DELO

Technical Information

DELO-DUALBOND® AD761

UV-/light-/heat curing adhesive, medium viscosity

Base

- modified epoxy resin
- one-part, solvent free, UV-/light-/heat curing

Use

- for the bonding of metal, glass, plastic and other materials as well as for the coating, fixing or sealing of electronic components; in the process, components can be fixed in seconds and cured completely with heat afterwards
- especially suitable for tension-equalizing bonding and sealing, in particular, in case of high temperature fluctuations at the component
- the product is normally used in a temperature range of -40 °C to +150 °C; depending on the application, other limits may be more reasonable
- compliant with RoHS directive 2002/95/EC

Processing

- the adhesive is supplied ready for use; in case of cool storage, it must be ensured that the container is conditioned to room temperature before use
- the containers are conditioned at room temperature (max. 25 °C); the conditioning time is approx. 0.5 h for containers up to 50 ml and approx. 4 h for containers up to 1,000 ml; additional heat addition is not allowed
- the adhesive is usually applied by dispensing
- the adhesive can be processed well from the original container or with DELO dispensing units
- the surfaces to be bonded must be dry as well as free of dust, grease and other contaminations
- use DELOTHEN cleaners for the cleaning of bonding surfaces
- when using aqueous cleaners with alkaline properties, they must be removed from the bonding surface after cleaning through appropriate rinsing cycles
- dispensing valves and product-bearing elements must be carefully cleaned before use, residues of other products must totally be completely removed; DELOTHEN EP as well as acetone are recommended to remove DELO-DUALBOND residues
- for further information please refer to our instructions for use DELO-DUALBOND

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Curing

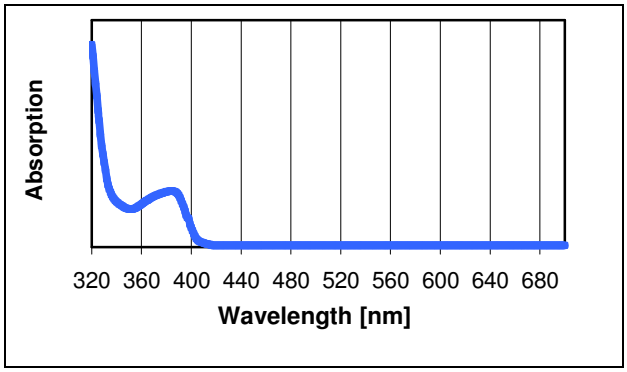
- curing with UV light or visible light in a wavelength range of 320 – 420 nm or with heat. DELOLUX LED curing lamps are especially suitable as per the chart below. All standard DELOLUX HID discharge lamps are also suitable.
- the light-curing mechanism and the heat-curing mechanism can be used independently
- after heat addition or irradiation curing until final strength within 24 h at room temperature
- pure light curing, pure heat curing and combination of irradiation and heat curing can result in deviations of the specific values
- increased temperatures accelerate the reaction, lower temperature decelerate it
- increased intensities shorten the required irradiation time, lower intensities prolong it

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

- not suitable + suitable ++ especially suitable

Absorption spectrum

- photoinitiation system in epoxy resin basic matrix



Curing parameters

- in case of light curing dependent on material thickness and absorption, adhesive layer thickness, lamp type, spectrum of the lamp, lamp intensity and distance between lamp and adhesive layer
- for the heat curing of shadowed areas a temperature of +130 °C can be preferably applied
- the minimal curing temperature is +120 °C
- increased temperatures shorten the curing process, lower temperatures extend it, and can change the properties of the cured product
- the actual curing times at the respective temperatures are dependent on the heating time of the components, the heating time of the components must be added to the curing time of the adhesive
- the heating time depends on the component size and the oven type

Technical data

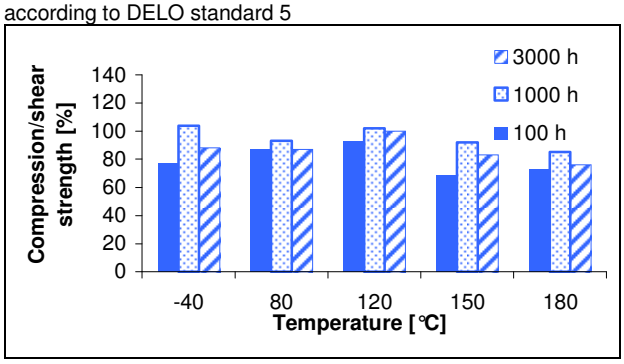
Color cured in a layer thickness of approx. 0.1 mm	yellowish clear
Color cured in a layer thickness of approx. 1 mm	yellowish translucent
Density [g/cm³] at room temperature (approx. 23 °C)	1.14
Viscosity [mPas] at 23 °C, Brookfield rpm 7/5	11000

Processing time at room temperature (max. 25 °C)	4 weeks
Minimal irradiation time [s] DELO Standard 37, DSC UVA intensity: 55 - 60 mW/cm² DELOLUXcontrol, at 30 °C	10
Recommended irradiation time [s] DELOLUX 03 S, UVA intensity: 55 - 60 mW/cm² DELOLUXcontrol	30
Curable layer thickness [mm] DELO Standard 20 curing lamp DELOLUX 03 S UVA intensity: 55 - 60 mW/cm² DELOLUXcontrol	2
Curing time until initial strength [min] at +130 °C	5
Curing time until initial strength [min] at +150 °C	3
Curing time until final strength [h] at room temperature (approx. 23 °C) after heat addition or irradiation	24
Compression shear strength glass/glass [MPa] DELO Standard 5 UVA intensity: 55 - 60 mW/cm² DELOLUXcontrol, irradiation time: 30 s curing time: 24 h at room temperature (approx. 23 °C)	25
Compression shear strength glass/Al [MPa] DELO Standard 5 UVA intensity: 55 - 60 mW/cm² DELOLUXcontrol, irradiation time: 30 s curing time: 24 h at room temperature (approx. 23 °C)	18
Compression shear strength glass/FR4 [MPa] DELO Standard 5 UVA intensity: 55 - 60 mW/cm², DELOLUXcontrol, irradiation time: 30 s curing time: 24 h at room temperature (approx. 23 °C)	24
Compression shear strength PC/Al [MPa] DELO Standard 5 UVA intensity: 55 - 60 mW/cm² DELOLUXcontrol, irradiation time: 30 s curing time: 24 h at room temperature (approx. 23 °C)	6
Compression shear strength PC/PC [MPa] DELO Standard 5 UVA intensity: 55 - 60 mW/cm² DELOLUXcontrol, irradiation time: 30 s curing time: 24 h at room temperature (approx. 23 °C)	10
Compression shear strength PMMA/PMMA [MPa] DELO Standard 5 UVA intensity: 55 - 60 mW/cm² DELOLUXcontrol, irradiation time: 30 s curing time: 24 h at room temperature (approx. 23 °C)	8
Compression shear strength PBT/PBT [MPa] DELO Standard 5 curing: 25 min at 130 °C + 24 h at room temperature (approx. 23 °C)	6
Compression shear strength PETP/PETP [MPa] DELO Standard 5 curing: 25 min at 130 °C + 24 h at room temperature (approx. 23 °C)	4
Compression shear strength FR4/FR4 [MPa] DELO Standard 5 curing: 25 min at 130 °C + 24 h at room temperature (approx. 23 °C)	20
Compression shear strength Al/Al [MPa] DELO Standard 5 curing: 25 min at 130 °C + 24 h at room temperature (approx. 23 °C)	30

Compression shear strength VA/VA [MPa] DELO Standard 5 curing: 25 min at 130 °C + 24 h at room temperature (approx. 23 °C)	25
Tensile strength [MPa] according to DIN EN ISO 527 layer thickness: 2 mm curing: combination of irradiation and heat curing curing time: 24 h at room temperature (approx. 23 °C)	23
Elongation at tear [%] according to DIN EN ISO 527 layer thickness: 2mm curing: combination of irradiation and heat curing curing time: 24 h at room temperature (approx. 23 °C)	84
Young's modulus [MPa] according to DIN EN ISO 527 layer thickness: 2mm curing: combination of irradiation and heat curing curing time: 24 h at room temperature (approx. 23 °C)	113
Shore hardness D according to DIN EN ISO 868 curing: combination of irradiation and heat curing	58
Decomposition temperature [°C] DELO Standard 36	265
Glass transition temperature [°C] rheometer	42
Coefficient of linear expansion [ppm/K] TMA, in a temperature range of +30 to +150 °C	216
Shrinkage [vol. %] DELO Standard 13 curing: combination of irradiation and heat curing	3.0
Water absorption [weight %] according to DIN EN ISO 62, 24 h at room temperature (approx. 23 °C) curing: combination of irradiation and heat curing	0.3
Specific volume resistance [Ωcm] VDE 0303, part 3 specimen: diameter 120 mm, thickness 2 mm curing: combination of irradiation and heat curing	>1xE13
Surface resistance [Ω] VDE 0303, part 3 specimen: diameter 120 mm, thickness 2 mm curing: combination of irradiation and heat curing	>1xE13
Dielectric constant RF-IV method, 1 MHz, at 25 °C +/- 3 °C	3.5
Dielectric constant RF-IV method, 10 MHz, at 25 °C +/- 3 °C	3.5
Dielectric constant RF-IV method, 100 MHz, at 25 °C +/- 3 °C	3.3
Dielectric constant RF-IV method, 1 GHz, at 25 °C +/- 3 °C	3.0
Dielectric loss factor RF-IV method, 1 MHz, at 25 °C +/- 3 °C	0.11
Storage life at 0 °C to +10 °C in unopened original container	6 months

Performance under temperature influence

compression/shear strength glass/glass after temperature storage
based on initial valve at room temperature
measured at room temperature (approx. 23 °C)
according to DELO standard 5



Performance under chemical influence

compression shear strength after storage for 1,000 h
based on initial valve at room temperature
measured at room temperature (approx. 23 °C)
according to DELO Standard 5

Chemical medium	Compression/shear strength glass/glass [%]
brake fluid DOT4	67
ATF gear oil	60
kerosine	68
diesel fuel	64
biodiesel fuel	76
engine oill 10W40	78
demineralised water / glycol mixture 50:50	69
glycol	95
demineralised water / 32.5 % urea mixture	52

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.
Many product properties are subject to temperature and may change permanently, especially at high temperatures.
It is the user's responsibility to test the suitability of the product for the intended purpose and temperature range of use 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. 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.

Instructions for use

The instructions for use of DELO-DUALBOND 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

see quality assurance test report