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 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 (+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; isopropanol is 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

<table>
<thead>
<tr>
<th>Lamp type</th>
<th>DELOLUX 20 / 50 / 80</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wavelength [nm]</td>
<td>365</td>
</tr>
<tr>
<td>Suitability</td>
<td>++</td>
</tr>
</tbody>
</table>

- not suitable   + suitable   ++ especially suitable
Absorption spectrum
photoinitiation system in acrylate matrix

![Absorption spectrum graph](image)

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

- blue fluorescent

**Density [g/cm³]**
1.0

**Viscosity [mPas]**
at 23 °C, Brookfield spm 3/10
1300

**Processing time**
at room temperature (approx. +23 °C)
4 weeks

**Minimal curing time [s]**
- DELO Standard 23, UVA intensity: 60 mW/cm², DELOLUXcontrol: 17
- DELO Standard 23, LED intensity: 200 mW/cm², DELOLUXcontrol: 11

**Compression shear strength glass/glass [MPa]**
- DELO Standard 5
  - UVA intensity: 55 - 60 mW/cm², DELOLUXcontrol, irradiation time: 60 s
  - 7

**Compression shear strength glass/PA [MPa]**
- DELO Standard 5
  - UVA intensity: 55 - 60 mW/cm², DELOLUXcontrol, irradiation time: 60 s
  - 5

**Compression shear strength glass/FR4 [MPa]**
- DELO Standard 5
  - UVA intensity: 55 - 60 mW/cm², DELOLUXcontrol, irradiation time: 60 s
  - 6

**Compression shear strength glass/Al [MPa]**
- DELO Standard 5
  - UVA intensity: 55 - 60 mW/cm², DELOLUXcontrol, irradiation time: 60 s
  - 8

**Compression shear strength PC/PC [MPa]**
- DELO Standard 5
  - UVA intensity: 55 - 60 mW/cm², 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
<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shrinkage [vol. %]</td>
<td>6.3</td>
</tr>
<tr>
<td>Shore hardness A</td>
<td>44</td>
</tr>
<tr>
<td>Glass transition temperature [°C]</td>
<td>28</td>
</tr>
<tr>
<td>Coefficient of linear expansion [ppm]</td>
<td>260</td>
</tr>
<tr>
<td>Specific volume resistance [Ωcm]</td>
<td>&gt;1xE13</td>
</tr>
<tr>
<td>Surface resistance [Ω]</td>
<td>&gt;1xE12</td>
</tr>
<tr>
<td>Dielectric strength [kV/mm]</td>
<td>14</td>
</tr>
<tr>
<td>Dielectric constant RF-IV method, 1 MHz</td>
<td>4.0</td>
</tr>
<tr>
<td>Dielectric constant RF-IV method, 10 MHz</td>
<td>3.5</td>
</tr>
<tr>
<td>Dielectric constant RF-IV method, 100 MHz</td>
<td>3.3</td>
</tr>
<tr>
<td>Dielectric constant RF-IV method, 1 GHz</td>
<td>3.0</td>
</tr>
<tr>
<td>Creep resistance CTI</td>
<td>600 M</td>
</tr>
<tr>
<td>Decomposition temperature [°C]</td>
<td>220</td>
</tr>
</tbody>
</table>

DELO Standard 13

DELO Standard 36

DELO Standard 36

DELO Standard 36
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

![Graph showing compression/shear strength at different temperatures](image)

**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

![Graph showing elongation at tear at different temperatures](image)

**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

![Graph showing tensile strength at different temperatures](image)

Performance under chemical influence

**compression shear strength after storage for 100 h**
- based on initial valve at room temperature
- measured at room temperature (approx. 23 °C)
- according to DELO Standard 5

<table>
<thead>
<tr>
<th>Chemical medium</th>
<th>Compression/shear strength glass/Al [%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATF gear oil</td>
<td>115</td>
</tr>
<tr>
<td>Diesel fuel</td>
<td>105</td>
</tr>
<tr>
<td>biodiesel</td>
<td>109</td>
</tr>
<tr>
<td>engine oil 10W40</td>
<td>135</td>
</tr>
</tbody>
</table>

**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 a product for the intended purpose by considering all specific requirements and by applying standards the customer deems suitable (e.g. DIN 2304-1). Type, 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. All data provided are typical average values or uniquely determined parameters measured under laboratory conditions. The data and information provided are therefore no guarantee for specific product properties or the suitability of the product for a specific 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 DELO’s General Terms of Business. Verbal ancillary agreements are deemed not to exist.

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.