

# DELO<sup>®</sup> PHOTOBOND<sup>®</sup> 4442

**modified acrylate | 1C | UV- / VIS-curing**

free of solvents | tension-equalizing, unfilled

### Special features of product

- compliant with RoHS Directive 2015/863/EU
- tested for biocompatibility and meets the requirements according to USP 23, 1995, Class VI Plastics -70 °C

### Function

- sealant

### Typical area of use

- -40 - 120 °C
- bonding of voice coil and membrane in miniloudspeakers

### Curing

|   |                             |   |
|---|-----------------------------|---|
| Suitable lamp types                                   | LED 365 nm, LED 400 nm, UVA |   |
| Typical irradiation time                              |                             |   |
| <i>intensity 55 - 60 mW/cm<sup>2</sup><br/>UVA</i>    | 60                          | s |
| <i>intensity 200 mW/cm<sup>2</sup><br/>LED 400 nm</i> | 28                          | s |

### Processing

|  |    |          |
|--|----|----------|
| Conditioning time (typical)  |    |          |
| <i>when stored in cold conditions<br/>in containers up to 50 ml</i>    | 30 | min      |
| <i>when stored in cold conditions<br/>in containers up to 1,000 ml</i> | 4  | h        |
| Storage life in unopened original container                            |    |          |
| <i>at +18 °C to +25 °C</i>   | 3  | month(s) |
| <i>at 0 °C to +10 °C</i>   | 6  | month(s) |

### Technical properties

|  |             |
|--|-------------|
| Color in uncured condition                         | colorless   |
| Transparency                                       | transparent |
| Color in cured condition in 0.1 mm layer thickness | colorless   |
| Color in cured condition in 1 mm layer thickness   | colorless   |

### Parameters

|  |     |                   |
|--|-----|-------------------|
| Density<br><i>DELO Standard 13   liquid</i>  | 1.0 | g/cm <sup>3</sup> |
| Viscosity<br><i>liquid   Rheometer   Shear rate: 2 1/s</i>   | 650 | mPa·s             |
| Compression shear strength<br><i>DELO Standard 5   <b>Glass</b>   <b>AI</b>   60 mW/cm<sup>2</sup>   60 s</i>        | 6   | MPa               |
| Compression shear strength<br><i>DELO Standard 5   <b>Glass</b>   <b>Glass</b>   60 mW/cm<sup>2</sup>   60 s</i>     | 7   | MPa               |
| Compression shear strength<br><i>DELO Standard 5   <b>Glass</b>   <b>PC</b>   60 mW/cm<sup>2</sup>   60 s</i>        | 7   | MPa               |
| Compression shear strength<br><i>DELO Standard 5   <b>Glass</b>   <b>PMMA</b>   60 mW/cm<sup>2</sup>   60 s</i>      | 6   | MPa               |
| Compression shear strength<br><i>DELO Standard 5   <b>PC</b>   <b>AI</b>   60 mW/cm<sup>2</sup>   60 s</i>           | 6   | MPa               |
| Compression shear strength<br><i>DELO Standard 5   <b>PC</b>   <b>PC</b>   400 nm   200 mW/cm<sup>2</sup>   60 s</i> | 10  | MPa               |
| Compression shear strength<br><i>DELO Standard 5   <b>PMMA</b>   <b>PMMA</b>   60 mW/cm<sup>2</sup>   60 s</i>       | 4   | MPa               |
| Tensile strength<br><i>by the criteria of DIN EN ISO 527   60 mW/cm<sup>2</sup>   90 s</i>                           | 8   | MPa               |
| Elongation at tear<br><i>by the criteria of DIN EN ISO 527   60 mW/cm<sup>2</sup>   90 s</i>                         | 390 | %                 |
| Shore hardness A<br><i>by the criteria of DIN EN ISO 868   400 nm   200 mW/cm<sup>2</sup>   60 s</i>                 | 35  |                   |

|  |     |        |
|--|-----|--------|
| Glass transition temperature<br><i>DELO Standard 24   Rheometer   60 mW/cm<sup>2</sup>   90 s</i>  | 16  | °C     |
| Coefficient of linear expansion<br><i>DELO Standard 26   TMA   Evaluation T: 24 °C - 140 °C   60 mW/cm<sup>2</sup>   90 s</i>  | 226 | ppm/K  |
| Shrinkage<br><i>DELO Standard 13   60 mW/cm<sup>2</sup>   90 s</i>   | 6   | vol. % |
| Water absorption<br><i>by the criteria of DIN EN ISO 62   Layer thickness: 4 mm   60 mW/cm<sup>2</sup>   90 s   Type of storage: Media<br/>  Medium: Distilled water   Storage temperature: at approx. +23 °C   Duration: 24 h</i> | 0.6 | wt. %  |

**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. All curing or light fixation parameters depend on material thickness and absorption, adhesive layer thickness, lamp type and distance between lamp and adhesive layer. 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