

Industry Information

Adhesive solutions for the textile industry



Your partner in bonding

Jowat
Klebstoffe 

Setting new trends in the textile industry

Innovative high-tech textiles take the lead.

The textile industry is one of the most innovative technological driving forces of the global economy, especially in the clothing sector. It is a constant source of new materials and material combinations, as well as an increasing variety of impressive functions in all segments of this industry.

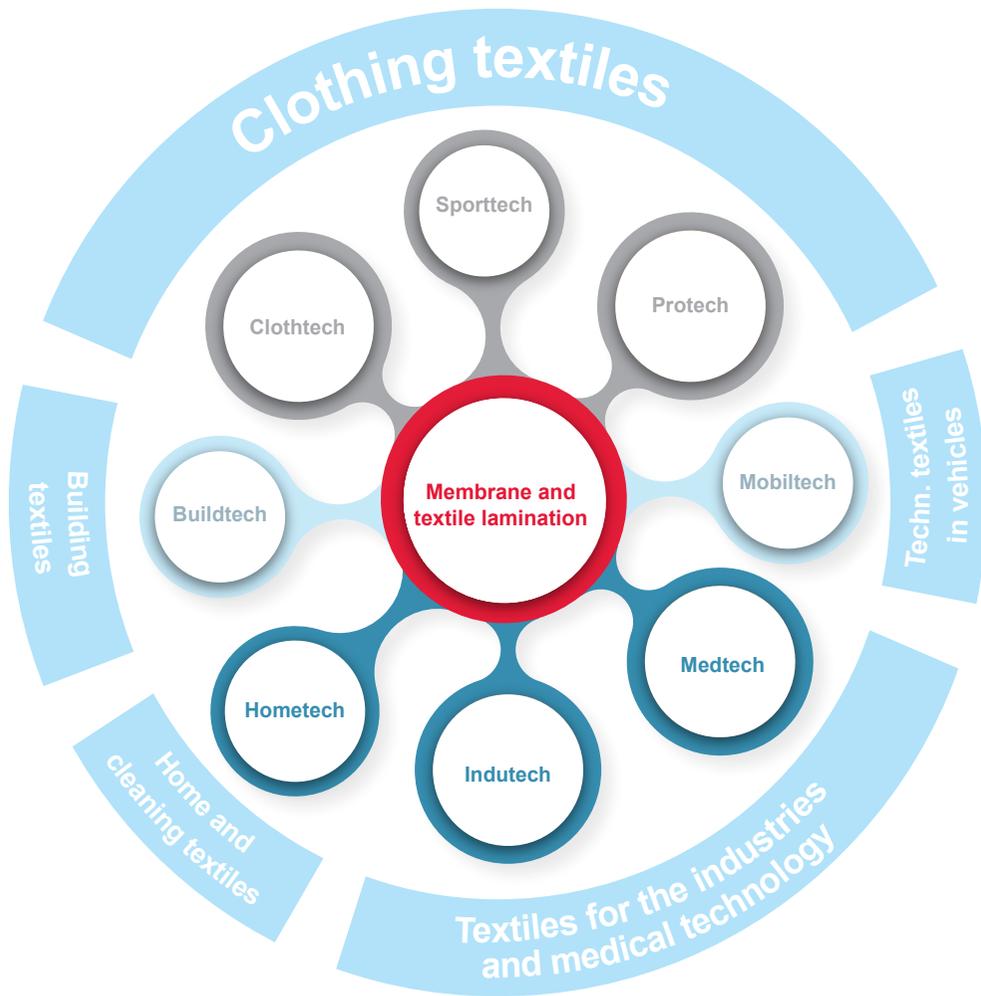
Textile industry

The variety of substrates used in the textile industry grows at the same rate as the requirements for flawless processes and superior product quality increase. Cost reduction and consequently less material input is a key objective in manufacturing. In addition, the implementation of a more sustainable and resource-friendly production requires innovative textile materials which in the best case are also biodegradable. Of course, this feature should also be preserved in the end product.

A major trend in the textile industry are “smart textiles”. They provide intelligent additional functions and add significant value in a variety of areas. “Smart socks” for instance help joggers find a healthy running style. Inte-

grated sensors provide valuable information which is analysed through mobile applications. Intelligent sensors in mattress covers used in the medical industry help protect bedridden patients from bedsores. At home, mattresses with regulation systems ensure a perfect thermal comfort. Further textiles with energy saving, heating or light emitting functions are already on the market or in development. The market for home textiles is also driven by changing lifestyles. The trend is towards an increasing use of fabrics; furniture and decorative fabrics lend homes a personal touch. “Well-Being 4.0” is the trend of the future: a symbiosis between modern textile furnishing settings and smart, digital solutions.

Each sector of the textile industry has its own, special set of requirements within the framework of the processing technology. Adhesives which sup-



port all the individual functions and requirements of the material compounds are indispensable. Powerful and innovative adhesive products from Jowat formulated with most modern raw materials facilitate reliable processes due to optimum processing characteristics and energy efficiency, and provide intelligent additional functions in the end product.



Adhesive solutions for all requirements

Flexibility, diversity and functionality.

A wide variety of different textiles are manufactured in the textile industry, each with individual material combinations and functions depending on the purpose of the product. Therefore, laminating and coating adhesives for textiles have to meet a broad range of special requirements.

Membrane and textile lamination

A constantly growing variety of different materials is used in the textile industry to manufacture laminated and coated textiles for a wide range of products. Whether clothing textiles of all kinds, textiles for car parts, products for the building industry or home products – the bonded substrates in laminated textiles are as diverse as the purpose of the products: foams, fleece, cotton or polyester, and glassfibre fabric with aluminium foil. The possibilities to add special functions to textiles are just as diverse.

Membranes and textiles are laminated using thermoplastic and reactive hot melt adhesives. Moisture-curing PUR hot melt adhesives meet highest requirements for a broad spectrum of adhesion to different materials, high

compound strength even with small application amounts, low processing temperature, as well as the resistance necessary in processes such as washing or sterilisation. Thermoplastic hot melts are adapted to the individual and often very specific demands. In membrane laminating, they support special properties in the end product, such as breathability, flame retardancy or noise absorption. A wide range of adhesion is here also an essential requirement due to the different substrates from which membranes are manufactured, such as PP, PE or PU.

Processes

Choosing the suitable application technology for every manufacturing process, i.e. an application method with clean adhesive transfer to the substrate, is extremely important. In membrane laminating, too much adhesive has a detrimental effect and therefore the application amount has to be defined very precisely.



Suitable application technologies for the application of hot melt adhesives

Slot nozzle system

- closed application system, no contact with oxygen and moisture
- high line speeds of up to 200 m/min.
- full-surface adhesive application

Gravure roller system

- precisely defined adhesive pattern, clean distribution through dot application / or other pattern
- adhesive transferred only in areas of contact

Spraying system

- open application pattern
- high line speeds
- variable grammages

Multi-roll system

- high flexibility due to easy change of adhesive
- full-surface coating
- Open Coating Structure (O.C.S.) is possible
- dot application

Screen printing system

- precisely defined adhesive pattern, clean dot application
- adhesive transferred only in areas of contact

A soft touch

Adhesives for textiles with skin contact.

Clothing textiles include all items people can wear. From underwear and shoes, to outdoor and sports clothing, as well as protective work apparel textiles provide a broad range of different functions depending on their purpose.

Clothtech

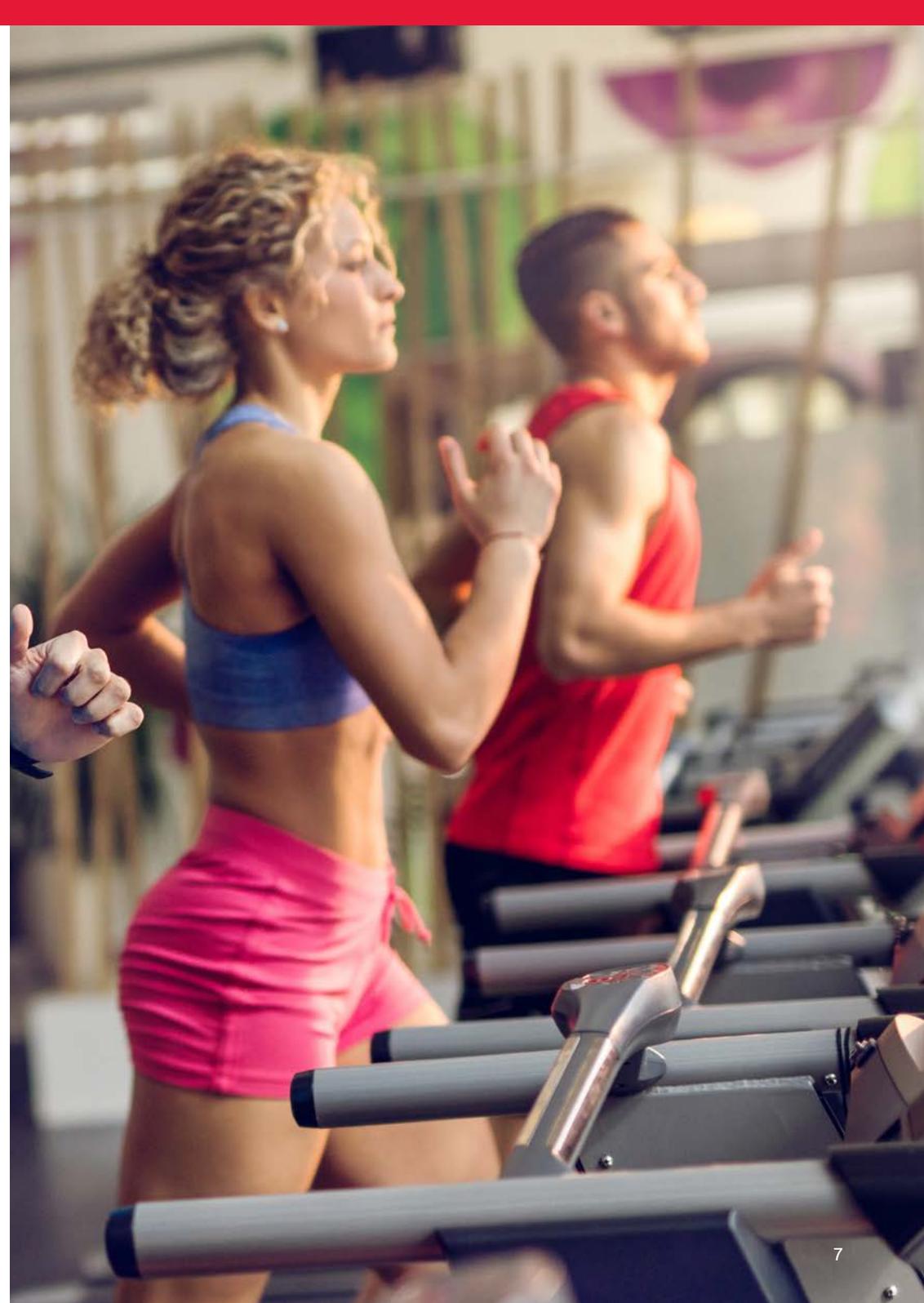
Textile compounds in the clothing industry generally consist of two layers of textiles laminated to each other. These multi-layer compounds are used for instance in jackets, bra cups or shoes and have different functions, depending on their requirements. The end product should not only look good, but also feel good. Products with a soft touch are much more comfortable to wear and attractive to customers. One of the biggest challenges in manufacturing is to preserve the soft touch of the product after the adhesive has been applied.

In addition, the demands for adhesives in textile laminating are often very diverse. For instance, bra cups have to be highly heat resistant during moulding after the laminating process, while the precoating on shoe caps

requires a low reactivation temperature. Adhesives used in clothing textiles have to be washing-resistant, skin-friendly and breathable.

Sporttech

Breathability plays a major role, especially in functional textiles for sports and outdoor clothing. This feature is influenced by the adhesive application on the substrate. The latest generation of breathable PUR hot melts from Jowat promote the breathability of functional textiles by facilitating a greater vapour diffusion at the same application amount compared to adhesives used so far. In addition, they provide optimum adhesion to a variety of membranes and textiles. Properties such as elasticity, wind tightness or thermoregulation, i.e. permanent functionality, must be ensured even after numerous washing cycles. Therefore, the durability of the functions depends on the bond strength of the material compound. PUR hot melt adhesives guarantee the high washing resistance necessary in functional textiles.



Top performance for professionals

High-end bonding solutions for extreme working conditions.

Textiles for special work clothing have to provide an effective protection, be extremely resistant, and impress with a durable material compound: Top performers are united in Protech applications.

Protech

Paramedics, firefighters, police officers. Certain professions need special protective clothing. Protech textiles must fulfil highest requirements with regard to breathability, compound strength, and washing resistance, also in chemical washing. In addition, they must provide a reliable protection and, depending on their purpose, have flame-retardant, hydrophobic, or dirt and oil repellent properties. A method which is becoming more widespread to promote these features is to impregnate the fabric, for instance with a layer of FC (fluorocarbon), prior to the laminating process. Adhesives used in this application must be characterised by optimum adhesion to the different substrates as well as to the impregnated layers.



ECO PASSPORT

Selected Jowat adhesives for the textile industry are tested and certified according to the ECO PASSPORT of the Hohenstein Institute. This certification verifies the human ecological safety of the adhesive for the use in textiles according to OEKO-Tex® Standard 100. The OEKO-Tex® Standard guarantees to the consumer that a textile product does not contain any harmful substances above a binding limit. The OEKO-TEX® tests for harmful substances take into account the purpose of the textile and divide articles into four product categories. From articles for babies and children up to 3 years, to furnishing materials such as covers for upholstery furniture – the closer the skin contact and the more sensitive the target group is, the stricter are the human ecological requirements which have to be met. Jowat adhesives fulfil the criteria of product class 1.



Technical textiles in cars



Always in motion

Bonding for permanent exposure to high stress.

Technical textiles are used in a variety of different applications in car, train and airplane manufacturing. In these applications, resistance to permanent use and stress is an essential requirement, especially for textile compounds in interiors. Adhesives play a major role in ensuring a durable and strong compound.

Mobiltech

Textiles are an indispensable factor in the manufacture of all kinds of vehicles. Consequently, Mobiltech is one of the biggest fields of application for technical textiles. In the manufacture of cars alone, textiles have numerous different applications: seats, ceilings, door panelling and carpets. Even a single seat has several layers with different materials – a cover fabric as well as a layer of foam or fleece for upholstery. In addition, seats can be equipped with technical textiles which are for instance tough and abrasion resistant, depending on the specific requirements. Bus and train seats for instance can be reinforced with a combination of scrim and textile to protect them against vandalism. These textiles are generally made of polyester which is characterised by high strength.

Textiles for the different applications in car interiors are laminated directly before rolling and packing. A fast handling strength of the laminated textiles is often required for immediate downline processing.

Therefore, high-performance adhesives play an essential role in the laminating process of these textile compounds. Reactive PUR hot melts meet highest demands: These adhesives are characterised by short cycle times, high compound strength while also providing a wide range of adhesion to different substrates, and high UV resistance. Textiles are often thin and translucent and therefore a yellowing of the adhesive dots is not acceptable. In addition, the adhesives have to meet high requirements regarding durability in changing climate tests, as well as the fogging and VOC values applicable to the car.

Everywhere at home

Modern adhesives for home textiles.

Home textiles have a major impact on our living quality. As cover fabric on furniture and mattresses, they are a key factor for comfort and wellbeing. At home, they are also small, but indispensable helpers.

Homotech

Cover fabrics for furniture and mattresses are exposed to a lot of stress during their use. These home textiles can be made from a variety of different materials, such as cotton, linen, half-linen or viscose fibres. They provide increased seating and bedding comfort and also protect the furniture – in some cases even against fire. Mattress ticking is characterised by high abrasion resistance and durability, and also firms up mattresses. Fibres are more likely to move under mechanical stress in textiles with fewer wefts. To prevent fibre movement and to increase strength, the textile is laminated with a fleece for reinforcement. Superior cover fabrics which are woven with more wefts are coated on the reverse side with a layer of adhesive to increase the durability of the textile.

For laminating as well as for coating of furniture and mattress cover fabrics, the product of choice are polyolefin hot melts applied by roller coaters. These adhesives are adapted to the specific requirements of the individual application and ensure fast setting as well as the necessary resistance to movement of warp and weft in textiles.



Cleaning textiles

Cleaning textiles are an indispensable part of every household. Several layers of different materials are laminated to each other to manufacture small cleaning heroes. Whether scourers with a sponge and an abrasive layer consisting of a rough fleece which may contain an abrasive agent, or a layer of foam and leather in polishing discs as they are used in car care products. Generally, the adhesive is sprayed on the preformed foam after which the abrasive material is applied. The end product is exposed to high mechanical and, due to the cleaning agent, also to chemical stress. Bonding the separate layers with powerful PUR hot melt adhesives ensures a high compound strength of the textiles and excellent resistance against moisture and cleaning agents. After laminating, the textile compound is cut into small pieces and packaged. During these downline processing steps, the adhesive has to master further challenges: short process times require a very fast build-up of a very high initial strength.



Everything under one roof

Bonding know-how for the building industry.

Energy-efficiency requirements for new and renovated buildings are constantly increasing. This is where the functions of building textiles, such as roofing liners or vapour barriers, show their strengths. In addition to protecting the roof, these materials also play a major role in ensuring a proper ventilation and heat insulation.

Buildtech

Living comfort and energy efficiency play an increasing role in building projects. Building textiles can provide important functions in this regard: Roofing liners protect the roof against external influences, function as a water-repellent layer and facilitate a proper ventilation of the roofing truss. Vapour barriers don't let anything go through and ensure that the requirements of the blower door test which measures the airtightness of buildings are met.

Underlining and vapour barriers consist of a multi-layer material compound made from different nonwovens which are laminated with PU or PE membranes. Roofing liners may also be the only protection of the construction against the effects of weather conditions for an extended period

and function as temporary roof covering. Therefore, the material has to be impermeable, and provide high and permanent resistance against different climatic conditions and weathering. This includes rain, heat and UV resistance, flexibility at low temperatures and wind tightness. The compound must be strong enough to provide a permanent resistance against mechanical stress. The laminating adhesives used in the manufacture of building textiles contribute significantly to the functionality of the product. The challenge which the adhesive has to master is the optimum adhesion to the different materials and a strong and durable lamination, without impairing the diffusion permeability of the textile.

Jowat provides innovative adhesive solutions for different requirements: special adhesives with very high UV resistance for laminating roofing liners, pressure-sensitive hot melts for laminating nonwovens with diverse



foils, reactive PUR hot melts with high bonding strength and low processing temperatures for bonding thin thermoplastic foils, as well as pressure-sensitive dispersions with high surface tack and very high cohesion for difficult to bond foils and textiles.



For sturdy types

Bonding technical textiles in industrial applications.

Technical textiles for the Indutech application area are true "all-rounders". Whether for manufacturing filter media, electrical insulation materials, conveyor belts or emery paper - they are used in the most demanding applications and are characterised by high resistance to heat and mechanical stress.

Indutech

Technical textiles demonstrate their strengths in a variety of different industrial applications. For instance, in emery paper manufacturing velours are laminated to the reverse side of paper. The material compound is then rolled and stored for approx. 24 hours, after which it is die cut and packaged.

Generally applied by slot nozzle or roller systems, laminating adhesives promote highly efficient manufacturing processes and the properties of the end product. Emery paper is exposed to high mechanical stress and heat during use and therefore the adhesive has to facilitate a high compound strength. The separate layers must remain bonded together until all the abrasive has been worn down. Therefore, PUR hot melts which are characterised by very high initial strength and optimum adhesion to resinated papers are the ad-

hesive of choice for laminating emery paper. These properties already play a crucial role immediately after laminating and ensure optimum resistance in downline processing.

Filter media are also manufactured from a laminated material compound and activated charcoal bonded to the textile. The laminated layers must promote the absorption capacity and the permeability of the product which is a critical demand for filter media. Thermoplastic PO and reactive PUR hot melts provide high compound strength with minimal adhesive application amounts.

With a healthy function

Innovative adhesives for medical applications.

The market for healthcare services is growing steadily along with the demand for medical textiles. In addition to essential functions such as the absorption of liquids, medical textiles are also equipped with special features: they are breathable, can be sterilised, and washed at high temperatures.

Medtech

Medical textiles are important helpers in healthcare and fulfil a variety of essential functions. For instance, pressure-relieving mattress toppers help prevent bedsores, and surgical gowns are a hygienic and breathable work clothing. Other daily used items are surgical drapes manufactured from nonwovens which are laminated with special foils. Adhesives used in membrane laminating have to promote the liquid absorbing function of the material compound. Another major factor in this regard is the application method. Thermoplastic and reactive hot melts for instance are applied in a diamond pattern which allows the material to absorb liquids into the spaces between the adhesive.

Reactive PUR hot melts are particularly suitable for laminating membranes in the manufacture of incontinence underpads. Underpads generally consist of a compound of cotton textile with membranes. In this application, PUR hot melts impress with high washing resistance at high temperatures as well as sterilisability.



A trendsetting and highly diverse industry

Innovative adhesives for the textile industry.

Adhesives facilitate reliable processes and support the individual functions and requirements of the material compounds. New challenges are met with constant development and by using the acquired know-how to master new fields of application.

Innovative adhesive solutions

Innovative adhesive solutions are an essential part of all the different application areas in the textile industry. The know-how acquired in one application and established expertise can be used successfully in other fields of application. Jowat has many years of experience in developing breathable adhesives for clothing textiles. This experience is used in the manufacture of building textiles where breathability is also a key requirement for the adhesive. This promotes the development of adhesive systems of thermoplastic as well as of moisture-curing hot melts. The long-term objective is to completely replace foils in building textiles with adhesives which are even more diffusion permeable. Jowat closely cooperates with raw material sub-suppliers for the textile industry to promote the production of environmentally sound, fluorocarbon-free textiles.

The development of adhesives also takes current trends into account.

“Smart Textiles” are no longer wishful thinking. In addition, the use of nanomembranes as a new technology in clothes and filter manufacturing is gaining ground. The fibres are laid in several layers on top of each other and do not have any cohesion of their own. The necessary inner strength is provided by adhesive dots which penetrate through the membrane. The open structure makes nanomembranes extremely breathable.

Medical technology and the related manufacture of medical textiles is a true emerging market with strong growth. Equipped with additional functions, medical textiles are widespread helpers in the healthcare sector.

Independent of the materials and the features of the textile compound, the adhesive is not allowed to impair and should support them. Jowat meets this challenge with constant development.

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 textile industry – whether increasing material diversity, giving textiles special functions, demands for a special resistance, skin tolerance 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 textile industry and facilitating the optimisation of products and processes.

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



www.jowat.com

Jowat SE

Ernst-Hilker-Straße 10-14
32758 Detmold · Germany
Telefon +49 (0) 5231 749-0
www.jowat.de · info@jowat.de