

DELO-KATIOBOND® GE680

UV-curing encapsulant, highly viscous

Base

- modified epoxy resin
- one-component, solvent-free, UV-curing, thixotropic

Use

- especially for the encapsulation of ICs in chip on board technology
- for the encapsulation of chip modules and coating of electronic components
- the system enables extremely short cycle times and, therefore, an increase in productivity and a decrease in production costs
- 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
- tested for biocompatibility and meets the requirements according to USP 30, NF 25, Class VI
- compliant with RoHS directive 2015/863/EU

Processing

- the adhesive 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); the conditioning time is approx. 0.5 h for containers up to 50 ml; additional heat addition is not allowed
- the adhesive can be applied by dispensing
- the surfaces to be bonded must be dry as well as free of dust, grease and other contaminations
- the postcuring potential of the adhesive decreases if the components are heated to approx. 125 °C directly before irradiation. This procedure can lead to improved reliability values
- 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

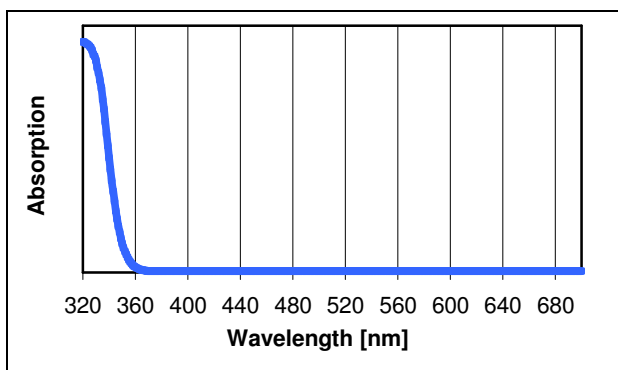
- curing with UV light in a wavelength range of 320 – 380 nm. DELOLUX LED curing lamps are especially suitable as per the chart below. All standard DELOLUX HID discharge lamps are also suitable.
- after irradiation curing until final strength within 24 h at room temperature
- increased temperatures accelerate 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

Absorption spectrum

- photoinitiation system in epoxy resin basic matrix



Curing parameters

- dependent on the layer thickness of the encapsulation compound, lamp type and irradiation intensity

Technical data

Color

cured in a layer thickness of approx. 0.1 mm

milky translucent

Color

cured in a layer thickness of approx. 0.5 mm

milky white

Filler content [weight %]

75

Filler particle size [μm]

≤ 90

d₉₉

Density [g/cm^3]

1.8

calculated, at room temperature (approx. 23 °C)

Curable layer thickness [mm]

4

DELO Standard 20

UVA intensity: 55 - 60 mW/cm^2 DELOLUXcontrol, DELOLUX 03

Viscosity [mPas]

112000

at 23 °C, Brookfield rpm 7/5

Thixotropy index

2

Processing time

1 week

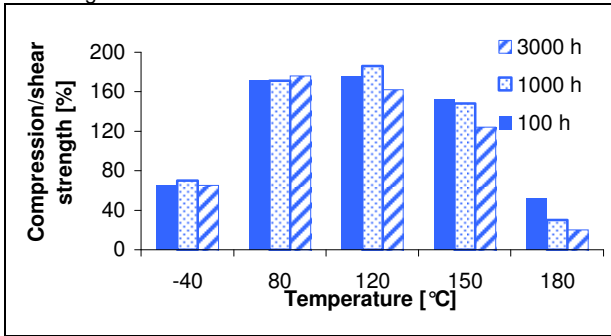
at room temperature (max. 25 °C)

Minimal irradiation time [s] DELO Standard 37, DSC DELOLUX; 365 nm LED; intensity: 200 mW/cm ² ; DELOLUXcontrol;	4
Recommended irradiation time [s] LED intensity: 200 mW/cm ² , DELOLUXcontrol	30
Recommended irradiation time [s] UVA-intensity: 55 - 60 mW/cm ² DELOLUXcontrol	30
Curing time until final strength [h] at room temperature (approx. 23 °C) after irradiation	24
<i>Compression shear strength glass/glass [MPa]</i> DELO Standard 5 UVA intensity: 55 - 60 mW/cm ² DELOLUXcontrol, irradiation time: 30 s curing time: 24 h at room temperature (approx. 23 °C)	31
Compression shear strength glass/FR4 [MPa] DELO Standard 5 UVA intensity: 55 - 60 mW/cm ² , DELOLUXcontrol, irradiation time: 30 s curing time: 24 h at room temperature (approx. 23 °C)	19
Compression shear strength glass/Al [MPa] DELO Standard 5 UVA intensity: 55 - 60 mW/cm ² , DELOLUXcontrol, irradiation time: 30 s curing time: 24 h at room temperature (approx. 23 °C)	20
Compression shear strength glass/PBT [MPa] DELO Standard 5 UVA intensity: 55 - 60 mW/cm ² DELOLUXcontrol, irradiation time: 30 s curing time: 24 h at room temperature (approx. 23 °C)	6
Compression shear strength glass/PC [MPa] DELO Standard 5 UVA intensity: 55 - 60 mW/cm ² DELOLUXcontrol, irradiation time: 30 s curing time: 24 h at room temperature (approx. 23 °C)	10
Tensile strength [MPa] DIN EN ISO 527	41
Elongation at tear [%] DIN EN ISO 527	0.6
Young's modulus [MPa] DIN EN ISO 527	6900
Shore hardness D according to DIN EN ISO 868	91
Decomposition temperature [°C] DELO Standard 36	291
<i>Glass transition temperature [°C]</i> TMA	120
Coefficient of linear expansion [ppm/K] TMA, in a temperature range of +30 to +120 °C	32
Shrinkage [vol. %] DELO Standard 13	2
Water absorption [weight %] according to DIN EN ISO 62, 24 h at room temperature (approx. 23 °C)	0.1
Ion content Cl- [ppm] extraction	<10
Ion content F- [ppm] extraction	<100

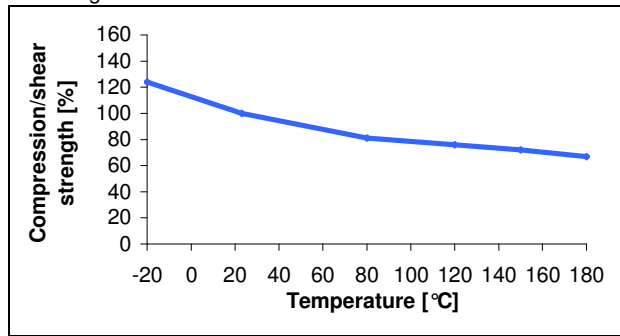
Ion content Na+ [ppm] extraction	<10
Ion content K+ [ppm] extraction	<10
Specific volume resistance [Ω cm] VDE 0303, part 3	>1xE13
Surface resistance [Ω] VDE 0303, part 3	>1xE13
Dielectric constant RF-IV method, 1 MHz, at 25 °C +/- 3 °C	3.5
Dielectric constant RF-IV method, 10 MHz, at 25 °C +/- 3 °C	3.5
Dielectric constant RF-IV method, 100 MHz, at 25 °C +/- 3 °C	3.5
Dielectric constant RF-IV method, 1 GHz, at 25 °C +/- 3 °C	3.2
Creep resistance CTI VDE 0303, part 1, IEC 112	600 M
Storage life at 0 °C to +10 °C in unopened original container	6 months

Performance under temperature influence

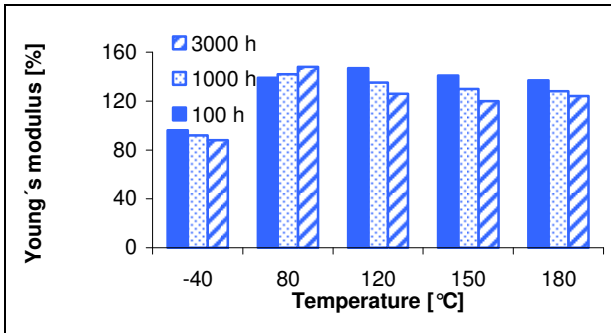
compression/shear strength glass/glass after temperature storage based on initial value at room temperature measured at room temperature (approx. 23 °C) according to DELO standard 5



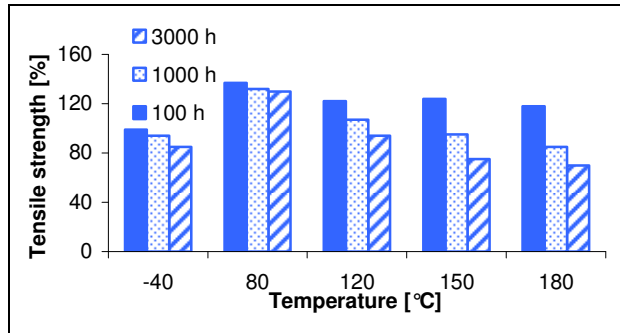
compression/shear strength glass/glass at temperature based on initial value at room temperature measured at determined temperature according to DELO standard 5



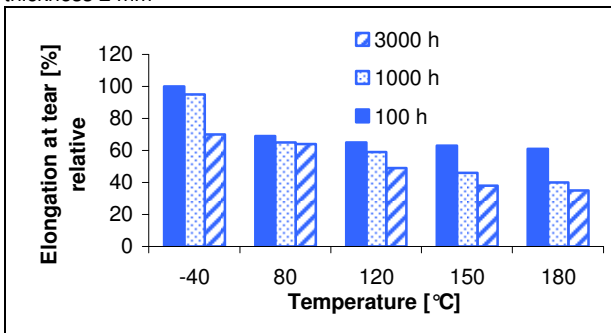
Young's modulus after temperature storage based on initial value at room temperature measured at room temperature (approx. 23 °C) according to DIN EN ISO 527, test specimen type 1B, thickness 2 mm



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	72
ethanol denatured	91
ethanol 70 % denatured	59
ATF gear oil	110
petrol	98
diesel fuel	74
engine oil 10W40	91
acetic acid 10 %	55
demineralised water / glykol mixture 50:50	87

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. 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.