

DELO[®]-ML DB133

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

free of solvents | dual-curing, fast light fixation possible

Special features of product

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

Function

- construction adhesive
- structural adhesive

Typical area of use

- -40 - 150 °C
- glass/metal bondings
- small metal areas with high fitting accuracy
- screw locking and thread sealing

Curing

Suitable lamp types UVA, LED 365 nm

Typical irradiation time

<i>intensity 60 mW/cm²</i> <i>UVA</i>	25	s
<i>intensity 200 mW/cm²</i> <i>LED 365 nm</i>	17	s

Curing time

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

Processing

Conditioning time (typical)

<i>when stored in cold conditions</i> <i>in containers up to 50 ml</i>	30	min
<i>when stored in cold conditions</i> <i>in containers up to 600 ml</i>	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 +10 °C 6 month(s)

up to <= 200 ml at 0 °C to +25 °C 9 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

Filler information unfilled

Parameters

Density 1.1 g/cm³
liquid

Viscosity 730 mPa·s
liquid | Rheometer | Shear rate: 10 1/s | Gap: 200 µm

Maximum curable layer thickness 1 mm
*DELO Standard 20 | **White substrate** | 365 nm | 200 mW/cm² | Irradiation time (unit): s*

Off-torque 30 N·m
*by the criteria of ISO 10964 | **Steel, zinc-phosphated** | **Steel, zinc-phosphated** | at approx. +23 °C | 24 h*

Tensile shear strength 5 MPa
*by the criteria of DIN EN 1465 | **Al** | **Al** | at approx. +23 °C | 72 h*

Tensile shear strength 12 MPa
*by the criteria of DIN EN 1465 | **Al** | **Al** | Pretreatment: sand-blasted | at approx. +23 °C | 72 h*

Tensile shear strength 14 MPa
*by the criteria of DIN EN 1465 | **Steel** | **Steel** | Pretreatment: sand-blasted | at approx. +23 °C | 72 h*

Tensile shear strength <i>by the criteria of DIN EN 1465 Steel Steel at approx. +23 °C 72 h</i>	11	MPa
Compression shear strength <i>DELO Standard 5 Glass Glass 365 nm 200 mW/cm² 60 s</i>	30	MPa
Compression shear strength <i>DELO Standard 5 PA6 Stainless steel Pretreatment: Annealing 365 nm 200 mW/cm² 60 s</i>	10	MPa
Compression shear strength <i>DELO Standard 5 PA6 Stainless steel Pretreatment: Activator Activator for component 1: DELO-QUICK 5002 72 h</i>	6	MPa
Compression shear strength <i>DELO Standard 5 PA6 PA6 Pretreatment: Annealing 365 nm 200 mW/cm² 60 s</i>	18	MPa
Compression shear strength <i>DELO Standard 5 PMMA PMMA 365 nm 200 mW/cm² 60 s</i>	10	MPa
Compression shear strength <i>DELO Standard 5 PPA Stainless steel Pretreatment: Activator Activator for component 1: DELO-QUICK 5006 24 h</i>	16	MPa
Compression shear strength <i>DELO Standard 5 PPS Stainless steel Pretreatment: Activator Activator for component 1: DELO-QUICK 5006 24 h</i>	3	MPa
Compression shear strength <i>DELO Standard 5 PS PS 60 mW/cm² 110 s</i>	13	MPa
Compression shear strength <i>by the criteria of ISO 10123 Steel shaft Steel hub at approx. +23 °C 1 h</i>	15	MPa
Compression shear strength <i>by the criteria of ISO 10123 Steel shaft Steel hub at approx. +23 °C 72 h</i>	28	MPa
Tensile strength <i>by the criteria of DIN EN ISO 527 60 mW/cm² 90 s</i>	20	MPa
Elongation at tear <i>by the criteria of DIN EN ISO 527 60 mW/cm² 90 s</i>	130	%
Young's modulus <i>by the criteria of DIN EN ISO 527 60 mW/cm² 90 s</i>	300	MPa
Shore hardness D <i>by the criteria of DIN EN ISO 868 60 mW/cm² 90 s</i>	44	
Glass transition temperature <i>Rheometer 60 mW/cm²</i>	104	°C

Coefficient of linear expansion 184 ppm/K
DELO Standard 26 | TMA | Evaluation T: 100 °C - 150 °C

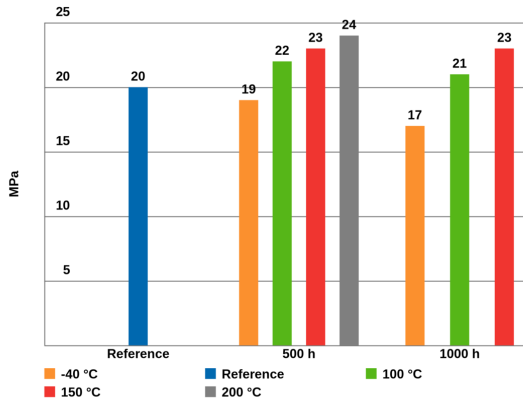
Shrinkage 8.6 vol. %
DELO Standard 13 | 60 mW/cm² | 90 s

Volume resistivity > 1E16 Ohm·cm
by the criteria of DIN EN 62631-3-1

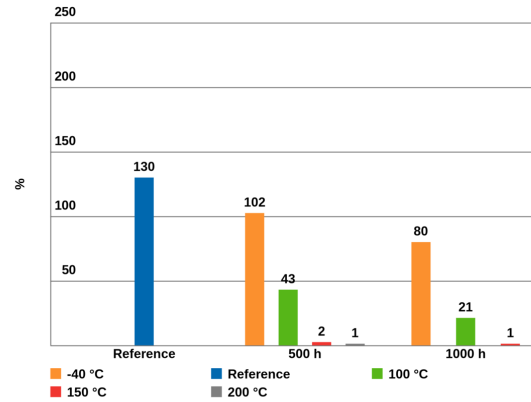
Surface resistance > 1E14 Ohm
by the criteria of DIN EN 62631-3-2

Comparative Tracking Index M > 600 M
by the criteria of VDE 0303-11

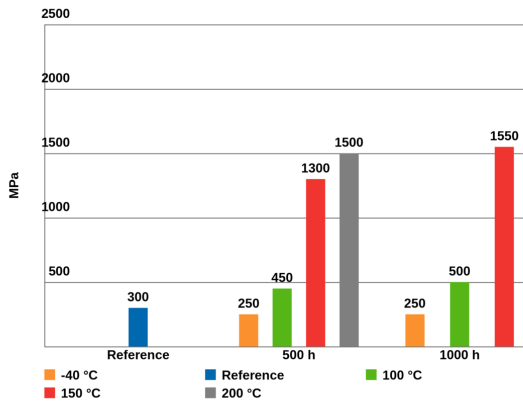
Tensile strength after temperature storage, by the criteria of DIN EN ISO 527



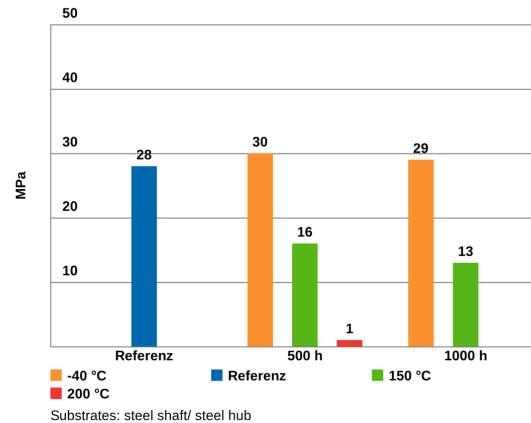
Elongation at tear after temperature storage, by the criteria of DIN EN ISO 527



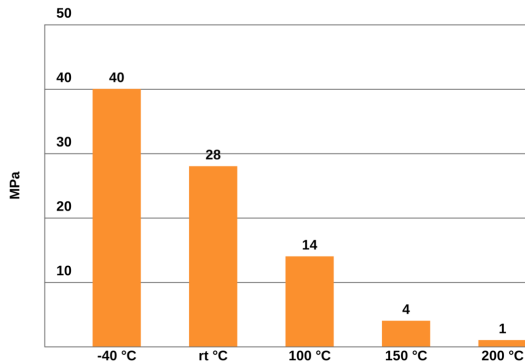
Young's modulus after temperature storage, by the criteria of DIN EN ISO 527



Compression shear strength after thermal storage, based on ISO 10123



Compression shear strength measured at the stated temperatures



Substrates: steel shaft / steel hub

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. Curing can be supported and accelerated by heat input and activators (DELO-QUICK). By using activators (DELO-QUICK), very good curing is also possible on highly passivated surfaces. 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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Instructions for use

You can find further details in the instructions for use.
 The instructions for use are available on 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

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