DELO

Instructions for Use &
General Information
on the Product Group

DELO® PHOTOBOND® LA

Preactivated, humidity-curing adhesives

General

DELO PHOTOBOND LA products are one-component adhesives on the basis of humidity-curing urethane polymers.

Areas of use

- Laminar or bead-shaped bondings and sealings, e. g. Dashboard, display, flacon and housing bondings
- Suitable for opaque components due to preactivation
- Short humidity curing time and immediate skin formation without open time by irradiation with very high intensities possible

Preparation of the components to be bonded

The contact surfaces must be free of oil, grease, dust and other contaminations in order to achieve optimal bond strength.

You can clean the components to be joined with standard isopropanol. When using other cleaning agents, please note our indications for substances compatible with the specific adhesive. You can find more details in the technical information about cleaning agents.

After cleaning, adhesion can be further improved by surface pretreatment.

Preparation of the adhesive

The products are usually supplied ready for use.

Cold storage

Condition the containers to room temperature before use.

The conditioning times depend on the container size and the storage time.

Prevent condensation on the substrate. If necessary, allow condensation to evaporate completely before applying the adhesive.

Conditioning time		
Container size	**temperature**	**Conditioning time**
up to 30 g	+18 °C to max. +25 °C *Heat addition is not permitted.*	approx. 1 h
30 g to 1 kg	+18 °C to max. +25 °C *Heat addition is not permitted.*	up to 4 h
> 1 kg	+18 °C to max. +25 °C *Heat addition is not permitted.*	overnight

General processing instructions

Depending on the delivery form, you can process the products manually directly from the container or with the support of equipment.

Process DELO PHOTOBOND LA products at temperatures from +18 °C to +25 °C and a relative humidity from 20 % to 70 %.

Prevention of bubble formation

- Dispensing preferably from the original container with a mechanical cartridge extrusion device or
- Pressing out with compressed air
  Disconnect the container from the compressed air supply during downtimes.

Containers

Protect adhesive containers and dispensing tips from light or shield them.

When exchanging the container, no scattered light may reach the inside of the container. Even scattered light may trigger the curing reaction.

Seal containers when not in use.

Clean dispensing needles after downtimes or replace them.

Product-carrying parts (e. g. dispensing valves and product hoses)

The materials used must be sufficiently chemically resistant and completely opaque.

Suitable materials:

- Stainless steel
- Polyethylene (PE, HDPE)
- Polypropylene (PP)
- Teflon (PTFE)

Check the compatibility before using other materials.

Unsuitable materials:

- Polyurethane (PU)
- Ignoble metals, such as Zn, Ni and Cu
- Ignoble Fe (e. g. cast iron)

Rinse and clean tanks, valves and hoses thoroughly before use

If you change the product, replace the product hoses. If product hoses are cleaned, the dispensing medium may be contaminated with solvent.

If there is cured adhesive in the dispensing system, replace or clean the affected components.

Joining / fixing

After applying the adhesive and irradiating the entire adhesive volume, join and, if necessary, fix the components quickly.

General curing instructions

DELO PHOTOBOND LA products can be preactivated or irradiated in a wavelength range from 400 nm to 460 nm.

Humidity curing is activated by irradiation. Afterwards, the adhesive cures until final strength at room temperature by absorbing humidity without further irradiation.

Recommended wavelength ranges

- Processes with thin layers up to 600 µm: 400 nm
- Processes with thicker layers greater than 600 µm: 460 nm

The intensity decreases with increasing penetration depth.

The maximum layer thickness that can be preactivated depends on the adhesive and is a function of light spectrum (wavelength), light intensity and irradiation time.

Depending on the application, a conditioning time after dispensing may be advantageous in order to allow humidity to diffuse into the adhesive bead. This can accelerate deep curing after irradiation.

Acceleration by heat input is not necessary and not recommended.

Curing speed: several millimeters/day at +23 °C and 50 % r. h.

The preactivation time and the open time (definition: see p. 5) vary in dependence of substrate, irradiation parameters and adhesive layer geometry, and must be individually determined on original components under production conditions for every application.

Conditions for curing

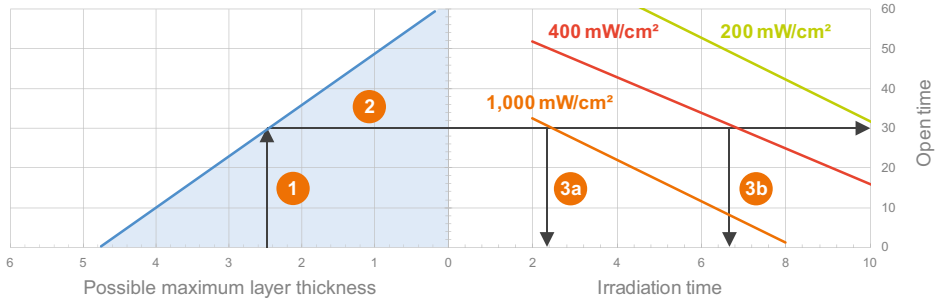
- Activation by light to activate humidity curing
- Suitable wavelength range
- Suitable intensity
- Sufficiently long irradiation time
- Humidity access during and after irradiation, depending on the layer thickness
- Complete irradiation of the entire adhesive volume
- Sufficient humidity in the ambient air or on the joining areas (20 % to 70 % r. F.)
- Suitable adhesive layer thickness
- Joining within an open time

Open time and layer thickness

Rule of thumb: Thicker layer = shorter open time

Open time: The open time is the time window between the end of irradiation and the point of time when the crosslinking of the adhesive has already progressed to such an extent that optimal flowing of the adhesive is no longer possible. The open time varies depending on substrate, irradiation parameters and adhesive layer geometry. It is recommendable to determine this time for each application on original components under production conditions.

Sample diagram for the first process setup:



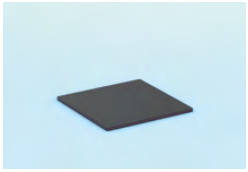
1. Define the required layer thickness
2. Read the corresponding open time from the diagram
3. Read the possible irradiation parameters from the diagram

This diagram provides a guide for the determination of suitable initial values to optimize your process. The optimal process parameters are individual and must be determined under real process conditions in the production on site. An irradiation time below 2 s is not recommended. The area colored in light blue in the diagram indicates that thinner layers can also be activated without changing the open time.

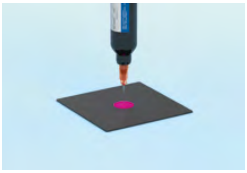
Ask your DELO contact person for further information. Further data is available for all products.

Processes

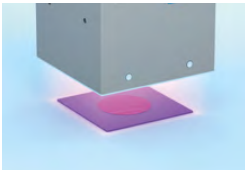
Open bonding, coating, sealing or casting



Preparation of the adhesive and the components

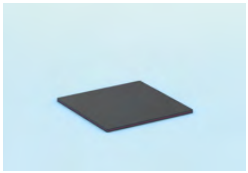


Adhesive application

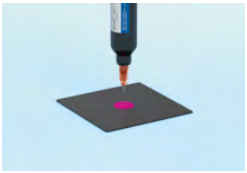


Direct curing of the adhesive

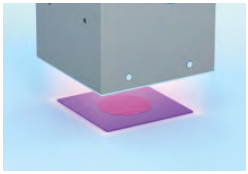
Bonding of opaque components by preactivation



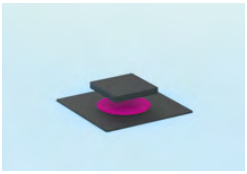
Preparation of the adhesive and the components



Adhesive application



Initiation of curing



Joining within the open time and curing without further irradiation

Instructions and advice for occupational health and safety

See Material Safety Data Sheet

Skin and eyes must be protected against UV light or glare of the lamp. It is recommended to shield the lamp with a suitable, yellowish colored plastic (e. g. polymethyl methacrylate or polycarbonate) or smoked glass and colored UV safety glasses (according to DIN EN 166 and DIN EN 170; protection level 6) for eye protection. Sufficient ventilation must be ensured during processing.

Storage

After delivery in the unopened, opaque original container.

Storage in the refrigerator (0 °C to +10 °C) is recommendable.

Storage life: see Technical Data Sheet for storage in unopened original container.

The container must not be exposed to direct solar radiation as this may lead to an unintentional decrease in reactivity up until curing.

Troubleshooting

For optimal bonding results, optimal processing parameters must be maintained. Deviations may lead to unsatisfactory results.

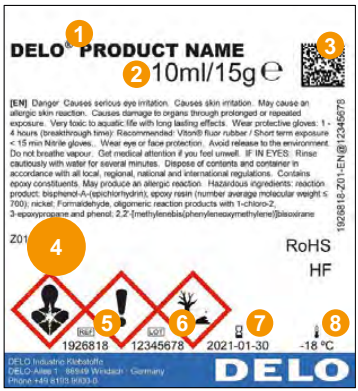
Error pattern	Errors	Possible cause	Solutions
Incomplete curing	Irradiation parameters	Insufficient irradiation of the entire adhesive volume	Irradiate entire adhesive volume
		Irradiation time too short	Adjust irradiation time
		Intensity too low	Adjust intensity
	Humidity curing	Too short curing time	Adjust time window for humidity curing
		Air humidity too low or too high	Optimize air humidity (between 20 % and 70 %)
Changed wetting behavior	Changed viscosity	Adhesive too cold or too warm	Warm up the adhesive
		Storage life of the adhesive exceeded	Use the products within their storage life
	Changed component surface	Changed surface properties (e. g. due to dissimilar material batches, suppliers, etc.)	Adapt the dispensing parameters; restore the original condition of the components
Reduced adhesion	Point of joining	Joining after skin formation	Joining within open time

If you have any other questions about how to use our products, please feel free to directly contact our application experts.

Label

Typical design of a GHS label at DELO.

Depending on the container size, design and content may vary.



1. Product name
2. Container content (volume/weight)
3. Datamatrix
   Extended article number@Batch@Expiry date@Product name
   (1926818-Z01-EN@12345678@2021-01-30@DELO PRODUCT NAME)
4. GHS labeling
5. Article number
6. Batch number
7. Expiry date
8. Storage temperature

KONTAKT

DELO Industrie Klebstoffe
Unternehmenszentrale

▶ **Deutschland** · Windach/München

▶ **China** · Shanghai
▶ **Japan** · Yokohama
▶ **Malaysia** · Kuala Lumpur
▶ **Singapur**
▶ **Südkorea** · Seoul
▶ **Taiwan, China** · Taipei
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