

DELO-PHOTOBOND® AD414

UV- and light curing acrylate adhesive, low viscosity

Base

- modified urethane acrylate
- one-component, solvent-free

Use

- Light-curing adhesive for electronic applications: pin casting, pin sealing
- the cured product is normally used in a temperature range of -40 °C to +120 °C; depending on the application, other limits may be more reasonable
- compliant with RoHS directive 2011/65/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 (+18 °C to +25 °C); the conditioning time is approx. 0.5 h for containers up to 50 ml and approx. 4 h for containers up to 1,000 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
- dispensing valves and product-bearing elements must be carefully cleaned before use, residues of other products must be completely removed; DELOTHEN EP as well as acetone, isopropanol or a mixture of both are recommended to remove DELO-PHOTOBOND residues
- for further information please refer to our instructions for use DELO-PHOTOBOND and the brochure "Light Curing"

Curing

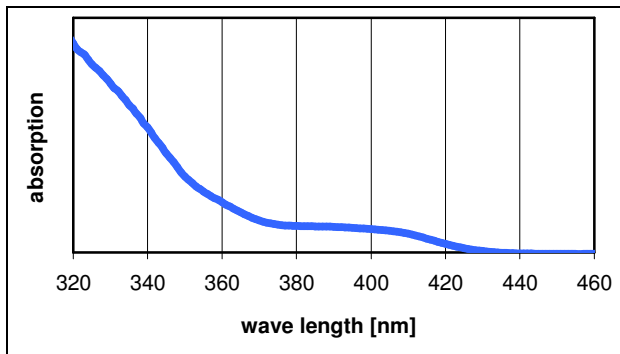
- curing with UV light or visible light in a wavelength range from 320 to 450 nm. DELOLUX LED curing lamps are especially suitable as per the chart below. All standard DELOLUX HID discharge lamps are also suitable
- increased intensities shorten the required irradiation time, lower intensities prolong it

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

- not suitable + suitable ++ especially suitable

Absorption spectrum

photoinitiation system in acrylate matrix



Curing parameters

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

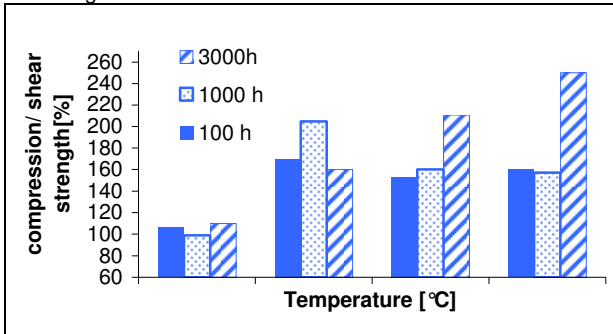
Technical data

<i>Color</i> cured in a layer thickness of approx. 0.1 mm	blue fluorescent
Density [g/cm ³]	1.0
<i>Viscosity</i> [mPas] at 23 °C, Brookfield spm 3/10	1300
<i>Minimal curing time</i> [s] DELO Standard 23, UVA intensity: 60 mW/cm ² , DELOLUXcontrol	17
Minimal curing time [s] DELO Standard 23, LED intensity: 200 mW/cm ² , DELOLUXcontrol	11
Compression shear strength glass/glass [MPa] DELO Standard 5 UVA intensity: 55 - 60 mW/cm ² , DELOLUXcontrol, irradiation time: 60 s	7
Compression shear strength glass/PA [MPa] DELO Standard 5 UVA intensity: 55 - 60 mW/cm ² , DELOLUXcontrol, irradiation time: 60 s	5
Compression shear strength glass/FR4 [MPa] DELO Standard 5 UVA intensity: 55 - 60 mW/cm ² , DELOLUXcontrol, irradiation time: 60 s	6
<i>Compression shear strength glass/Al</i> [MPa] DELO Standard 5 UVA intensity: 55 - 60 mW/cm ² , DELOLUXcontrol, irradiation time: 60 s	8
Compression shear strength PC/PC [MPa] DELO Standard 5 UVA intensity: 55 - 60 mW/cm ² , DELOLUXcontrol, irradiation time: 60 s	6
Tensile strength [MPa] DIN EN ISO 527	8
Elongation at tear [%] DIN EN ISO 527	540
Water absorption [%] according to DIN EN ISO 62, 24 h at room temperature (approx. 23 °C)	0.7
Shrinkage [%] DELO Standard 13	6.3

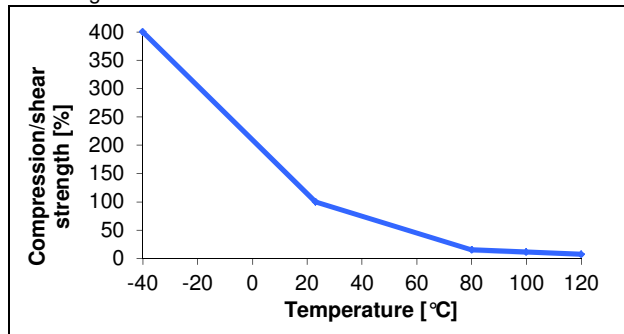
Shore hardness A according to DIN EN ISO 868	44
Glass transition temperature [°C] rheometer	28
Coefficient of linear expansion [ppm] in a temperature range of +30 to +140 °C	260
Specific volume resistance [Ωcm] VDE 0303, part 3	>1xE13
Surface resistance [Ω] VDE 0303, part 3	>1xE12
Dielectric strength [kV/mm] VDE 0303, part 2	14
Dielectric constant RF-IV method, 1 MHz, at 25 °C +/- 3 °C	4.0
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	3.3
Dielectric constant RF-IV method, 1 GHz, at 25 °C +/- 3 °C	3.0
Creep resistance CTI VDE 0303, part 1, IEC 112	600 M
Decomposition temperature [°C] DELO Standard 36	220

Performance under temperature influence

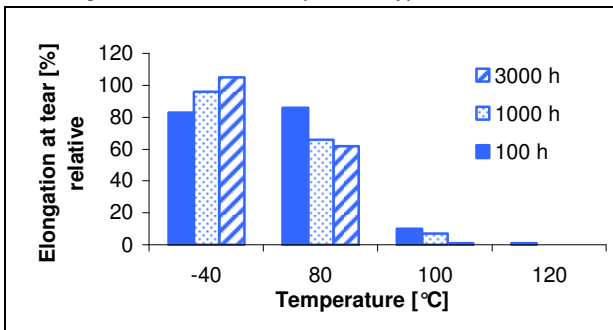
compression/shear strength glass/glass after temperature storage based on initial value at room temperature measured at room temperature (approx. 23 °C) according to DELO standard 5



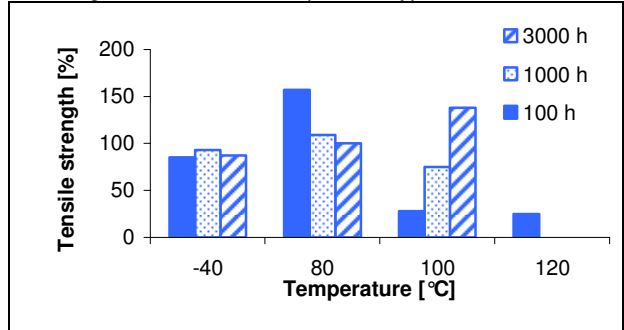
compression/shear strength glass/glass at temperature based on initial value at room temperature measured at determined temperature according to DELO standard 5



elongation at tear after temperature storage based on initial value at room temperature measured at room temperature (approx. 23 °C) according to DIN EN 527, test specimen type 5A 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 527, test specimen type 5A, thickness 2 mm



Performance under chemical influence

compression shear strength after storage for 100 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 [%]
ATF gear oil	115
Diesel fuel	105
biodiesel	109
engine oil 10W40	135

Storage life

at room temperature (0 °C to +25 °C) in unopened original container

6 months

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-PHOTOBOND 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.