# DELO® KATIOBOND® DI6049

**modified epoxy resin | 1C | preactivated / UV-fixable**

free of solvents | low outgassing, filled, low swelling, can be fixed quickly, thixotropic | electrically insulating, high water vapor barrier, light-fixable, low CTE, low-temperature-curing, very high temperature strength, preactivated, thermally conductive

## Curing

| | | |
|---|---|---|
| Suitable lamp types | LED 365 nm, LED 400 nm, LED 460 nm, UVA | |
| Typical preactivation time | | |
| *intensity 200 mW/cm²<br>LED 460 nm* | 10 | s |
| *intensity 200 mW/cm²<br>LED 400 nm* | 10 | s |
| Typical open time | | |
| | 2 - 10 | min |
| Typical light fixation time | | |
| *intensity 200 mW/cm²<br>LED 365 nm* | 5 | s |
| Typical curing time | | |
| *at rt ca. + 23 °C<br>preactivated* | 3 | d |
| *at +60 °C<br>preactivated / in air convection oven* | 15 | min |

## Processing

| | | |
|---|---|---|
| Conditioning time (typical) | | |
| *when stored in cold conditions<br>in containers up to 50 ml* | 1 | h |
| Processing time | | |
| *at rt approx. +23 °C* | 14 | d |

| | | |
|---|---|---|
| Storage life in unopened original container | | |
| *at 0 °C to +10 °C* | 6 | month(s) |

## Technical properties

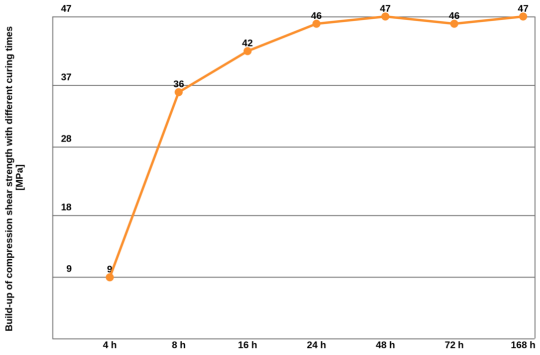
| | | |
|---|---|---|
| Color in cured condition in 0.1 mm layer thickness | whitish | |
| Transparency in cured condition in 0.1 mm layer thickness | translucent | |
| Filler particle type | minerals | |
| Filler particle size | d95 = 65 µm | |
| Filler content | 74 | wt. % |

## Parameters

| | | |
|---|---|---|
| Density<br>*DELO Standard 13 \| liquid* | 1.81 | g/cm³ |
| Viscosity<br>*liquid \| Rheometer \| Shear rate: 10 1/s \| Gap: 500 µm* | 20000 | mPa·s |
| Thixotropy index<br>*liquid \| Rheometer \| Gap: 500 µm* | 3 | |
| Maximum layer thickness that can be preactivated<br>*DELO Standard 21 \| Preactivation \| 460 nm \| 200 mW/cm² \| 10 s \| Plus \| at approx. +23 °C \| 7 d* | 4 | mm |
| Compression shear strength<br>*DELO Standard 5 \| **Al** \| **Al** \| Preactivation \| 460 nm \| 200 mW/cm² \| 10 s \| Plus \| at approx. +23 °C \| 7 d* | 35 | MPa |
| Compression shear strength<br>*DELO Standard 5 \| **Al** \| **Al** \| Pretreatment: Laser \| Preactivation \| 460 nm \| 200 mW/cm² \| 10 s \| Plus \| at approx. +23 °C \| 168 h* | 47 | MPa |
| Compression shear strength<br>*DELO Standard 5 \| **FR4** \| **FR4** \| Preactivation \| 460 nm \| 200 mW/cm² \| 10 s \| Plus \| at approx. +23 °C \| 7 d* | 45 | MPa |
| Compression shear strength<br>*DELO Standard 5 \| **Glass** \| **Glass** \| Preactivation \| 460 nm \| 200 mW/cm² \| 10 s \| Plus \| 365 nm \| 1000 mW/cm² \| 5 s \| Plus \| at approx. +23 °C \| 7 d* | 19 | MPa |
| Compression shear strength<br>*DELO Standard 5 \| **LCP MR25** \| **LCP MR25** \| Preactivation \| 460 nm \| 200 mW/cm² \| 10 s \| Plus \| at approx. +23 °C \| 7 d* | 9 | MPa |

| | | |
|---|---|---|
| Compression shear strength<br>*DELO Standard 5 | **PA6** | **PA6** | *Preactivation | 460 nm | 200 mW/cm² | 10 s | Plus | at approx. +23 °C | 7 d* | 12 | MPa |
| Compression shear strength<br>*DELO Standard 5 | **PBT** | **PBT** | *Preactivation | 460 nm | 200 mW/cm² | 10 s | Plus | at approx. +23 °C | 7 d* | 8 | MPa |
| Tensile strength<br>*Based on DIN EN ISO 527 | Preactivation | 460 nm | 200 mW/cm² | 10 s | Plus | at approx. +23 °C | 7 d* | 65 | MPa |
| Elongation at tear<br>*Based on DIN EN ISO 527 | Preactivation | 460 nm | 200 mW/cm² | 10 s | Plus | at approx. +23 °C | 7 d* | 0.6 | % |
| Young's modulus<br>*DMTA | Preactivation | 460 nm | 200 mW/cm² | 10 s | Plus | at approx. +23 °C | 7 d* | 17000 | MPa |
| Shore hardness D<br>*Based on DIN EN ISO 868 | Preactivation | 460 nm | 200 mW/cm² | 10 s | Plus | at approx. +23 °C | 7 d* | >90 | |
| Glass transition temperature<br>*DMTA | Preactivation | 460 nm | 200 mW/cm² | 10 s | Plus | at approx. +23 °C | 7 d* | 170 | °C |
| Coefficient of linear expansion<br>*DELO Standard 26 | TMA | Evaluation T: -40 °C - 20 °C | Preactivation | 460 nm | 200 mW/cm² | 10 s | Plus | at approx. +23 °C | 7 d* | 18 | ppm/K |
| Coefficient of linear expansion<br>*DELO Standard 26 | TMA | Evaluation T: 150 °C - 170 °C | Preactivation | 460 nm | 200 mW/cm² | 10 s | Plus | at approx. +23 °C | 7 d* | 52 | ppm/K |
| Shrinkage<br>*DELO Standard 13 | Preactivation | 460 nm | 200 mW/cm² | 10 s | Plus | at approx. +23 °C | 7 d* | 2 | vol. % |
| Water absorption<br>*Based on DIN EN ISO 62 | Layer thickness: 4 mm | Preactivation | 460 nm | 200 mW/cm² | 10 s | Plus | at approx. +23 °C | 7 d | Type of storage: Media | Medium: Distilled water | Storage temperature: at approx. +23 °C | Duration: 24 h* | 0.05 | wt. % |
| Specific thermal conductivity<br>*DELO Standard 47 | Preactivation | 460 nm | 200 mW/cm² | 10 s | Plus | 60 °C | 15 min* | 1 | W/(m·K) |
| Volume resistivity<br>*Based on DIN EN 62631-3-1 | Preactivation | 400 nm | 200 mW/cm² | 10 s | Plus | at approx. +23 °C | 168 h* | 3 E15 | Ohm·cm |
| Surface resistance<br>*Based on DIN EN 62631-3-2 | Preactivation | 400 nm | 200 mW/cm² | 10 s | Plus | at approx. +23 °C | 168 h* | 1 E14 | Ohm |

Substrates: Al / Al, pretreatment: Laser / Laser , curing: 460 nm, 200 mW/cm², 10 s; based on DELO-Norm 5




at room temperature (approx. 23 °C)

## Converting table

| | | | |
|---|---|---|---|
| °F | = (°C x 1.8) + 32 | 1 MPa | = 145.04 psi |
| 1 inch | = 25.4 mm | 1 GPa | = 145.04 ksi |
| 1 mil | = 25.4 µm | 1 cP | = 1 mPa·s |
| 1 oz | = 28.3495 g | 1 N | = 0.225 lb |

## General curing and processing information

The curing time stated in the technical data was determined in the laboratory. It can vary depending on the adhesive quantity and component geometry and is therefore a reference value.Increasing or decreasing the curing temperature and / or irradiation intensity and / or irradiation time shortens or prolongs the curing time and can lead to changed physical properties.A short irradiation time (preactivation time) results in an open time within which opaque components can be joined.An initial strength can be achieved through light fixation (irradiation with light fixation parameters).All curing or light fixation parameters depend on material thickness and absorption, adhesive layer thickness, lamp type and distance between lamp and adhesive layer.High temperatures during or after curing can lead to post-crosslinking of the adhesive which influences the physical properties of the bond.Values measured after 24 h at approx. 23 °C / 50 % r.h., unless otherwise specified.You can find information on the curing until final strength above under “typical curing time”.

## 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

You can find further details in the instructions for use.

The instructions for use are available on www.DELO-adhesives.com.

We will be pleased to send them to you on demand.

## Occupational health and safety

See material safety data sheet.

## Specification

Nothing contained in this Technical Datasheet shall be interpreted as any express warranty or guarantee. This Technical Datasheet is for reference only and does not constitute a product specification. Please ask our responsible Sales Engineer for the applicable product specification which includes defined ranges. DELO is neither liable for any values and content of this Technical Datasheet nor for oral or written recommendations regarding the use, unless otherwise agreed in writing. This limitation of liability is not applicable for damages resulting from intent, gross negligence or culpable breach of cardinal obligations, nor shall it apply in case of death or personal injury or in case of liability under any applicable compulsory law.