

### Slot nozzle

With this method the PUR hot melt can be applied as one layer or air permeable. Application widths of up to 4000 mm are possible. To avoid the adhesives contact with environment humidity a closed application system is preferable. In the case of variable application widths the heating zones in the slot nozzles can be switched off individually.

### Spray application

The adhesive is applied via spray nozzles with a very small diameter. The adhesive is being sprayed on to the substrate with the aid of compressed air. Depending upon selection of the process parameters very different coat weights can be achieved. Several nozzles can be on a spraying bar

so that larger coating widths are possible. Through the ability of switching spray nozzles on and off this installation configuration provides great flexibility for different application widths. Another advantage is the contactless application of adhesive. Ideally used for the application of pressure and thermally sensitive materials.

### Template roller

Here the adhesive is applied with a doctor blade system, pulled across so-called hole templates (best known from the silk-screen printing process). One way to adjust the coat weight is the adjustment of the pressure of the doctor blade. Just as with the engraved roller system the adhesive is applied in dots.

### Engraved rollers

This system applies the adhesive via an open roller system. The coat weight depends on the engraving of the roller. Im-

mediately after going through the melting tank the surface of the roller is completely „scraped“ off. The adhesive is applied in dots to the laminate with the aid of the partial recesses on the roller.

### Cleaning

After finishing production the application roller have to be cleaned completely with **KLEIBERIT Cleaner 761.8** und **761.5**.

(Information see our technical data sheets). Remaining hot melt in pipes and melting vessels should be kept under air and humidity tight condition.

Slot nozzle openings can be sealed airtight and therefore remaining hot melt can be left inside the system. Any other remaining PUR hot melt should be cleaned off with **KLEIBERIT Cleaner 761.7** PUR hot melt, which is left to cross-link can only be removed mechanically.

KLEIBERIT Products	Viskosity at			Cleaning properties Advantages	
	100°C	120°C	140°C		
Cleaner	761.5	-	very low viscosity	-	<ul style="list-style-type: none"> <li>Prevents blockages and reactive contaminations</li> <li>Good mixing properties with PUR HM</li> <li>Neutralises the isocyanate reaction</li> <li>Easy to wipe off Rollers</li> </ul>
	761.7	26.000	11.000	6.000	<ul style="list-style-type: none"> <li>Prevents blockages and reactive contaminations</li> <li>Good mixing properties with PUR HM</li> <li>Neutralises the isocyanate reaction</li> </ul>
	761.8	-	very low viscosity	-	<ul style="list-style-type: none"> <li>Prevents blockages and reactive contaminations</li> <li>Good mixing properties with PUR HM</li> <li>Neutralises the isocyanate reaction</li> </ul>



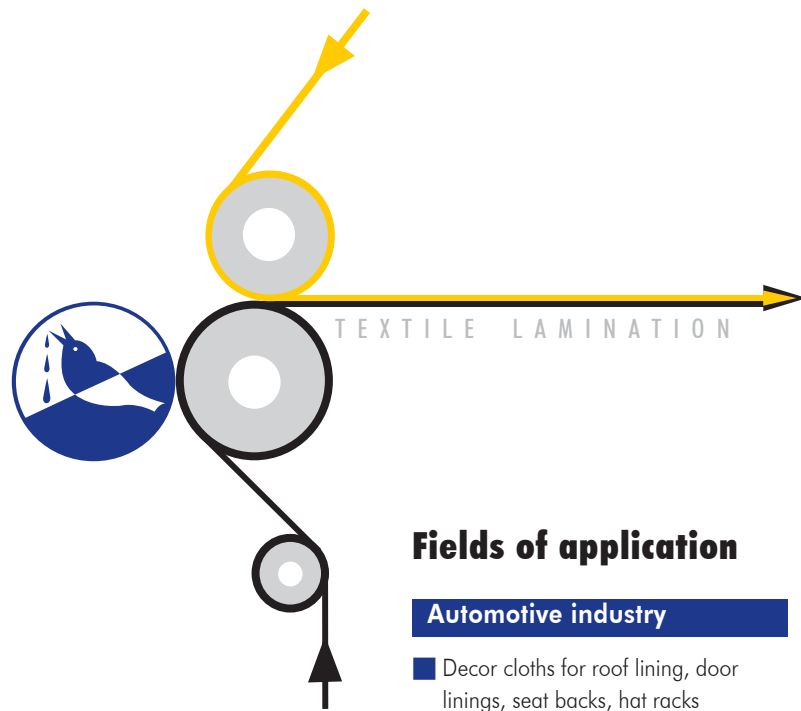
# Textile Lamination

ROLLER AND SLOT NOZZLE APPLICATION



## Innovative PUR Hot Melts for Textile Lamination

COMPETENCE PUR  
**KLEIBERIT**®  
THE ADHESIVE SPECIALISTS



# Textile Lamination



## Textile Lamination

Over the last few years the textile industry has seen remarkable developments. More and more textiles are now bonded into duplex or triplex laminates. This combining of materials improves the quality of the end product. The term "technical textiles" was established.

**KLEIBERIT** PUR hot melt adhesives help to produce modern high performance materials from textiles.

The variety of technical textiles is almost unlimited. Amongst others nonwovens, textiles, foils, foam materials and papers can be bonded together. Daily new material combinations are being developed, which continually open opportunities for new user applications.

## Fields of application

### Automotive industry

- Decor cloths for roof lining, door linings, seat backs, hat racks
- Wear resistant and breathe-active material combinations for car seats

### Leisure and sports industry

- Breathe-active and waterproof materials
- Light and durable material combinations

### Rescue services technology

- Protective suits for fire brigade
- Police and army clothing

### Medical technology

- Surgical face masks
- Surgical gowns
- Surgical cover
- Protective mattress covers
- Incontinent articles
- Anti-allergy systems

### Home textiles

- Upholstered furniture and mattress materials
- Curtains and light protection materials

## Advantage

Technical textiles can be produced with a variety of different adhesives systems. Thermo plastics based on polyolefin, Polyamid or polyester for example are applied ground to a powder and strewn on the textile strips. The adhesive is then reactivated with the aid of heat, before the materials are bonded with the aid of press rollers. Another option is the production of adhesive foils or nets. A thermal reactivation is also required here.

For some years more and more reactive PUR hot melts are being used for the lamination of technical textiles. In comparison with the above described thermo plastics adhesive systems, PUR hot melts reach their end strength not only through the cooling down of the adhesive, but also benefit from an additional chemical cross linking. This provides a superior heat, chemical and wash resistance for the materials produced with PUR hot melts.



**KLEIBERIT** produced a product range, which allows for all specific requirements for the production of technical textiles. The relationship of a long open time in connection with a high green strength permits production with a wide and therefore safe applications window, even with smallest coat weights. **KLEIBERIT** products are fluorescent adjusted to enable effective control for an even application. For certain applications e.g. for the military requirements, **KLEIBERIT** PUR hot melts can be supplied also without fluorescent agents.

## Processing

The PUR hot melts are heated in the pre-melting equipment to relatively low application temperatures of between 90 and 120°C. The adhesive is pumped to the application equipment in heated hoses. The substrates are pressed together with press rollers after the adhesive has been



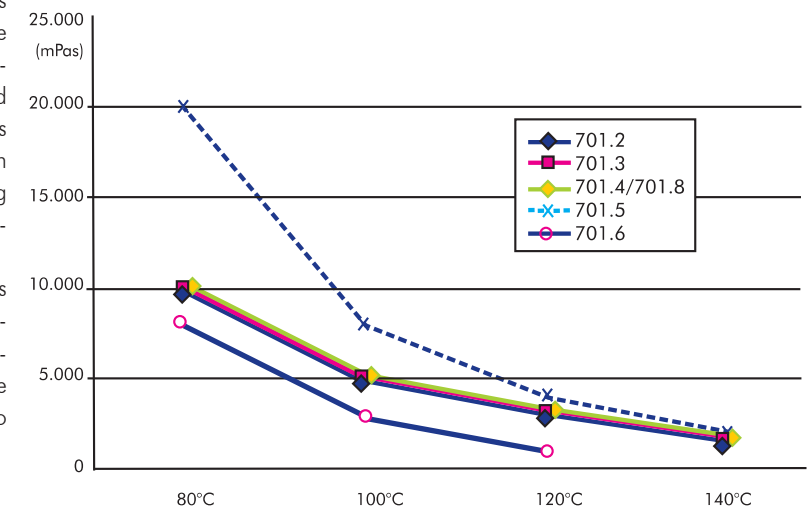
applied. The thermal reactivation, as with the purely thermo plastics systems, is not necessary here. In principle 4 application methods are available: (s. Rückseite)

## Characteristics of the bond

Directly after the application of the adhesive and joining of the substrates by press rollers the warm PUR hot melt wets out the different materials. The application characteristics of the hot melt can be altered by adjusting the applications parameters (e.g. application temperature, application geometry and coat weight). A cross-linking process is started by the presence of humidity in the air and the materials.

The bond achieves its superior qualities through this chemical cross-linking process. Depending on the surrounding conditions the PUR hot melt cures within one to three days, and transforms the thermo plastics to an elastomer.

In special cases (e.g. „Just in time“ deliveries for the automotive industry) the cross linking process can be modified to be completed within a few hours. Due to the low application temperatures the bonding of temperature sensitive materials is also possible.



The bond has a temperature resistance of up to 140°C and lies therefore clearly over the application temperature of the PUR hot melt.

End users are interested in high quality textiles. For this reason reactive PUR hot melts from **KLEIBERIT** range are chemical and hydrolysis resistant.

## Reactive PUR hot melts for laminating membranes, leather, coatings and textiles

	Reactive PUR hot melt	KLEIBERIT 701.2	KLEIBERIT 701.3	KLEIBERIT 701.4	KLEIBERIT 701.5	KLEIBERIT 701.6	KLEIBERIT 701.8
Viscosity	80°C	10.000	10.000	10.000	20.000	8.000	10.000
	100°C	5.000	5.000	5.000	8.000	3.000	5.000
	120°C	3.000	3.000	3.000	4.000	1.000	3.000
	140°C	1.600	1.600	1.600	2.000		1.600
Application	Temperature*	100 - 120	80 - 120	100 - 120	100 - 120	100 - 120	100 - 120
	Gravure Roller	x	x	x	x	x	x
	Slot nozzle	x	x	x	x	x	x
	Spray application	x	x	x		x	x
	Screen print	x	x	x	x	x	x
Description	Characteristics	flexible; soft textile grip	universal; for textiles with fine structure	very good wash resistance (>90°C); can be sterilized (medical items)	very high initial strength; soft; for open and porous structures	very high green strength; very good wash resistance (>90°C); can be sterilized (medical items)	UV resistant; very good wash resistance (>90°C); can be sterilized (medical items);

Application temperatures should be adjusted according to specific substrates  
Chemical cross linking is dependent on temperature and moisture

TESTED AUXILIARY



No. 07.0.52347 · FI Hohenstein

PUR HM for textiles, tested according to Öko Pass 100. Suited for Öko-Tex Standard 100.