



Technical Information

DELO®-ML DB180

Anaerobic- and light curing adhesive, high-viscous

Base

- Modified urethane acrylate
- one-component, solvent-free
- dual-curing adhesive

Use

- for tension-equalizing metal bondings
- fixing: coaxial components, e. g., bearings or sockets
- adhesive leaking from the bonding gap can be cured in seconds with visible light
- therefore, firmness to touch can be reached faster
- if one of the components to be bonded is translucent, specific plastics can also be bonded through polymerization
- DELO curing lamps generating radiation adjusted to the adhesives are available to initiate this reaction
- also suitable for the bonding of components with dissimilar coefficients of expansion due to flexibilized and tension-equalizing nature
- easy application control due to fluorescent color
- the cured product is normally used in a temperature range of -60 °C to +180 °C; depending on the application, other limits may be more reasonable
- compliant with RoHS directive 2015/863/EU

Processing

- the surfaces to be bonded must be dry as well as free of dust, grease and other contaminations
- DELOTHEN cleaners are recommended for the optimal preparation of bonding areas
- thread connections must be tightened well
- the adhesive is good to dispense from original containers or by means of dispensing systems suitable for anaerobic-curing adhesives

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Curing

- anaerobic, i.e., by exclusion of air and under metal influence at room temperature (small gap)
- the curing may be assisted by application of heat, use of activator and/or light (if using ML DB), e.g. if the curing speed is too slow or if it comes to larger gaps.
- heat curing in the oven and by thermode possible, also fast inductive curing
- the build-up of strength depends on the components and the geometry joined. The initial strength is achieved after just a few minutes. Significant acceleration is possible by using an activator and/or applying heat
- curing with UV light in a wavelength range of 320 – 450 nm. DELOLUX LED curing lamps are especially suitable as per the chart below. All standard DELOLUX HID discharge lamps are also suitable
- both curing mechanisms can be used in combination or separately

Lamp type	DELOLUX 20 / 50 / 80		
Wavelength [nm]	365	400	460
Suitability	++	++	-

- not suitable + suitable ++ especially suitable

Properties

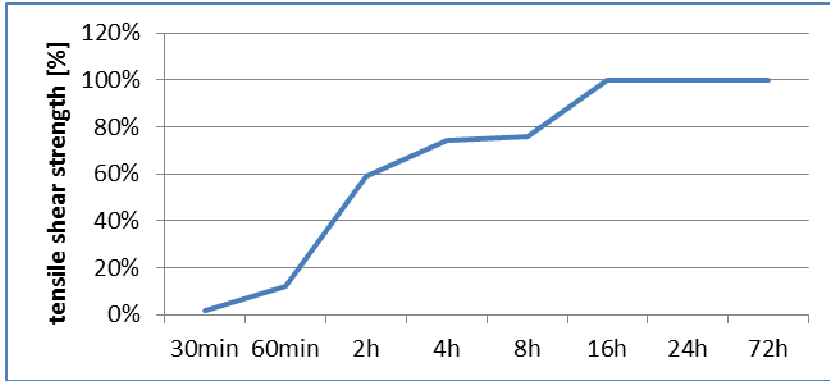
- high-viscous
- flexible setting
- light-curing and anaerobic-curing
- visible adhesive in boundary areas can be cured with visible light
- high strength, difficult to remove
- very good strengths and low roughness depth of the bonding areas

Technical data

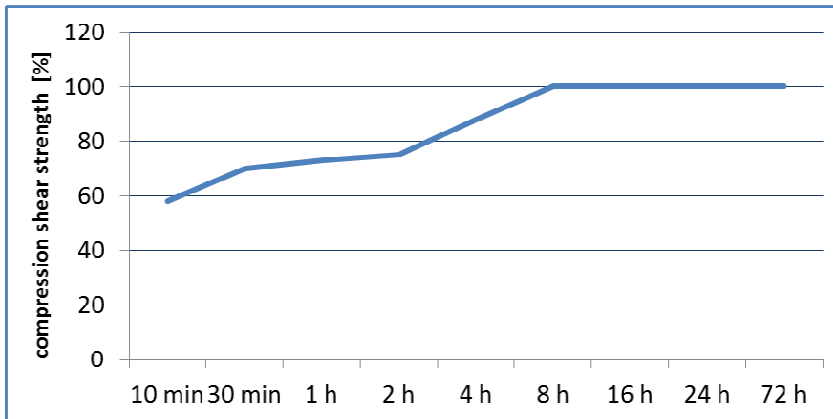
<i>Color</i>	clear- yellowish and fluorescent	
suitable clearance [mm]	0.1	3.9 mil
Density [g/cm ³] at room temperature (approx. 23 °C)	1.1	
<i>Viscosity</i> [mPas] at 23 °C, Brookfield rpm 4/5	17000	17000 cP
<i>Curing time until firmness to touch</i> [min] at room temperature (approx. 23 °C), anaerobic on zinc-phosphated screws	approx. 3- 6	
Minimal irradiation time [s] DELO Standard 23, UVA intensity: 60 mW/cm ² , DELOLUXcontrol	10	
Off-torque with Mon 46 Nm [Nm]	60	531.06 lb.in.
<i>Compression shear strength shaft/hub steel</i> [MPa] according to ISO 10123	40	5800 psi

curing progress

compression shear strength shaft-hub joint
 based on initial value at room temperature
 measured at room temperature (approx. 23°C)
 according to ISO 10123



compression shear strength shaft-hub joint with activator DELO-QUICK 5006
 based on initial value at room temperature
 measured at room temperature (approx. 23°C)
 according to ISO 10123

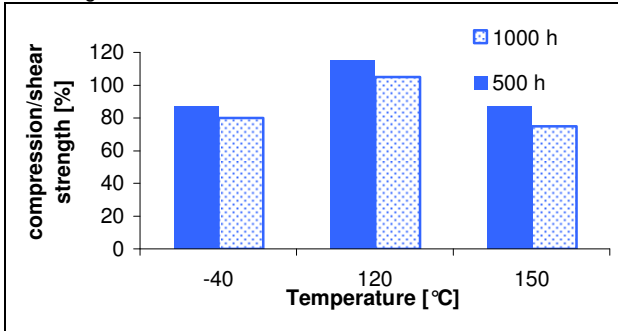


Compression shear strength glass/glass [MPa] DELO Standard 5 UVA intensity: 55 - 60 mW/cm ² , DELOLUXcontrol	25	3625 psi
Compression shear strength PA/PA [MPa] DELO Standard 5 UVA intensity: 55 - 60 mW/cm ² , DELOLUXcontrol	20	2900 psi
Compression shear strength VA/PA [MPa] DELO Standard 5 UVA intensity: 55 - 60 mW/cm ² , DELOLUXcontrol	10	1450 psi
Tensile shear strength Al/Al [MPa] DIN EN 1465, blank	6	870 psi
Tensile shear strength Al/Al [MPa] DIN EN 1465, sand- blasted	13	1885 psi

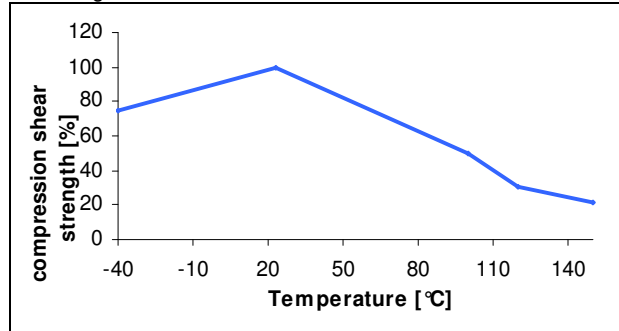
Tensile shear strength St/St [MPa] DIN EN 1465, blank	12	1740 psi
Tensile shear strength St/St [MPa] DIN EN 1465, sand-blasted	14	2030 psi
Tensile strength [MPa] DIN EN ISO 527	25	3625 psi
Elongation at tear [%] DIN EN ISO 527	40	
Young's modulus [MPa] DIN EN ISO 527	900	130.5 ksi
Shore hardness D DIN EN ISO 868	76	
Glass transition temperature [°C] DELO Standard 24, Rheometer	90	194 °F
Coefficient of linear expansion [ppm/K] TMA, DELO Standard 26 in a temperature range of +30 to +150 °C	195	
Shrinkage DELO Standard 13	7.8	
Water absorption [%] DIN EN ISO 62	1.1	

Performance under temperature influence

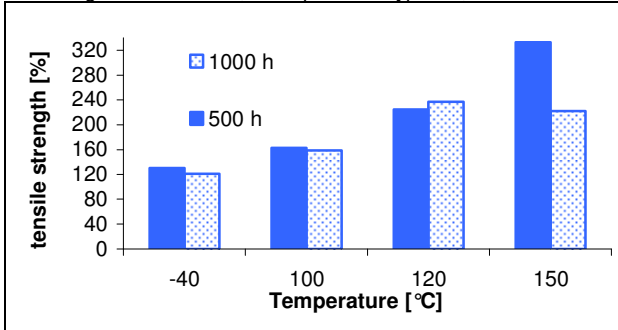
compression/shear strength shaft-hub joint
after temperature storage
based on initial value at room temperature
measured at room temperature (approx. 23 °C)
according to ISO 10123



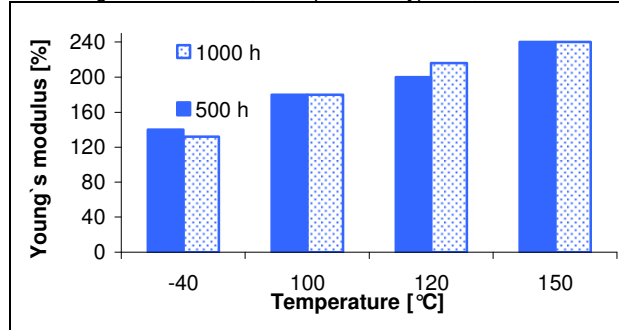
compression/shear strength shaft-hub joint at temperature
based on initial value at room temperature
measured at determined temperature
according to ISO 10123



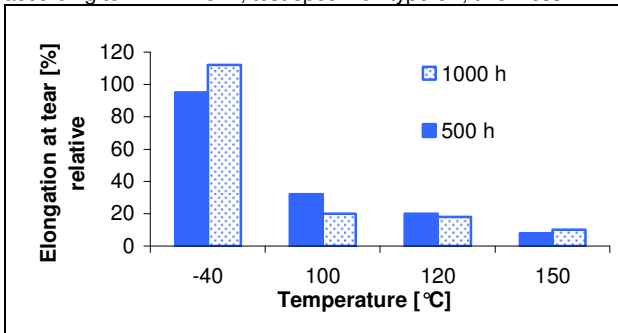
tensile strength after temperature storage
based on initial value at room temperature
measured at room temperature (approx. 23 °C)
according to DIN EN 527, test specimen type 5A, thickness 2 mm



Young's modulus after temperature storage
based on initial value at room temperature
measured at room temperature (approx. 23 °C)
according to DIN EN 527, test specimen type 5A, thickness 2 mm



elongation at tear after temperature storage
based on initial value at room temperature
measured at room temperature (approx. 23 °C)
according to DIN EN 527, test specimen type 5A, thickness 2 mm



Performance under chemical influence

compression shear strength after storage for 1,000 h
based on initial value at room temperature
measured at room temperature (approx. 23 °C)
according to ISO 10123

Chemical medium	Compression/shear strength <u>shaft-hub joint</u> [%]
ATF gear oil	105
Diesel fuel	97
engine oil	101
fuel	97

Storage life

at 0 °C to +10 °C in unopened original container

12 months

Storage life

at room temperature (0 °C to +25 °C) in unopened original container

6 months

Instructions and advice

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 the product for the intended purpose by considering all specific requirements. Type and 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. The data and information provided are therefore no guarantee for specific product properties or the suitability of the product for the intended 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 DELOs' General Terms of Business. Verbal side agreements are not permitted. This document is subject to change.

Instructions for use

The instructions for use of DELO-ML are available on: www.DELO.de. We will be pleased to send them to you on demand.

Occupational health and safety

see material safety data sheet

Specification

The properties in italics are part of the specification. Ranges with clear limits are defined for them and others, where applicable. In the course of the QA test, each batch is tested for these properties and the maintenance of the limits is ensured. The measuring methods used can deviate from those specified in the data sheet. Details can be found in the QA test report.

Converting table

$(^{\circ}\text{C} \times 1.8) + 32 = ^{\circ}\text{F}$

mm / 25.4 = inches

$\mu\text{m} / 25.4 = \text{mil}$

g / 28.3495 = oz.

MPa x 145 = psi

mPas = cP

N x 0.225 = lb.