

# DELO DUALBOND® LT2221

## modified epoxy resin | 1C | light-fixable / heat-curing

free of solvents, free of antimony | low-temperature-curing from + 60 °C, heat curing mandatory, light-fixable, humidity-resistant, tension-equalizing, filled, reproducible, low shrinkage, fast fixation, light-blocking, thixotropic

### Special features of product

- compliant with RoHS Directive 2015/863/EU
- halogen-free according to IEC 61249-2-21
- compliant with limits of VOC content in adhesive acc. to GB33372-2020

### Function

- electronic adhesive

### Typical area of use

- -40 - 150 °C
- glass/metal bondings
- mixed bondings with plastics
- fast component fixation
- sensor bonding
- bonding of temperature-sensitive substrates
- bonding of opaque components

### Curing

Suitable lamp types LED 365 nm, LED 400 nm

Typical light fixation time

*intensity 200 mW/cm<sup>2</sup>  
LED 400 nm* 1 s

Typical curing time

*at +80 °C  
light-fixed / in air convection oven* 30 min

*at +80 °C  
in air convection oven* 60 min

### Processing

Typical adhesive application needle dispensing

Conditioning time (typical)

<i>when stored in cold conditions in containers up to 50 ml</i>	1	h
<i>when stored in cold conditions in containers up to 170 ml</i>	2	h

Processing time

<i>in standard climate +23 °C / 50 % r. h. in containers up to 170 ml</i>	3	d
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Storage life in unopened original container

<i>at -25 °C to -15 °C</i>	6	month(s)
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**Technical properties**

Color in uncured condition	black
Transparency	opaque
Color in cured condition in 1 mm layer thickness	black
Transparency in cured condition in 1 mm layer thickness	opaque
Filler particle type	polymer

**Parameters**

Density <i>by the criteria of DIN 66137-2   liquid</i>	1.15	g/cm <sup>3</sup>
Viscosity <i>liquid   Rheometer   Shear rate: 10 1/s   Gap: 500 µm</i>	11000	mPa·s
Thixotropy index <i>liquid   Rheometer   Gap: 500 µm</i>	4.5	
Compression shear strength <i>DELO Standard 5   <b>AI</b>   <b>AI</b>   80 °C   30 min</i>	17	MPa
Compression shear strength <i>DELO Standard 5   <b>FR4</b>   <b>FR4</b>   Pretreatment: Annealing   80 °C   30 min</i>	24	MPa
Compression shear strength <i>DELO Standard 5   <b>LCP MR25</b>   <b>LCP MR25</b>   80 °C   30 min</i>	8	MPa

Compression shear strength <i>DELO Standard 5   <b>PA   PA</b>   Pretreatment: Annealing   80 °C   30 min</i>	14	MPa
Compression shear strength <i>DELO Standard 5   <b>PC   PC</b>   liquid</i>	12	MPa
Tensile strength <i>by the criteria of DIN EN ISO 527   400 nm   200 mW/cm²   0,5 s   Plus   80 °C   30 min</i>	15	MPa
Elongation at tear <i>by the criteria of DIN EN ISO 527   liquid</i>	110	%
Young's modulus <i>liquid   DMTA</i>	900	MPa
Shore hardness D <i>by the criteria of DIN EN ISO 868   400 nm   200 mW/cm²   0,5 s   Plus   80 °C   30 min</i>	49	
Glass transition temperature <i>liquid   DMTA</i>	32	°C
Coefficient of linear expansion <i>DELO Standard 26   liquid   TMA   Evaluation T: -45 °C - 10 °C</i>	98	ppm/K
Coefficient of linear expansion <i>DELO Standard 26   liquid   TMA   Evaluation T: 40 °C - 150 °C</i>	242	ppm/K
Shrinkage <i>DELO Standard 13   liquid</i>	5	vol. %
Water absorption <i>by the criteria of DIN EN ISO 62   liquid   Layer thickness: 4 mm   Type of storage: Media   Medium: Distilled water   Storage temperature: at approx. +23 °C   Duration: 24 h</i>	0.2	wt. %
Transmission <i>at wavelength: 450 nm   <b>Glass   Glass</b>   Layer thickness: 50100200500 µmµmµmµm   400 nm   200 mW/cm²   0,5 s   Plus   80 °C   30 min</i>	1.8	%

**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. The heating time of the

components must be added to the actual curing time. It depends on component size and type of heat input. The specified curing temperature must be reached directly at the adhesive. 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. Depending on the adhesive quantity used, exothermic reaction heat is generated which can lead to overheating. In this case, a lower curing temperature is to be selected. All curing or light fixation parameters depend on material thickness and absorption, adhesive layer thickness, lamp type and distance between lamp and adhesive layer. Optional pre-fixation is performed with light. Heat curing is mandatory. Values measured after 24 h at approx. 23 °C / 50 % r.h., unless otherwise specified.

## 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](http://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.

## CONTACT

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**DELO** Industrial Adhesives  
Headquarters

▶ Germany · Windach / Munich ... [www.DELO-adhesives.com](http://www.DELO-adhesives.com)

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