

# DELO<sup>®</sup>-ML DB180

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

free of solvents | high-strength, can be fixed quickly | dual-curing, very good temperature resistance, tension-equalizing

**Special features of product**

- compliant with RoHS Directive 2015/863/EU

**Function**

- structural adhesive
- construction adhesive

**Typical area of use**

- -60 - 180 °C
- screw locking and thread sealing
- small metal areas with high fitting accuracy
- glass/metal bondings

**Curing**

Suitable lamp types	LED 365 nm, LED 400 nm, UVA
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Typical irradiation time

<i>intensity 60 mW/cm<sup>2</sup> UVA</i>	10	s
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Curing time

<i>until initial strength at rt approx. +23 °C anaerobic on zinc-phosphated screws</i>	3 - 6	min
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<i>until final strength at rt approx. +23 °C anaerobic on zinc-phosphated screws</i>	24	h
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**Processing**

Conditioning time (typical)

<i>when stored in cold conditions in containers up to 50 ml</i>	30	min
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<i>when stored in cold conditions in containers up to 1,000 ml</i>	4	h
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Storage life in unopened original container

up to <= 600 ml  
at 0 °C to +25 °C

6 month(s)

### Technical properties

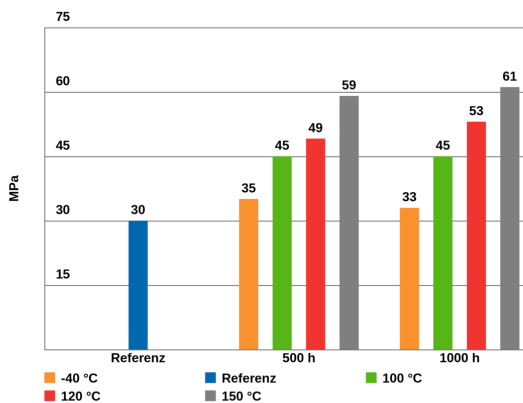
Color in uncured condition	yellow
Transparency	translucent
Color in cured condition in 0.1 mm layer thickness	yellow
Color in cured condition in 1 mm layer thickness	yellow
Fluorescence	fluorescent

### Parameters

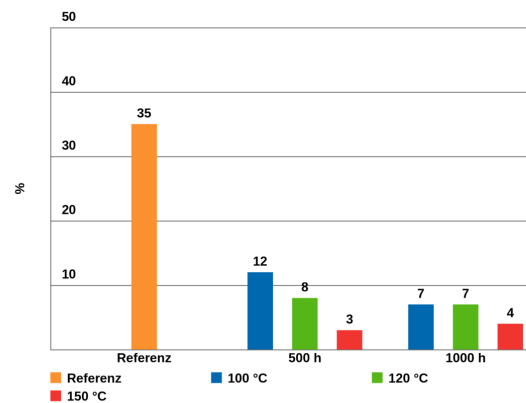
Density <i>liquid</i>	1.1	g/cm <sup>3</sup>
Viscosity <i>liquid   Viscosimeter</i>	17000	mPa·s
Maximum curable layer thickness <i>DELO Standard 20   White substrate   400 nm   200 mW/cm<sup>2</sup>   60 s</i>	4	mm
Off-torque <i>by the criteria of ISO 10964   Steel, zinc-phosphated   Steel, zinc-phosphated   at approx. +23 °C   24 h</i>	60	Nm
Tensile shear strength <i>by the criteria of DIN EN 1465   Al   Al   at approx. +23 °C   72 h</i>	6	MPa
Tensile shear strength <i>by the criteria of DIN EN 1465   Al   Al   Pretreatment: sand-blasted   at approx. +23 °C   72 h</i>	13	MPa
Tensile shear strength <i>by the criteria of DIN EN 1465   Steel   Steel   at approx. +23 °C   72 h</i>	12	MPa
Tensile shear strength <i>by the criteria of DIN EN 1465   Steel   Steel   Pretreatment: sand-blasted   at approx. +23 °C   72 h</i>	14	MPa
Compression shear strength <i>DELO Standard 5   Glass   Glass   400 nm   200 mW/cm<sup>2</sup>   60 s</i>	16	MPa

Compression shear strength <i>DELO Standard 5   PA6   Stainless steel   400 nm   200 mW/cm<sup>2</sup>   60 s</i>	10	MPa
Compression shear strength <i>DELO Standard 5   PA6   PA6   Pretreatment: Annealing   400 nm   200 mW/cm<sup>2</sup>   60 s</i>	15	MPa
Compression shear strength <i>by the criteria of ISO 10123   Steel shaft   Steel hub   at approx. +23 °C   72 h</i>	40	MPa
Tensile strength <i>by the criteria of DIN EN ISO 527   60 mW/cm<sup>2</sup>   90 s</i>	30	MPa
Elongation at tear <i>by the criteria of DIN EN ISO 527   60 mW/cm<sup>2</sup>   90 s</i>	35	%
Young's modulus <i>by the criteria of DIN EN ISO 527   60 mW/cm<sup>2</sup>   90 s</i>	1000	MPa
Shore hardness D <i>by the criteria of DIN EN ISO 868   60 mW/cm<sup>2</sup>   90 s</i>	70	
Glass transition temperature <i>DELO Standard 24   Rheometer   60 mW/cm<sup>2</sup></i>	90	°C
Coefficient of linear expansion <i>DELO Standard 26   TMA   Evaluation T: 30 °C - 150 °C   60 mW/cm<sup>2</sup>   90 s</i>	195	ppm/K
Shrinkage <i>DELO Standard 13   60 mW/cm<sup>2</sup>   90 s</i>	7.8	vol. %
Water absorption <i>by the criteria of DIN EN ISO 62   60 mW/cm<sup>2</sup>   90 s   Type of storage: Media   Medium: Distilled water   Storage temperature: at approx. +23 °C   Duration: 24 h</i>	1.1	wt. %

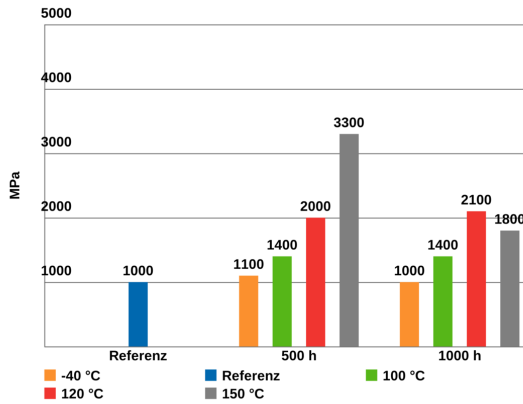
Tensile strength after thermal storage, based on DIN EN ISO 527



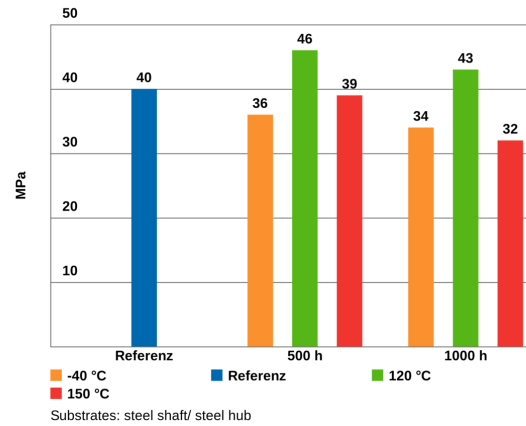
Elongation at tear after temperature storage, by the criteria of DIN EN ISO 527



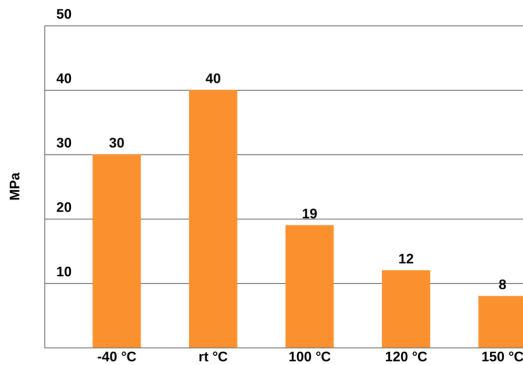
Young's modulus after thermal storage  
Curing 60 mW/cm<sup>2</sup> 90 s /



Compression shear strength after thermal storage, based on ISO 10123

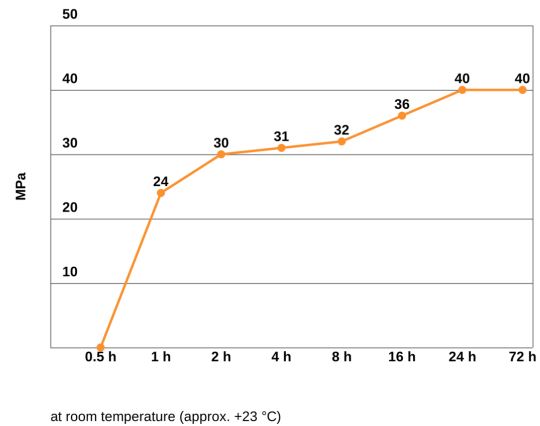


Compression shear strength measured at the stated temperatures



Substrates: steel shaft / steel hub

Compression shear strength for determining the curing process  
shaft-to-hub bonding, substrates: steel shaft/steel hub, based on ISO 10123



### 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. 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

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