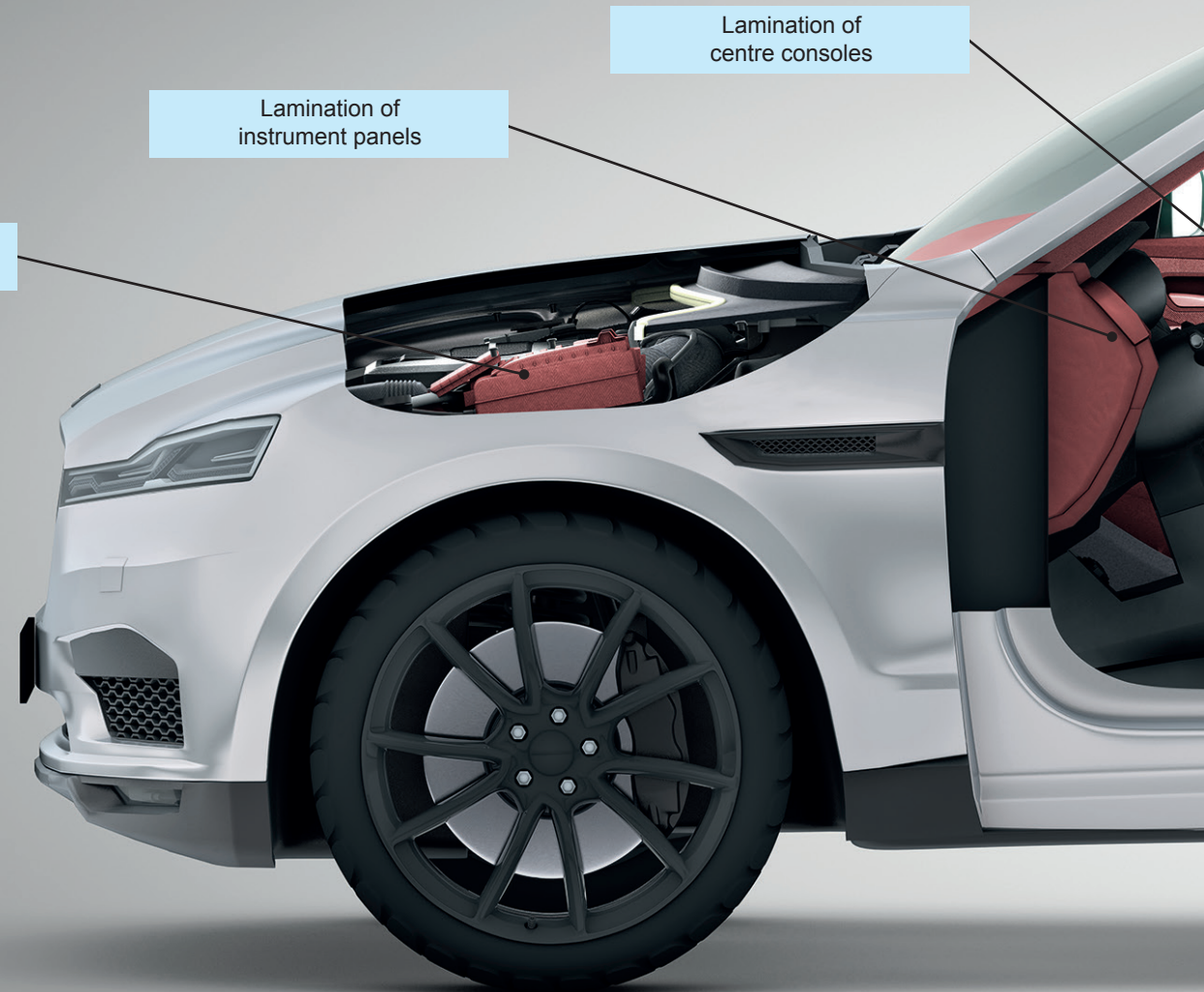
The automotive industry is undergoing a period of technological change. In the future, efficient and eco-friendly electric cars will replace combustion engines and considerably redefine the requirements in the manufacture of vehicles. Innovative adhesive solutions already provide an invisible and very safe joining method, and facilitate visually appealing interiors, highly resistant surfaces, effective sound insulation, and clean passenger cells due to efficient filter technologies. Currently, up to 15 kg of adhesive are used in an average vehicle and this amount will increase significantly in the future. Especially in light of future ever lighter electric cars, bonding will become the unequalled joining technology.

Vehicles are a major field of application for innovative bonding solutions from Jowat. We develop tailor-made processes and products in close cooperation with the automotive industry, its sub-suppliers and with engineering companies, for demanding bonding applications in virtually the entire vehicle.



# Bonding in the automotive sector

Our powerful adhesive portfolio for the automotive industry ranges from thermoplastic and reactive hot melts to dispersions and pressure-sensitive adhesives. Jowat products are strong and reliable partners in all relevant lamination and assembly processes. We provide tailored services for our customers in the planning phase as well as far beyond the actual bonding procedure – with the objective to ensure a perfect bonding performance.







Lamination of door side panelling

Lamination of A, B, C columns

Textile lamination

Trunk applications

## At home in all processes

Flexible lamination processes for the automotive industry.

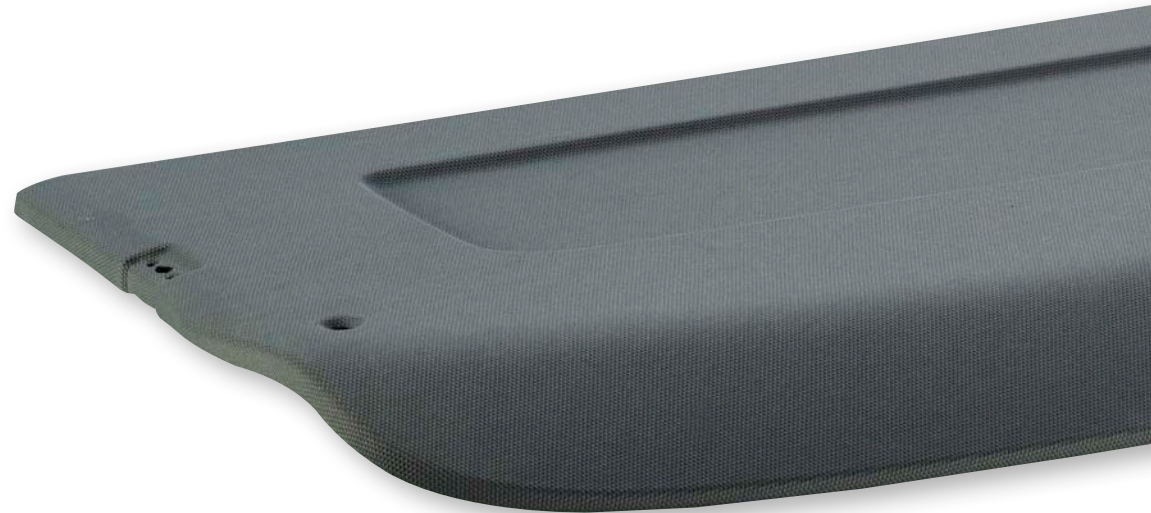
Jowat adhesives are reliable partners in all relevant lamination processes in the automotive industry. We cooperate closely with our customers to optimise our adhesive portfolio for the automotive industry and adapt it to the individual application and production process.

### Adhesives for all lamination methods

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Jowat adhesives have a wide range of applications from standard processes, such as press laminating and vacuum deep-drawing, to very demanding semi-manual laminating and IMG or VACFLOW methods.

Our powerful bonding solutions are equally at home in virtually every established method, ensuring optimum adhesion and facilitating an attractive and superior appearance.



## Laminating methods in the automotive industry

### Press laminating

- Processing of textiles and foils which are not vacuum-capable, as well as leather and Alcantara
- Laminating of embossed foils, e.g. with leather-like structures
- Manual processing of laminations with visible functional or decorative seams
- Inline edgefolding without reactivation of the adhesive possible

### Vacuum deep-drawing

- Ideal method for large quantities
- For processing of vacuum-capable materials, e.g. plastic foils, such as TPO, TEPEO 2® and PVC
- Ideally suitable for laminating embossed foils, e.g. with leather-like structures
- Edgefolding on a separate edgefolding unit with reactivation of the adhesive

### IMG method (In Mould Graining)

- Extended vacuum method
- Suitable only for TPO decor materials
- Surface structures are embossed inline during the lamination process (“graining”)

### VACFLOW

- Patented method for laminating materials which are not vacuum-capable
- Substantial reduced investment and production costs
- Less weight of the parts, optimum prevention of trapped air
- Parts do not have to be grained during laminating, this function is taken over by special adhesive applications

## Quality you can feel

Adhesives for modern vehicle interiors.

In addition to being a means of transport, cars are also increasingly becoming a workplace and a living space. The requirements for car interiors are therefore very diverse. Superior quality and feel, durability, high strength and heat resistance, as well as permanent UV stability of the materials used inside the passenger cell are all prerequisites.

### Vehicle interiors

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Adhesives play a major role in the manufacture and assembly of the different parts for car interiors. Whether tried and proven for many years or tailored to specific applications, Jowat supplies the suitable adhesive solution for all current requirements and process parameters in all established bonding methods.

A particularly demanding application is the lamination of instrument panels, side and door panelling, and centre consoles with a wide variety of different decor materials. Jowat provides a broad spectrum of suitable bonding solutions with highest heat resistances, which reaches far beyond the standard applications, such as press laminating and vacuum deep-drawing. PO hot melts facilitate the lamination of polypropylene form parts in IMG processes without pretreatment and provide a fully recyclable compound. Powerful PUR

hot melts are ideal in all laminating procedures for the entire vehicle interior. And for the top league of lamination, for instance the real leather lamination of instrument panels and door panelling with visible seams, Jowat supplies PU dispersions which have been optimised specially for these mostly manual assemblies.

More frequently thin and porous textiles are used to cover A-B-C columns, parcel shelves or ceilings. These applications are exposed to direct sunlight and are therefore laminated with highly UV-stable PU dispersions. Even after many years of exposure, the bondline will remain invisible due to the excellent oxidation resistance and colour stability of these adhesives.

Jowat adhesives for car interiors support the efficiency of modern manufacturing processes with regard to all lamination methods, including VACFLOW – short process cycles, low energy consumption, and clean processing – as





well as the specific requirements of the different parts. Our product range provides for each application suitable products with a broad spectrum of different initial strengths and activation temperatures, edgelifolding capability, heat and

UV resistances, as well as precoatings with good storage stability for products supplied on reels.

## A silent driving environment

Bonding for effective sound and vibration absorption.

Background noise has a substantial effect on the quality of a car and the driving experience for passengers. Passenger cells in modern vehicles have to provide a silent environment and therefore need to be perfectly insulated from unwanted engine and road noise.

### Noise insulation

Self-adhesive insulating materials, like acoustic heavy-duty foils or vibration absorbing panels, are used to reduce the noise seeping into the cabin. These materials are bonded directly on the painted metal in concealed places behind the door panelling, on the body floor or in the trunk. Copolymer dispersions are odourless and characterised by good heat resistance as well as low VOC values and are the adhesives of choice in this application. Alternatively, the sound deadening materials may also be bonded with special PSA hot melts with minimal odour. Due to their vibration absorbing properties, these adhesives support the effectiveness of the insulating materials.

In addition, Jowat supplies suitable adhesives for bonding the clips and retainers necessary to attach sound insulation panels in the wheel housing

to absorb splashing water and road noise or under the hood for sound insulation. Powerful PUR hot melts are highly resistant to all weathering conditions and are ideal for these application.





# Best seats

Lamination solutions for car seats.

We spend most of our time in cars sitting. Therefore, the seats are exposed to a lot of stress during the life cycle of a car. Apart from durability and sturdiness, requirements for appearance, material quality and ergonomics are increasing here as well.

## Car seats

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Adhesive technology from Jowat is also used in seats and seat covers. Our special adhesives are used for instance for the coating or covering of the back of seats. NFPP substrates are laminated with a foil using a PUR hot melt to protect the back of the seats against mechanical stress. Our high-performance reactive PUR bonding solutions are also demanded for laminating for instance PU foam with leather, plastic foils or other textiles. These materials are usually supplied laminated and on reels for downline processing in the manufacture of car seats.



## Room for more

Strong and flexible bonding solutions for car trunks.

Car trunks have come a long way and today they carry much more than luggage. The trunk is used for many different things depending on the purpose and the type of the vehicle, and is exposed to higher mechanical stress compared to the other sections of the vehicle. The interior lining is joined with adhesives which meet the requirements permanently and reliably.

### Trunk applications

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In automotive manufacturing, car trunks have numerous different applications which require innovative adhesive solutions: from the bonding of floors and the side lining to the lamination of trunks covers in station wagons. Jowat adhesives are reliable and flexible partners in this section of the vehicle as well.

Trunk floors made from carpet and insulation fleece are bonded with thermoplastic hot melt adhesives. Superior floors are manufactured from GMPU boards (polyurethane honeycombed boards reinforced with glass fibre) in different geometries laminated with carpets using polyurethane adhesives which can easily resist the high restoring forces of the material in edgelifting applications. All adhesives are suitable for inline as well as for





semi-manual production processes and the heat resistance of these products has been for direct sun exposure.

Two different applications in the manufacture of trunk covers for station wagons depend on bonding solutions: the wrapped retractable cover box and the laminated cover handle. The box is made of steel or aluminium which is wrapped with a PVC foil, and the handle consists of a wood fibre-board which is laminated on the top and on the underside with a PVC foil. Adhesives for these applications have to meet highest adhesion requirements due to the different materials and to the very high stress to which trunk covers are exposed. The product of choice are polyurethane hot melt adhesives which in addition provide resistance to the demanding climate conditions: minimum heat resistance of 90 – 110 °C under direct sunlight exposure. In addition, clips bonded with thermoplastic and reactive Jowat hot melt adhesives hold the individual components securely in place.



## Special requirements are welcome

Solutions for special applications and assembly operations.

Not all bonded parts are visible. Many functional bonding applications are hidden "under the hood" or behind different covers and give the car its shape. In addition to this wide range of assembly operations, the extensive bonding know-how provided by Jowat also facilitates numerous special applications.

### **Batteries, headlights, convertible tops, assembly**

The highest requirements are often in the detail. For instance, in the manufacture of car batteries the adhesive has to meet complex demands. Thermoplastic PO hot melts which have been developed specially for this application provide substantial advantages over the use of two-component epoxies: high resistance to acids, highly efficient one-component processing, and excellent adhesion to the polypropylene case of the battery. In addition, they are optimally adapted to fully automated production processes with fast process cycles due to a long open time and a fast build-up of cohesion. Another benefit is provided by the formulation of the adhesive: Due to their shared chemical basis, PO hot melt and PP battery cases can be recycled together.

In the assembly of headlights, adhesives are used to join the lens with the

housing and also take over the essential function of a sealant and protect the sophisticated technology from water. Black coloured PUR hot melts provide protection against high sun exposure. Adhesives used in convertible tops also have to meet demanding requirements. Even after strong sun exposure and at high temperatures, the adhesive has to remain flexible and provide excellent resistance to hydrolysis. For a superior appearance and UV resistance, the high-performance PUR adhesives for convertible tops are also in black colour.

Car interiors are also protected from water by special water-repellent foils which are bonded directly on the body and function as a water barrier between the door and the door panelling. Modern materials additionally function as sound insulation and shield the interior from different body and road noises. These foils are fixed with special pressure-sensitive adhesives





based on polyolefin which are characterised by high heat resistance. The Jowat adhesive portfolio also supplies PO and PUR hot melts which have been optimised for the diverse requirements in all individual bonding applications for clips and retainers in cars. The latest generation of PO hot

melts are suitable for bonding clips and retainers as well as for edgefolding purposes and for flat lamination, and therefore facilitate extremely efficient manufacturing processes.

## In permanent use for clean air

Bonding of air filters and filter media for vehicles.

Form and size of automotive air filters as well as the variety of the materials used in their manufacture are very diverse and unique. They are manufactured on fast production cycles and are exposed to high thermal and mechanical stress during use. Jowat provides specially developed high-performance adhesives for the manufacturing of filter media and filters, which master the challenges during production and use.

Air filters in the automotive sector have numerous functions. Cabin filters ensure a cleaner air inside the vehicle, engine filters protect the engine from damage due to contaminations such as dirt, dust and pollen. Jowat adhesives ensure an optimum joining of the different filter components and facilitate efficient manufacturing processes as well as premium quality filters.

### **Pleating and frame bonding**

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Pleated filter media are made from a wide variety of materials, such as for instance paper or different nonwoven fabrics. Thermoplastic adhesives for filters from Jowat for pleating and frame bonding are characterised by a broad spectrum of adhesion. In addition, they also function as a sealant, give the filters stability and facilitate highly reliable processes. Due to the special characteristics of these adhesives, the finished filters keep their form throughout their life cycle even while the compound is exposed to



mechanical stress e.g. during installation or to high temperatures of over 180 °C. Special polyolefin hot melts can be used for pleating as well as for filter frame bonding and meet all necessary requirements.

### **Lamination of activated charcoal filter media**

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Thermoplastic PO and reactive PUR hot melt adhesives from Jowat facilitate a laminated activated charcoal filter media with a high permeability of the compound. The absorption capacity and the breathability of the filter media is influenced by the lamination of the multiple layers. The necessary compound strength of the filter media is already ensured with a minimal application amount in manufacturing. Therefore, as much surface as possible remains free for air filtration to provide clean air and for high breathability.

PO as well as PUR hot melts from Jowat facilitate a fast processing of the filter media and therefore efficient manufacturing due to optimum spraying performance and high green strength, and support all further downline processing steps. Both adhesive systems are characterised by low fogging and emissions, and are odourless.

Jowat adhesives for filters meet the high heat resistance demanded in the automotive industry and facilitate the manufacture of cabin filters in original equipment quality.



## Shaping the future together

Bonding as a promoter of technological innovation.

Modern bonding systems are used successfully in all areas of manufacturing in the automotive industry. They provide a reliable joining technology for the most different materials, reduce the weight of vehicles and give designers great creative freedom.

### **Innovative adhesive solutions**

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The demand for special adhesive solutions will continue to increase in the future. The trend towards electric cars requires vehicles with substantially less weight, which can be achieved only through lightweight components and therefore also by bonding. In addition, the use of electronic components such as cameras and sensors and requirements for these parts are increasing due to the objective of the automotive industry to implement autonomous driving. Compared to conventional joining methods, adhesives can bond even the smallest components and are therefore the perfect solution for these applications.

Adhesives also take on essential additional functions in many areas. For instance, they protect sensitive parking sensors from external influences, such as extreme temperatures or road salt, or provide protection against rust when applied as a thick layer. At the same time, they facilitate safe

parking due to their good acoustic characteristics. In addition, they help secure camera systems precisely in the right position and due to virtually no emissions and minimal shrinkage do not affect the functioning of these devices.

With the powerful bonding solutions from Jowat, manufacturers in the automotive industry are prepared today for the challenges of the future.



# Have we sparked your interest?

As a global innovation partner in the textile industry, Jowat actively supports processors in optimising manufacturing processes and in meeting customer requirements. We understand the challenges in the automotive industry – whether the increasing diversity of laminated substrates, superior design, giving materials special functions, requirements for high resistance, heat resistance or durability, and requirements with regard to energy and cost efficiency.



We are part of the entire manufacturing chain and provide extensive advisory services: from the continuous search and testing of new, sustainable raw materials, to the development of innovative adhesives in close cooperation with sub-suppliers and processors, and to carrying out individual failure analyses in case of rejects. For years, Jowat has played a key role in safeguarding success and protecting investments by providing adhesive solutions for the many different applications in the automotive industry and facilitating the optimisation of products and processes.

Have we sparked your interest? Contact us!  
We look forward to working together.



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