KLEIBERIT®
ADHESIVES • COATINGS

## Innovative bonding in the Automotive Industry

# Get in!

Highly resistant and innovative adhesive systems for efficient and reliable assembly bonding

Competence PUR

# Service and Quality

**FAST team**

Filter-Automotive-Sandwich-Textile


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KLEIBERIT places high value on product quality, customer service and sustainability. We have these requirements confirmed on an annual basis by an external and independent audit team according to ISO 9001, ISO 50001 and ISO 14001.


High-quality design and elegant material combinations turn the vehicle interior into an experience. We offer a comprehensive range of adhesives for diverse and highly demanding laminating and assembly bonding applications.

## Product News

| | |
|---|---|
| **KLEIBERIT 713.0** | **Monomer reduced** and sprayable PUR-Hotmelt with **long open time** and **high green strength** |
| **KLEIBERIT 713.5** | **Monomer reduced** PUR-Hotmelt with **high green strength** for reactivation processes – **cost optimized!** |
| **KLEIBERIT 713.7.00** | **Monomer reduced** PUR-Hotmelt with **very high green strength** and low reactivation temperature |
| **KLEIBERIT 724.5** | PO-Hotmelt with **long open time** and **no stringing** |

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# Company


**Intensive research, competent development and customer oriented application technology are the foundation for the enormous success of KLEIBERIT adhesive systems in a variety of applications. Customers worldwide rely on the know-how resulting from over seven decades of experience in the area of PUR adhesives and their applications.**

**Reactive PUR hotmelt adhesives, made in Germany, have gained a leading position in the global market – convincing the automotive, textile, filter, furniture and paper industries and have made KLEIBERIT a global trendsetter in all matters concerning bonding.**

**The product range is tailored to exactly meet customer requirements. Worldwide availability is ensured with an intelligent logistics concept.**

Working together with customers, ideas become new solutions. At the KLEIBERIT Technical Center in Weingarten, Germany, customers from all over the world regularly meet with research, development and application technology specialists to develop new possibilities and to prepare for future requirements.

For already about 15 years, KLEIBERIT adhesives have been successfully in use by the premium brands of renowned automotive suppliers and manufacturers in Europe.

Our Automotive Expert Team offers comprehensive advice and works side by side with customers, from the idea stage up to the final integration of the bonding solutions and processes according to international standards.

# Adhesive Groups

## Reactive PUR-Hotmelts

Extraordinary green strength for the shortest press times. 100% solids content, solvent-free, glue line is extremely resistant against heat, cold, moisture and chemicals. Permanent flexibility, even at low temperatures.
The properties of reactive PUR hotmelt adhesives are unsurpassed and the fields of application are diverse – from assembly bonding to flat lamination.

## 1C/2C PUR-Adhesive

Solvent-free, 100% solids content and top adhesive properties on several common substrates. These are the main properties of PUR hotmelt adhesives. These adhesive systems are particularly characterized by their performance in regards to the high requirements concerning climate change conditions, especially high temperature resistance.

## Reactive PO-Hotmelts

Bonds with reactive PO hotmelt adhesive combine the properties of PO hotmelts with the additional advantages of a long-lasting glue line, which cannot be re-melted, with maximum temperature, water and chemical resistance.

## PO-Hotmelts

Good adhesion properties to different plastics coupled with high temperature resistance with an economical price-performance ratio. The adhesion to polyolefins without pre-treatment and the elastic properties of the glue line are especially important features of PO hotmelt adhesives.

## Waterbased Adhesives

Water based, solvent-free adhesives are used for a variety of applications in the automotive industry. These adhesives feature good adhesion to different materials and high green strength. The very good application properties (uniform application, precise coat weights) are advantageous for 3D shaped substrates or in areas with tension.

## Pressure Sensitive Hotmelt Adhesives

Permanent tackiness during the production process, an elastic glue line with good moisture resistance as well as good adhesion to nearly all surfaces – these are the main properties of KLEIBERIT pressure sensitive adhesives.

## STP-Adhesives

**STP-Adhesives**
**Prepared for the future!**

- moisture curing
- extremely resistant elastomer
- exceptional resistance against heat/cold/water/UV light
- primerless bonding on metals, glass, ceramic and different plastics (e.g. GRP)

We would be happy to find a future-oriented use for you.

# Fields of Application

## Cockpit

**An increasing number of new and high quality materials are being used in car interiors. Various combinations of substrates as well as stringent requirements and norms in production need smart and competent answers concerning bonding technology. We are the specialists with decades of experience.**

The trend for adhesive applications in the cockpit area is towards the increasing use of reactive PUR hotmelt adhesives. As a result, the production process requirements are met as well as the unique processing properties:

- One-sided adhesive application
- Short open time for pre-coating on PVC/TPO compact or foam films
- Very high temperature and climate resistance

Interesting applications for PUR hotmelt adhesives in the cockpit include the assembly bonding of control buttons. The extreme adhesion and bonding properties are a major advantage. Fast setting enables optimal handling for subsequent processing.

Armrest

Glove Compartment Door

Instrument Panel

Operator Button

Center Console Covering

| Applications | Substrates | Product | Product group |
|---|---|---|---|
| Armrest | ABS or PP with synthetic leather cover | 756.2 | Reactive Polyolefin HM |
| Glove Compartment Door | ABS-PC | 703.3<br>724.5 | Reactive PUR-HM<br>Polyolefin HM |
| Instrument Panel | PP/TPO | 703.3.33<br>713.7.04<br>756.2 | Reactive PUR-HM<br>Reactive PUR-HM<br>Reactive Polyolefin HM |
| Operator Button | AlMg / ABS (chromed) | 703.5 | Reactive PUR-HM |
| Center Console Covering | Wooden blind (wood on fleece) | 706.0.09<br>713.0 | Reactive PUR-HM<br>Reactive PUR-HM |

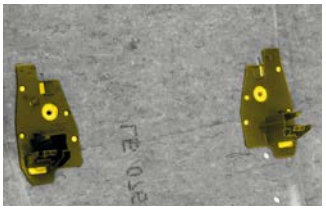
# Fields of Application

## Clips/Retainer

**Many detailed solutions can only be securely realized by the assembly bonding of clips and retainers. A complete range of special adhesive systems are used for these interesting applications. Above all, an intelligent application technology coupled with the highest requirements on the bond quality is also required.**

Several elements in vehicle interiors, such as coverings and liners, are attached using holders like clips and retainers. Thermoplastic (PO) as well as reactive (PUR) assembly adhesives are used for these applications.

Complex detailed solutions and design requirements can be functionally and efficiently achieved with this assembly technology. Perfect application properties when used with adhesive robots and fast handling stability optimize the entire process flow.



Clips/Retainer

| Applications | Substrates | Product | Product group |
|---|---|---|---|
| Clips / Retainer | ABS / wood fiber<br>ABS-PC / ABS-PC<br>PP / wood fiber | 703.5<br>703.3.33<br>713.7<br>750.0 | Reactive PUR-HM<br>Reactive PUR-HM<br>Reactive PUR-HM<br>Polyolefin HM |

# Fields of Application

## Trunk

**The use of adhesives for textile materials, foam elements, and lightweight components, and combinations of these materials, enable structurally simple solutions.**

**Nevertheless, the adhesives and the bonded elements must meet the requirements resulting from demanding climate change conditions in the trunk area.**

Modern car trunks, especially station wagons with a large storage space, are complex. Individual elements, such as the trunk floors, rear seat backs, rear decks, rear blinds, etc., have been produced for several years with KLEIBERIT adhesive systems. Both dispersion adhesives and an increasing amount of reactive PUR systems are in use. In particular, the low emissions properties of the adhesives must be highlighted. Lamination includes PVC films to hardboard panels or aluminum; carpet materials to PU honeycomb panels, PP or hardboard panels.

Especially for shaped parts or edgefolding applications, the high green strength of the adhesives systems are advantageous, in addition to the high temperature and climate change resistance.

Trunk Floor

Package Tray

Rear Seat Carpet Covering

| Applications | Substrates | Product | Product group |
|---|---|---|---|
| Trunk Floor | PUR-Sandwich / PES-Carpet | 416.3<br>706.0.09<br>713.5<br>713.7.04 | Special dispersion<br>Reactive PUR-HM<br>Reactive PUR-HM<br>Reactive PUR-HM |
| Package Tray | PES carpet or fleece / wood fiber | 703.3<br>724.1 | Reactive PUR-HM<br>Polyolefin HM |
| Rear Seat Carpet Covering | PES carpet / ABS | 457.1<br>713.7.04<br>713.7 | Dispersion<br>Reactive PUR-HM<br>Reactive PUR-HM |

# Fields of Application

## Lamination

**Lightweight, noise reducing, and above all, a natural feel are characteristics which make a difference in the car interior experience. Complex requirements, such as the field of application, the application properties or short cycle times and high green strength, characterize the specific properties of the KLEIBERIT product families.**

Fine textile materials, modern film design, and real leather, wood or metal trim are a real challenge for bonding technologies. For the various bonding processes and the high standards regarding durability, temperature and climate properties, KLEIBERIT offers a complete line of specific adhesive systems, such as dispersion adhesives, 1C/2C PU adhesives, PO hotmelt adhesives, reactive PO hotmelt adhesives and, above all, reactive PUR hotmelt adhesives. Important characteristics include the possibility for one-sided adhesive application, high green strength at the activation temperature and the warm demolding of bonded elements.

A-Pillar Covering

Headliner Lamination

Door Covering Lamination

Seat Backrest

| Applications | Substrates | Product | Product group |
|---|---|---|---|
| A-Pillar Covering | ABS-PC<br>PP-PC | 703.3.33<br>713.7.04 | Reactive PUR-HM<br>Reactive PUR-HM |
| Headliner Lamination | Textile/foam lamination bonded to PUR shell | 713.5<br>713.4.04 | Reactive PUR-HM<br>Reactive PUR-HM |
| Door Covering Lamination | Wood finishing / ABS | 439.3<br>457.1 | Dispersion<br>Dispersion |
| Seat Backrest | PP-GMT / PES-carpet | 724.5<br>725.1 | Polyolefin HM<br>Polyolefin HM |

# Fields of Application

## Exterior

**Design and functionality are highly interdependent. The introduction of new shapes and the development of detailed solutions are challenges to the adhesive. The high quality requirements of KLEIBERIT are a precondition for process security and flexibility for creating ideas.**

Complex design, increasing component size and external influences, such as heat, cold and moisture, are important parameters in the bonding of headlamps. Therefore, particular adhesive properties are required: high elasticity, adhesive and sealant functionality, quick setting.

For the assembly of emblems, the adhesive system's compatibility with the material coatings as well as fast handling stability for subsequent processing of the components is necessary.

Emblems

Headlamp

| Applications | Substrates | Product | Product group |
|---|---|---|---|
| Emblems | Alu CT- foil<br>ABS-chromed | 703.3.33 | Reactive PUR-HM |
| Headlamp | PP / PC | 517.0 | 2C PUR |

# Adhesives for automotive application

| | Product | Monomer reduced, MDI < 1,0 % | Viscosity [mPa·s] | | Open time* bead 3 mm | Open time* film 90 µm | Application methods |
|---|---|---|---|---|---|---|---|
| 1C PUR | 504.9 | – | 3.900 ± 800 (at 20 °C ) | - | - | 120 min | • Roller |
| | 508.3 | – | 12.000 ± 2.000 (at 20 °C ) | - | 15 min | 15 min | • Roller<br>• Spatula |
| 2C PUR | 517.0 | – | ca. 130.000 (at 23 °C ) | - | approx. 4 min | - | • 2C mixing and dosing unit |
| Reactive PUR-Hotmelts | 703.3 | – | 30.000 ± 6.000 (at 120 °C ) | 15.000 ± 3.000 (at 140 °C ) | 30 sec | 5 secec | • Spray<br>• Roller<br>• Nozzle |
| | 703.3.33 | ✓ | 55.000 ± 10.000 (at 120 °C ) | 30.000 ± 5.000 (at 140 °C ) | 30 sec | 5 secec | • Roller<br>• Nozzle |
| | 703.5 | – | 11.000 ± 4.000 (at 120 °C ) | 6.000 ± 2.000 (at 140 °C ) | 30 sec | 10 secec | • Spray<br>• Roller<br>• Nozzle |
| | 706.0.09 | ✓ | 12.000 ± 3.000 (at 120 °C ) | 6.000 ± 2.000 (at 140 °C ) | 45 sec | 3 min | • Spray<br>• Roller<br>• Nozzle |
| | 713.0.99 | ✓ | 30.000 ± 5.000 (at 120 °C ) | 15.000 ± 3.000 (at 140 °C ) | 40 sec | 2 min | • Spray<br>• Roller<br>• Nozzle |
| | 713.0 | ✓ | 30.000 ± 5.000 (at 120 °C ) | 15.000 ± 3.000 (at 140 °C ) | 40 sec | 2 min | • Spray<br>• Roller<br>• Nozzle |
| | 713.2 | – | 55.000 ± 10.000 (at 120 °C ) | 30.000 ± 5.000 (at 140 °C ) | 30 sec | 5 secec | • Nozzle<br>• Roller |
| | 713.4.04 | ✓ | 30.000 ± 5.000 (at 120 °C ) | 17.000 ± 3.000 (at 140 °C ) | 30 sec | 5 secec | • Spray<br>• Roller<br>• Nozzle |
| | 713.5 | ✓ | 35.000 ± 7.000 (at 120 °C ) | 20.000 ± 5.000 (at 140 °C ) | 60 sec | 5-10 secec | • Spray<br>• Roller<br>• Nozzle |
| | 713.7 | ✓ | 100.000 ± 20.000 (at 120 °C ) | 60.000 ± 15.000 (at 140 °C ) | 20 sec | 10 sec | • Nozzle<br>• Roller |
| | 713.7.04 | ✓ | 50.000 ± 10.000 (at 120 °C ) | 25.000 ± 5.000 (at 140 °C ) | 25 sec | 10 sec | • Spray<br>• Roller<br>• Nozzle |
| | 713.7.30 | – | 100.000 ± 20.000 (at 120 °C ) | 40.000 ± 10.000 (at 140 °C ) | 10 sec | 10 sec | • Nozzle<br>• Roller |
| PO-Hotmelts | 724.1 | – | 8.000 ± 2.000 (at 180°C ) | 5.000 ± 1.000 (at 200 °C ) | - | 45 sec | • Spray<br>• Roller<br>• Nozzle |
| | 724.5 | – | 8.000 ± 2.000 (at 180°C ) | 5.000 ± 1.500 (at 200 °C ) | - | 35 sec | • Spray<br>• Roller<br>• Nozzle |
| | 725.1 | – | 4.500 ± 1.500 (at 180°C ) | - | 20 sec | - | • Spray<br>• Roller<br>• Nozzle |
| | 727.3 | – | 18.000 ± 3.000 (at 160 °C ) | 9.000 ± 2.000 (at 180°C ) | 30 sec | permanently tacky | • Spray<br>• Roller<br>• Nozzle |
| Reactive PO-HM | 756.2 | – | 26.000 ± 4.000 (at 180°C ) | 16.000 ± 3.000 (at 200 °C ) | 40 sec | < 10 sec | • Nozzle<br>• Roller |
| Pressure Sensitive HM | 723.3 | – | 8.000 ± 1.500 (at 180°C ) | 4.000 ± 1.000 (at 200 °C ) | - | permanently tacky | • Nozzle<br>• Roller |

| Characteristics/Advantages | Fields of application |
|---|---|
| • High stiffness (rigidity) of the composites<br>• Fast curing under heat | Headliner production |
| • Short press times<br>• High strength<br>• Good weather resistance | Roof reinforcement damping |
| • Fast curing<br>• Permanently elastic<br>• Solvent-free<br>• Favorable fogging values | Headlamp |
| • High green strength<br>• Highly heat resistant, water resistant, very cold resistant, highly resilient bond<br>• No stringing | Armrest, side door, assembly, trunk floor, A-pillar outside covering |
| • Very high green strength<br>• Highly heat resistant, water resistant, very cold resistant, highly resilient bond<br>• Very good reactivation | I-board, center console, side door, assembly, trunk floor, A-pillar |
| • Low process temperature<br>• Highly heat resistant, water resistant, very cold resistant, highly resilient bond<br>• No stringing | Operator button, seat backrest, retainer |
| • Low process temperature<br>• High green strength<br>• Long open time | Trunk floor |
| • Black<br>• Very high green strength<br>• Long open time | Trunk floor |
| • Low process temperature<br>• Very high green strength<br>• Long open time | Trunk floor |
| • Wide application window<br>• Highly heat resistant, water resistant, very cold resistant, highly resilient bond | I-board, side door, assembly, trunk floor |
| • Very high green strength<br>• Good reactivation | I-board, center console, side door, assembly, trunk floor, A-pillar |
| • Very high green strength<br>• Good reactivation | I-board, center console, side door, assembly, trunk floor, A-pillar |
| • Extremely high green strength for high restoring forces<br>• Highly heat resistant, water resistant, very cold resistant, highly resilient bond | Armrest, side door, assembly, trunk floor |
| • High green strength for high restoring forces<br>• Highly heat resistant, water resistant, very cold resistant, highly resilient bond | Armrest, side door, assembly, trunk floor |
| • Adhesive complies with VDA 278<br>• Highly heat resistant, water resistant, very cold resistant, highly resilient bond | Side door, assembly, trunk floor |
| • High initial strength<br>• Heat resistance up to 90 °C<br>• Long open time | Armrest |
| • High initial strength<br>• No stringing<br>• Heat resistance up to 90 °C | Armrest |
| • Heat resistance up to 100 °C<br>• Very good activation properties<br>• High initial strength<br>• Foaming (FoamMelt®)<br>• Good ageing resistance | Seat backrest |
| • Very high green strength<br>• High tackiness<br>• Sprayable | Acoustic damping |
| • Very high green strength<br>• Highly heat resistant<br>• Very cold resistant | Dashboard<br>Armrest |
| • Very good bond with wood based material<br>• Long permanent tack<br>• Long open time | Acoustic damping |

*According to KLEIBERIT test specification

# Adhesives for automotive interior application

| | Product | | Viscosity ati 20°C [mPa·s] (Dispersion) | Hardener | Hardener Viscosity at 20°C [mPa·s] | Parts hardener (%) | Pot life hardener mixture [h] | Evaporation time (at room temperature) | Reactivation temperature [°C] (bond line) | Press time [sec.] | Heat resistance [°C] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Automotive interior applications | 416.3 | Special Dispersion | 2,000 ± 500 | 810.0 (optional) | 4 mm DIN Becher: ca.12 s | 5-10 (optional) | - | ca. 0-60 s | - | - | 80 |
| | 439.3 | Special Dispersion | 800 ± 200 | 807.1 (blue) 807.2 (red) 807.3 (green) | approx. 1.400 | 5 | approx. 8 | 30-60 min | from 55 | 15-30 | 120 |
| | 450.7 | 1C PUR-Dispersion | 2,200 ± 300 | - | - | - | - | 30-60 min | from 70-75 | 15-30 | 120 |
| | 457.1 | PUR-Dispersion with hardener | 10,000 ± 2,000 | 807.1 (blue) 807.2 (red) 807.3 (green) | approx. 320 | 5 | 4-6 | from 15 min | from 55 | 15-30 | 120 |
| | 457.7 | PUR-Dispersion with hardener | 2,200 ± 300 | 807.1 (blue) 807.2 (red) 807.3 (green) | approx. 1.400 | 5 | approx. 8 | 30-60 min | from 50 | 15-30 | 120 |
| | 457.9 | PUR-Dispersion with hardener | 5,000 ± 500 | 807.1 (blue) 807.3 (green) | approx. 1.400 | 5 | approx. 6-8 | 30-60 min | from 50 | 15-30 | 120 |

| Application methods | Characteristics / Advantages | Fields of application |
|---|---|---|
| • Spray<br>• Duo pistol (with Activator) | • Solvent-free<br>• Very short evaporation time<br>• Long open time<br>• Immediate high-tension bonding possible when adding KLEIBERIT Activator 810.0 | Lamination / trunk floor |
| • Spray<br>• Roller | • Solvent-free<br>• Highly resilient bond<br>• Very high green strength<br>• Very long reactivation time (up to 72h*) | Lamination / door covering<br>Lamination / headliner<br>Lamination / seat shell<br>Lamination / trunk floor |
| • Spray | • Solvent-free<br>• Very high green strength<br>• No pot life compared to 2K products<br>• Very good climate change resistance<br>• Long reactivation time (up to 72h*)<br>• Very good moisture resistance | Lamination of 3D-shaped substrates |
| • Roller | • Solvent-free<br>• Highly resilient bond<br>• Very high green strength<br>• Very good climate change resistance<br>• Long reactivation time (up to 8h* with hardener)<br>• Very good moisture resistance | Lamination / door covering<br>Lamination / trunk floor |
| • Spray | • Solvent-free<br>• Very high green strength<br>• Very good temperature resistance<br>• Very good climate change resistance<br>• Long reactivation time (up to 24h* with hardener)<br>• Very good moisture resistance | Lamination of 3D-shaped substrates |
| • Spray | • Solvent-free<br>• Very high green strength<br>• Very good temperature resistance<br>• Very good climate change resistance<br>• Long reactivation time (up to 24h* with hardener)<br>• Very good moisture resistance | Lamination of 3D-shaped substrates |

*According to KLEIBERIT test specification

## KLEIBERIT® Adhesives worldwide

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Competence PUR

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