

# DELO<sup>®</sup> KATIOBOND<sup>®</sup> 4594

**modified epoxy resin | 1C | preactivated**

free of solvents | electrically insulating, unfilled, thixotropic

### Special features of product

- compliant with RoHS Directive 2015/863/EU
- halogen-free according to IEC 61249-2-21
- passes ANSI/UL 94 HB Flame Test

### Typical area of use

- -40 - 150 °C

### Curing

Suitable lamp types LED 460 nm, LED 400 nm

Typical preactivation time

*intensity 200 mW/cm<sup>2</sup>  
LED 460 nm* 3 s

Typical open time

*intensity 200 mW/cm<sup>2</sup>  
LED 460 nm* 15 - 20 s

Typical irradiation time

*intensity 200 mW/cm<sup>2</sup>  
LED 400 nm* 40 - 60 s

Typical curing time

*at rt approx. +23 °C  
preactivated* 24 h

### Processing

Typical adhesive application jetting, needle dispensing

Processing time

*at rt approx. +23 °C* 14 d

Storage life in unopened original container

*at 0 °C to +25 °C* 6 month(s)

**Technical properties**

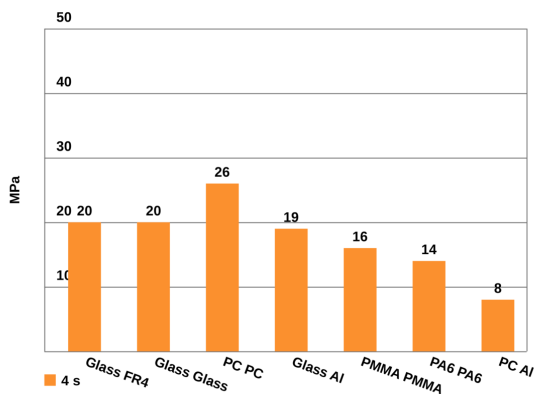
Color in cured condition in 0.1 mm layer thickness	yellowish
Transparency in cured condition in 0.1 mm layer thickness	transparent

**Parameters**

Density <i>by the criteria of DIN EN ISO 2811-3   liquid</i>	1.13	g/cm <sup>3</sup>
Viscosity <i>liquid   Viscosimeter</i>	32000	mPa·s
Viscosity <i>liquid   Rheometer   Shear rate: 10 1/s</i>	5500	mPa·s
Thixotropy index <i>liquid   Rheometer</i>	3.4	
Maximum layer thickness that can be preactivated <i>DELO Standard 21   <b>White substrate</b>   Preactivation   460 nm   200 mW/cm<sup>2</sup>   3 s   Plus   at approx. +23 °C   24 h</i>	≥4	mm
Compression shear strength <i>DELO Standard 5   <b>AI   AI</b>   Pretreatment: Laser   Preactivation   460 nm   200 mW/cm<sup>2</sup>   3 s   Plus   at approx. +23 °C   24 h</i>	35	MPa
Compression shear strength <i>DELO Standard 5   <b>Glass   AI</b>   400 nm   200 mW/cm<sup>2</sup>   60 s   Plus   at approx. +23 °C   24 h</i>	20	MPa
Compression shear strength <i>DELO Standard 5   <b>Glass   FR4</b>   400 nm   200 mW/cm<sup>2</sup>   60 s   Plus   at approx. +23 °C   24 h</i>	20	MPa
Compression shear strength <i>DELO Standard 5   <b>Glass   Glass</b>   400 nm   200 mW/cm<sup>2</sup>   60 s   Plus   at approx. +23 °C   24 h</i>	20	MPa
Compression shear strength <i>DELO Standard 5   <b>Glass   LCP GF30</b>   400 nm   200 mW/cm<sup>2</sup>   60 s   Plus   at approx. +23 °C   24 h</i>	9	MPa
Compression shear strength <i>DELO Standard 5   <b>Glass   PBT</b>   400 nm   200 mW/cm<sup>2</sup>   60 s   Plus   at approx. +23 °C   24 h</i>	11	MPa
Compression shear strength <i>DELO Standard 5   <b>PA6   PA6</b>   Preactivation   460 nm   200 mW/cm<sup>2</sup>   3 s   Plus   at approx. +23 °C   24 h</i>	13	MPa
Compression shear strength <i>DELO Standard 5   <b>PC   AI</b>   400 nm   200 mW/cm<sup>2</sup>   60 s   Plus   at approx. +23 °C   24 h</i>	8	MPa

Compression shear strength <i>DELO Standard 5   <b>PC   PC</b>   400 nm   200 mW/cm<sup>2</sup>   60 s   Plus   at approx. +23 °C   24 h</i>	44	MPa
Tensile strength <i>by the criteria of DIN EN ISO 527   400 nm   200 mW/cm<sup>2</sup>   60 s   Plus   at approx. +23 °C   24 h</i>	27	MPa
Elongation at tear <i>by the criteria of DIN EN ISO 527   400 nm   200 mW/cm<sup>2</sup>   60 s   Plus   at approx. +23 °C   24 h</i>	9	%
Young's modulus <i>DMTA   400 nm   200 mW/cm<sup>2</sup>   60 s   Plus   at approx. +23 °C   24 h   Type of storage: Temp.   Storage temperature: 205 °C   Duration: 30 min</i>	2300	MPa
Shore hardness D <i>by the criteria of DIN EN ISO 868   400 nm   200 mW/cm<sup>2</sup>   60 s   Plus   at approx. +23 °C   24 h</i>	75	
Glass transition temperature <i>DMTA   400 nm   200 mW/cm<sup>2</sup>   60 s   Plus   at approx. +23 °C   24 h   Type of storage: Temp.   Storage temperature: 205 °C   Duration: 30 min</i>	140	°C
Coefficient of linear expansion <i>DELO Standard 26   TMA   Evaluation T: 30 °C - 55 °C   400 nm   200 mW/cm<sup>2</sup>   60 s   Plus   at approx. +23 °C   24 h</i>	123	ppm/K
Shrinkage <i>DELO Standard 13   400 nm   200 mW/cm<sup>2</sup>   60 s   Plus   at approx. +23 °C   24 h</i>	4.3	vol. %
Comparative Tracking Index M <i>by the criteria of DIN EN 60112   60 mW/cm<sup>2</sup>   60 s   Plus   at approx. +23 °C   24 h</i>	> 600	

Compression shear strength after preactivation, based on DELO Standard 5



**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

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**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. Curing until final strength proceeds within 24 hours at room temperature. 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.

**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.

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