

# DELO<sup>®</sup>-ML DB180

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

free of solvents | tension-equalizing, very good temperature resistance, dual-curing, high-strength, fast fixation

**Special features of product**

- compliant with RoHS Directive 2015/863/EU
- compliant with limits of VOC content in adhesive acc. to GB33372-2020

**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

Typical irradiation time

*intensity 60 mW/cm<sup>2</sup>  
UVA* 10 s

*intensity 200 mW/cm<sup>2</sup>  
LED 400 nm  
layer thickness 100 µm* 15 s

Curing time

*until initial strength  
at rt approx. +23 °C  
anaerobic on zinc-phosphated screws* 3 - 6 min

*until final strength  
at rt approx. +23 °C  
anaerobic on zinc-phosphated screws* 24 h

### Processing

Conditioning time (typical)

*when stored in cold conditions  
in containers up to 50 ml* 30 min

*when stored in cold conditions  
in containers up to 1,000 ml* 4 h

Processing time

*in standard climate +23 °C / 50 % r. h.* 28 d

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 1.1 g/cm<sup>3</sup>  
*liquid*

Viscosity 17000 mPa·s  
*liquid | Viscosimeter*

Maximum curable layer thickness 4 mm  
*DELO Standard 20 | White substrate | 400 nm | 200 mW/cm<sup>2</sup> | 60 s*

Off-torque 60 N·m  
*by the criteria of ISO 10964 | Steel, zinc-phosphated | Steel, zinc-phosphated | liquid | Tightening torque: 46 N·m*

Tensile shear strength 13 MPa  
*by the criteria of DIN EN 1465 | AI | AI | Pretreatment: sand-blasted | liquid*

Tensile shear strength 6 MPa  
*by the criteria of DIN EN 1465 | **Al** | **Al** | liquid*

Tensile shear strength 14 MPa  
*by the criteria of DIN EN 1465 | **Steel** | **Steel** | Pretreatment: sand-blasted | liquid*

Tensile shear strength 12 MPa  
*by the criteria of DIN EN 1465 | **Steel** | **Steel** | liquid*

Compression shear strength 16 MPa  
*DELO Standard 5 | **Glass** | **Glass** | 400 nm | 200 mW/cm<sup>2</sup> | 60 s*

Compression shear strength 10 MPa  
*DELO Standard 5 | **PA6** | **Stainless steel** | 400 nm | 200 mW/cm<sup>2</sup> | 60 s*

Compression shear strength 15 MPa  
*DELO Standard 5 | **PA6** | **PA6** | Pretreatment: Annealing | 400 nm | 200 mW/cm<sup>2</sup> | 60 s*

Compression shear strength 40 MPa  
*by the criteria of ISO 10123 | **Steel shaft** | **Steel hub** | at approx. +23 °C | 72 h*

Tensile strength 30 MPa  
*by the criteria of DIN EN ISO 527 | liquid*

Elongation at tear 35 %  
*by the criteria of DIN EN ISO 527 | liquid*

Young's modulus 1000 MPa  
*by the criteria of DIN EN ISO 527 | liquid*

Shore hardness D 70  
*by the criteria of DIN EN ISO 868 | 60 mW/cm<sup>2</sup> | 90 s*

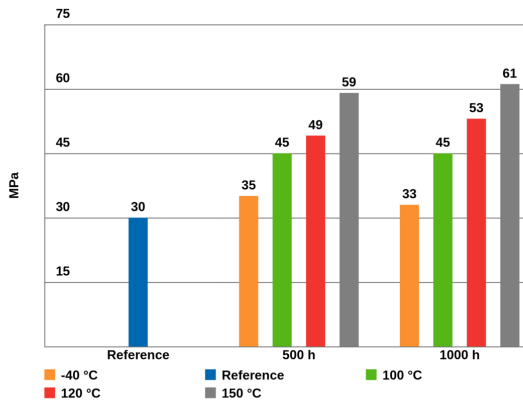
Glass transition temperature 90 °C  
*DELO Standard 24 | Rheometer | 60 mW/cm<sup>2</sup>*

Coefficient of linear expansion 195 ppm/K  
*DELO Standard 26 | TMA | Evaluation T: 30 °C - 150 °C | 60 mW/cm<sup>2</sup> | 90 s*

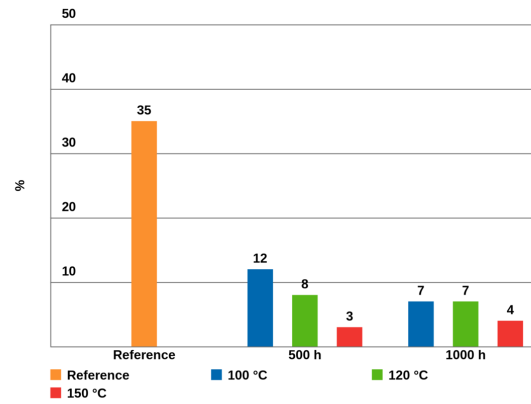
Shrinkage 7.8 vol. %  
*DELO Standard 13 | 60 mW/cm<sup>2</sup> | 90 s*

Water absorption 1.1 wt. %  
*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*

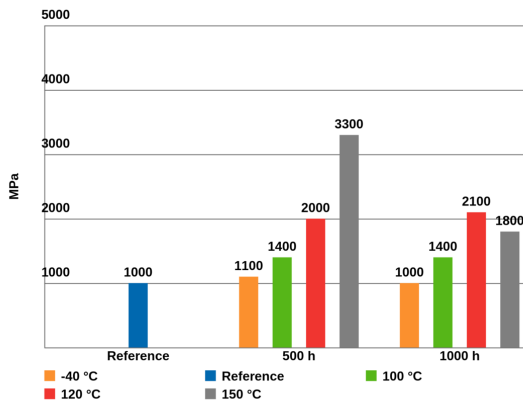
Tensile strength after temperature storage, by the criteria of DIN EN ISO 527



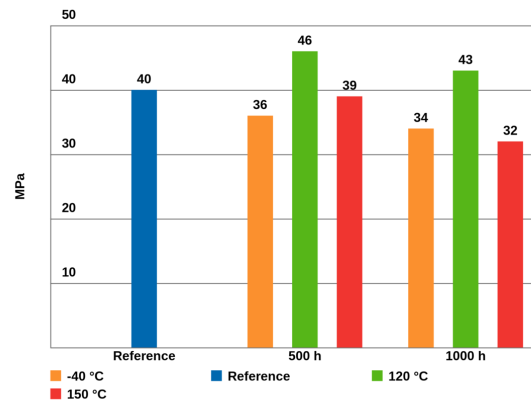
Elongation at tear after temperature storage, by the criteria of DIN EN ISO 527



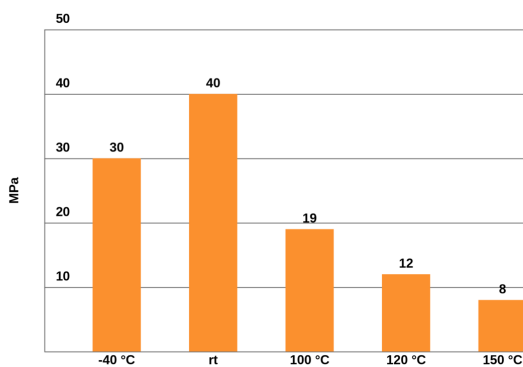
Young's modulus after temperature storage, by the criteria of DIN EN ISO 527



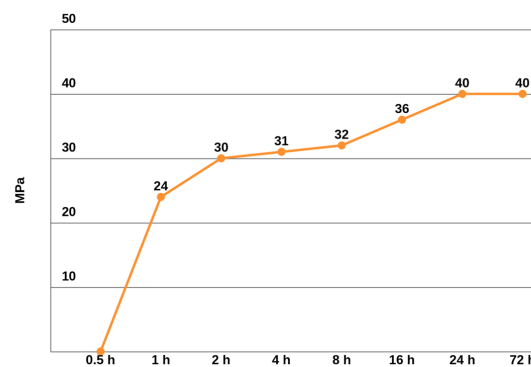
Compression shear strength after temperature storage  
Substrates: steel shaft/ steel hub, by the criteria of ISO 10123



Compression shear strength measured at the stated temperatures  
Substrates: steel shaft / steel hub, ISO 10123



Compression shear strength for determining the curing process shaft-to-hub bonding  
substrates: steel shaft/steel hub, by the criteria of 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

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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. 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.

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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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