

### **DELO-KATIOBOND® 4557**

Light-activated adhesive, medium viscous

#### **Base**

- modified epoxy resin
- one-component, solvent-free, light-activated

#### **Use**

- especially for tough-hard bondings and sealings
- for the bonding of metal, glass, plastic and other materials as well as for the coating, fixing or sealing of electronic components
- also suitable for the bonding of opaque components through preactivation
- the cured product is normally used in a temperature range of -40 °C to +150 °C; depending on the application, other limits may be more reasonable
- positively tested according to UL 94 HB
- compliant with RoHS directive 2015/863/EU

#### **Processing**

- the product is supplied ready for use; in case of cool storage, it must be ensured that the container is conditioned to room temperature before use
- the containers are conditioned at room temperature (max. 25 °C); additional heat addition is not allowed
- the adhesive is usually applied by dispensing
- the adhesive can be processed well from the original container or with DELO dispensing units
- the surfaces to be bonded must be dry as well as free of dust, grease and other contaminations
- use DELOTHEN cleaners for the cleaning of bonding surfaces
- when using aqueous cleaners with alkaline properties, they must be removed from the bonding surface after cleaning through appropriate rinsing cycles
- dispensing valves and product-bearing elements must be carefully cleaned before use, residues of other products must be completely removed; acetone or DELOTHEN EP are recommended as cleaners
- for further information please refer to our instructions for use DELO-KATIOBOND.

## Curing

- curing with UV light or visible light in a wavelength range of 320 – 550 nm. DELOLUX LED curing lamps are especially suitable as per the chart below. All standard DELOLUX HID discharge lamps are also suitable. For preactivation, only visible light in a wavelength range of 400 – 550 nm can be used.
- the cationic curing mechanism enables adhesive curing after the joining of opaque components after sufficient irradiation
- after irradiation curing until final strength within 24 h at room temperature
- increased temperatures accelerate the reaction, lower temperature decelerate it
- increased intensities shorten the required irradiation time, lower intensities prolong it

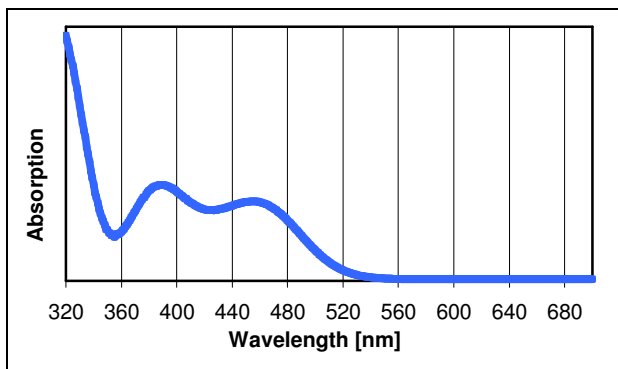
| Lamp type       | DELOLUX 20 / 50 / 80 |     |     |
|-----------------|----------------------|-----|-----|
| Wavelength [nm] | 365                  | 400 | 460 |
| Suitability     | + *)                 | +   | ++  |

- not suitable + suitable ++ especially suitable

\*) suitable only in case of direct irradiation, preactivation not possible

## Absorption spectrum

- photoinitiation system in epoxy resin basic matrix



## Curing parameters

- dependent on material thickness and absorption, adhesive layer thickness, lamp type and distance between lamp and adhesive layer

## Technical data

### *Color*

cured in a layer thickness of approx. 0.1 mm

brown clear

### *Color*

cured in a layer thickness of approx. 1 mm

brown clear

### Density [g/cm<sup>3</sup>]

DELO Standard 13  
at room temperature (approx. 23 °C)

1.1

### Viscosity [mPas]

at 23 °C, Brookfield spm 3/10

3500

### Preactivation time [s]

DELO Standard 19  
DELOLUX 03 S, UVA intensity: 55 - 60 mW/cm<sup>2</sup> DELOLUXcontrol

5

### Open time after preactivation [s]

DELO Standard 19  
at room temperature (approx. 23 °C) and normal room lighting

17

### Minimal irradiation time [s]

DELO Standard 37, DSC  
UVA intensity: 55 - 60 mW/cm<sup>2</sup> DELOLUXcontrol, at 30 °C

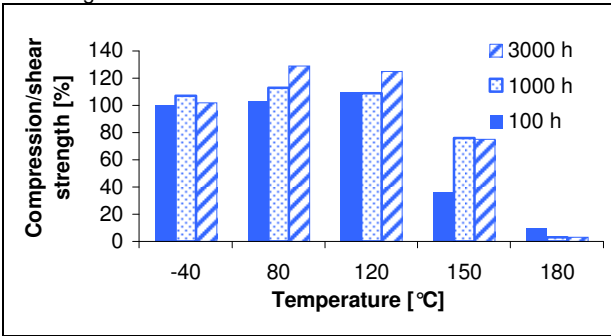
24

|  |     |
|--|-----|
| <b>Recommended irradiation time [s]</b><br>UVA-intensity: 55 - 60 mW/cm <sup>2</sup> DELOLUXcontrol  | 60  |
| <b>Minimal irradiation time [s]</b><br>DELO Standard 37, DSC<br>LED 460 nm, intensity: 200 mW/cm <sup>2</sup> ; DELOLUXcontrol, at 30 °C   | 15  |
| <b>Recommended irradiation time [s]</b><br>LED 460nm, intensity: 200 mW/cm <sup>2</sup> DELOLUXcontrol   | 60  |
| <b>Curing time until final strength [h]</b><br>at room temperature (approx. 23 °C) after irradiation   | 24  |
| <b><i>Compression shear strength glass/glass [MPa]</i></b><br>DELO Standard 5<br>UVA intensity: 55 - 60 mW/cm <sup>2</sup> , DELOLUXcontrol, irradiation time: 60 s<br>curing time: 24 h at room temperature (approx. 23 °C) | 10  |
| <b>Compression shear strength glass/Al [MPa]</b><br>DELO Standard 5<br>UVA intensity: 55 - 60 mW/cm <sup>2</sup> , DELOLUXcontrol, irradiation time: 60 s<br>curing time: 24 h at room temperature (approx. 23 °C)           | 9   |
| <b>Compression shear strength glass/FR4 [MPa]</b><br>DELO Standard 5<br>UVA intensity: 55 - 60 mW/cm <sup>2</sup> , DELOLUXcontrol, irradiation time: 60 s<br>curing time: 24 h at room temperature (approx. 23 °C)          | 14  |
| <b>Compression shear strength PC/Al [MPa]</b><br>DELO Standard 5<br>UVA intensity: 55 - 60 mW/cm <sup>2</sup> , DELOLUXcontrol, irradiation time: 60 s<br>curing time: 24 h at room temperature (approx. 23 °C)              | 7   |
| <b>Compression shear strength PC/PC [MPa]</b><br>DELO Standard 5<br>UVA intensity: 55 - 60 mW/cm <sup>2</sup> , DELOLUXcontrol, irradiation time: 60 s<br>curing time: 24 h at room temperature (approx. 23 °C)              | 18  |
| <b>Compression shear strength PMMA/PMMA [MPa]</b><br>DELO Standard 5<br>UVA intensity: 55 - 60 mW/cm <sup>2</sup> , DELOLUXcontrol, irradiation time: 60 s<br>curing: 24 h at room temperature (approx. 23 °C)               | 8   |
| <b>Compression shear strength PBT/PBT [MPa]</b><br>DELO Standard 5<br>UVA intensity: 55 - 60 mW/cm <sup>2</sup> DELOLUXcontrol, at optimal preactivation time<br>curing time: 24 h at room temperature (approx. 23 °C)       | 9   |
| <b>Compression shear strength PETP/PETP [MPa]</b><br>DELO Standard 5<br>UVA intensity: 55 - 60 mW/cm <sup>2</sup> DELOLUXcontrol, at optimal preactivation time<br>curing time: 24 h at room temperature (approx. 23 °C)     | 10  |
| <b>Tensile strength [MPa]</b><br>DIN EN ISO 527  | 6   |
| <b>Elongation at tear [%]</b><br>DIN EN ISO 527  | 10  |
| <b>Young's modulus [MPa]</b><br>DIN EN ISO 527   | 100 |
| <b>Shore hardness D</b><br>according to DIN EN ISO 868   | 29  |
| <b>Decomposition temperature [°C]</b><br>DELO Standard 36  | 182 |
| <b>Glass transition temperature [°C]</b><br>rheometer  | 50  |

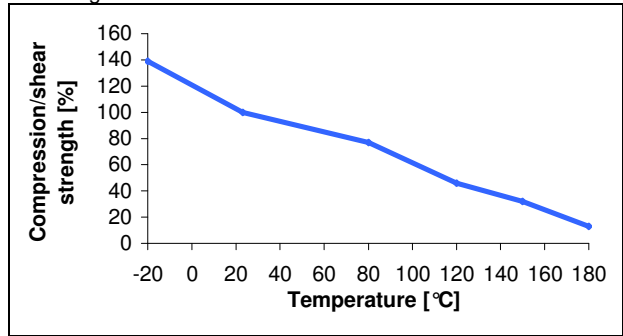
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| <b>Coefficient of linear expansion [ppm/K]</b><br>TMA, in a temperature range of +30 to +150 °C          | 185      |
| <b>Shrinkage [vol. %]</b><br>DELO Standard 13  | 2.5      |
| <b>Water absorption [weight %]</b><br>according to DIN EN ISO 62, 7 d at room temperature (approx. 23°C) | 1.2      |
| <b>Thermal conductivity [W/(m·K)]</b>  | 0.2      |
| <b>Specific volume resistance [<math>\Omega</math>cm]</b><br>VDE 0303, part 3                            | >1xE10   |
| <b>Surface resistance [<math>\Omega</math>]</b><br>VDE 0303, part 3                                      | >1xE10   |
| <b>Dielectric strength [kV/mm]</b><br>VDE 0303, part 2   | 16       |
| <b>Dielectric constant</b><br>RF-IV method, 1 MHz, at 25 °C +/- 3 °C                                     | 4.8      |
| <b>Dielectric constant</b><br>RF-IV method, 10 MHz, at 25 °C +/- 3 °C                                    | 4.7      |
| <b>Dielectric constant</b><br>RF-IV method, 100 MHz, at 25 °C +/- 3 °C                                   | 4.3      |
| <b>Dielectric constant</b><br>RF-IV method, 1 GHz, at 25 °C +/- 3 °C                                     | 3.5      |
| <b>Creep resistance CTI</b><br>VDE 0303, part 1, IEC 112   | 600 M    |
| <b>Storage life at room temperature (0 °C to +25 °C)</b><br>in unopened original container               | 6 months |

## Performance under temperature influence

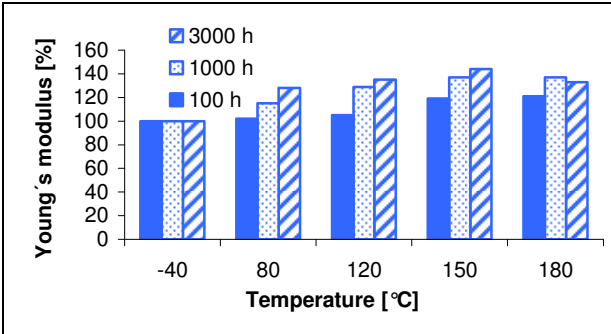
compression/shear strength glass/glass after temperature storage based on initial value at room temperature measured at room temperature (approx. 23 °C) according to DELO standard 5



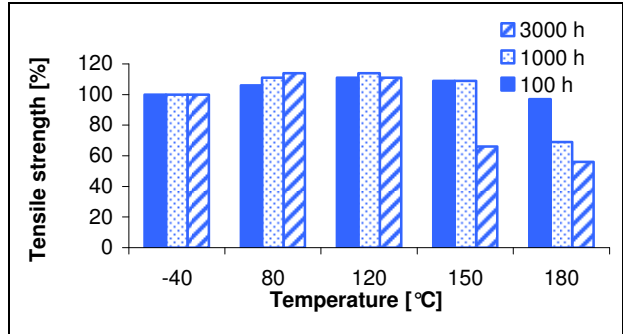
compression/shear strength glass/glass at temperature based on initial value at room temperature measured at determined temperature according to DELO standard 5



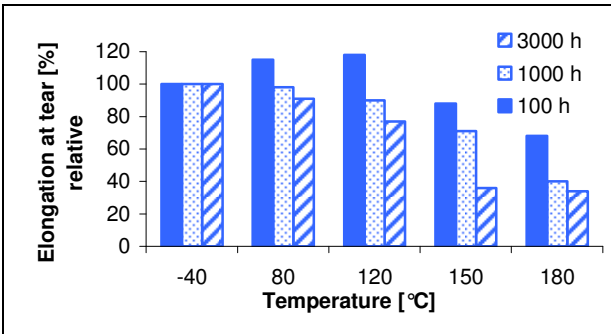
Young's modulus after temperature storage based on initial value at room temperature measured at room temperature (approx. 23 °C) according to DIN EN ISO 527, test specimen type 1B, thickness 2 mm



tensile strength after temperature storage based on initial value at room temperature measured at room temperature (approx. 23 °C) according to DIN EN ISO 527, test specimen type 1B, thickness 2 mm



elongation at tear after temperature storage based on absolute initial value at room temperature measured at room temperature (approx. 23 °C) according to DIN EN ISO 527, test specimen type 1B, thickness 2 mm



## Performance under chemical influence

compression shear strength after storage for 1,000 h  
based on initial value at room temperature  
measured at room temperature (approx. 23 °C)  
according to DELO Standard 5

| Chemical medium                            | Compression/shear strength glass/Al [%] |
|--|---|
| acetone                                    | 83                                      |
| ethanol denatured                          | 97                                      |
| ATF gear oil                               | 106                                     |
| petrol                                     | 92                                      |
| diesel fuel                                | 80                                      |
| engine oil 10W40                           | 129                                     |
| demineralised water / glykol mixture 50:50 | 74                                      |

## **Instructions and advice**

### General

The data and information provided are based on tests performed under laboratory conditions. Reliable information about the behavior of the product under practical conditions and its suitability for a specific purpose cannot be concluded from this. It is the customer's responsibility to test the suitability of the product for the intended purpose by considering all specific requirements. Type and physical and chemical properties of the materials to be processed with the product, as well as all actual influences occurring during transport, storage, processing and use, may cause deviations in the behavior of the product compared to its behavior under laboratory conditions. The data and information provided are therefore no guarantee for specific product properties or the suitability of the product for the intended purpose.

Nothing contained herein shall be construed to indicate the non-existence of any relevant patents or to constitute a permission, encouragement or recommendation to practice any development covered by any patents, without permission of the owner of this patent.

All products provided by DELO are subject to DELOs' General Terms of Business. Verbal side agreements are not permitted. This document is subject to change.

### Instructions for use

The instructions for use of DELO-KATIOBOND are available on: [www.DELO.de](http://www.DELO.de). We will be pleased to send them to you on demand.

### Occupational health and safety

see material safety data sheet

### Specification

The properties in *italics* are part of the specification. Ranges with clear limits are defined for them and others, where applicable. In the course of the QA test, each batch is tested for these properties and the maintenance of the limits is ensured. The measuring methods used can deviate from those specified in the data sheet. Details can be found in the QA test report.