DELO

Instructions for Use &
General Information
on the Product Group

DELO DUALBOND®

Light- and humidity-curing acrylates

Areas of use

Bonding, coating, fixing and sealing in the following industries

- Electronics
- Electrical engineering
- Microelectronics
- Optics
- Precision engineering

Applications and properties of DELO DUALBOND OC

- Especially developed for the display industry
- High optical transparency
- Bonding of touch panels or other cover glasses on displays

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 DUALBOND products at temperatures from +18 °C to +25 °C and a relative humidity from 20 % to 70 %.

The adhesive can also be conveyed or extruded with compressed air. The compressed air must be absolutely dry. Otherwise, the curing reaction may start in the container due to humidity. The compressed air can be dried, e. g. by upstream water separators (air driers, pressure dew point –30 °C to –60 °C).

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.

The adhesive's secondary curing mechanism can already be triggered by humidity available in the ambient or condensed on the surfaces to be joined.

Seal containers when not in use.

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

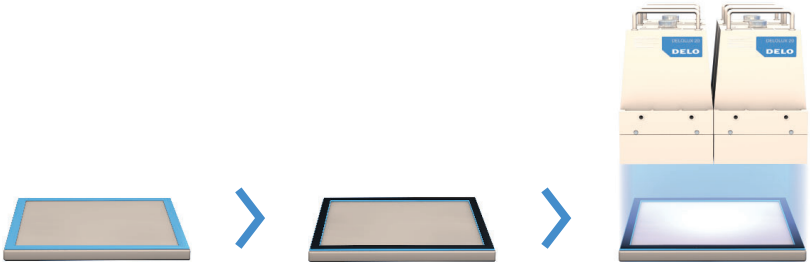
If you change the product, replace the product hoses. If product hoses are cleaned, the dispensing medium may be contaminated with solvent.

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

Further details about adhesive irradiation can be found in the Technical Information "10 Rules of Light Curing".

Processes

Join and, if necessary, fix the components quickly after applying the adhesive.



Application of the adhesive onto the opaque substrate

Joining of the substrates with opaque frame

Direct curing of the visible adhesive with UV or visible light. In the shadowed area, the adhesive cures by humidity.

General curing instructions

DELO DUALBOND products can be irradiated in a wavelength range from 315 nm to 450 nm.

Recommended wavelength ranges

- UVA-curing products: 315 to 420 nm
- VIS-curing products: 380 to 450 nm

You can find the suitable wavelength for a product in the respective technical data sheet.

The primary curing mechanism is mandatory for professional bonding as pure humidity curing does not build up sufficient strength. In shadowed areas, the adhesive crosslinks through a second curing mechanism.

Complete curing can only be achieved if the complete adhesive volume is reached by light of the suitable wavelength and sufficient intensity.

The intensity decreases with increasing penetration depth.

The maximum layer thickness that can be cured must be determined for the intended application task and is normally between 2 and 4 mm.

During irradiation, the primary curing reaction proceeds very fast. After removing the light source, the reaction stops immediately. Only the secondary curing mechanism is continued.

The primary curing time depends on product and lamp (see technical data sheets). The curing speed of the respective products can be varied through the parameters lamp type, lamp intensity, lamp distance and irradiation time.

Conditions for curing

- Complete irradiation of the entire adhesive volume
- Suitable intensity
- Consistent intensity
- Monitoring of intensity (e. g. with the DELOLUXcontrol light intensity meter)
- Sufficiently long irradiation time
- Suitable adhesive layer thickness
- Open adhesive layer (potting, coating) or a translucent component

Some DELO DUALBOND adhesives have a tacky surface outside the bonding gap after curing. The tacky surface can be removed with isopropanol.

The secondary curing mechanism ensures that no adhesive remains liquid in shadowed areas. Secondary curing proceeds through a reaction with air humidity or the remaining humidity on the components.

The curing speed in shadowed areas is defined by humidity and temperature. At a relative humidity of 50 % and a temperature of +23 °C the curing speed is approx. 2 mm / day.

Increased ambient temperatures or humidity can accelerate the curing process. +40 °C and 80 % r. h. should not be exceeded. Low ambient temperatures or humidity have a retarding effect.

	Recommended	Maximum
Relative humidity	20 % to 80 %	80 %
Ambient temperature	+23 °C	+40 °C

Please note that the components must be positioned before irradiation.

Additional processing information for OC products

If possible, process DELO DUALBOND OC in a clean room to avoid dust and other contaminations.

The adhesive reacts with air humidity, and areas that have been previously humidity-cured can impair the appearance. Never fill the adhesive from the original container into other containers for storage.

Thoroughly flush the receiver and dispensing container with dried, synthetic air (20 % O2; H2O < 2 ppm) or compressed air from the refrigeration dryer (< 10 % r. h. at -60 °C) before filling it. Seal the containers so that they are airtight and opaque. Check the tightness of all connections. Prevent humidity and light from entering the container.

After filling, the containers can be degassed by means of vacuum (min. -750 mbar negative pressure, min. 5 min).

Possibilities to minimize the effects of residual humidity:

Continuous stirring of the material with moderate to low stirring speed

- during degassing
- during dispensing
- during downtimes

Ensure that the complete material is circulated and that there are no dead volumes.

Use up original containers that have once been connected to a dispensing system. They cannot be stored again.

During dispensing, make sure that no preliminarily cured adhesive is in the system (e. g. at the dispensing needle, in the receiver vessel, valves or connectors). If there is cured adhesive in the dispensing system, replace or clean the affected components (recommended cleaning cycle: 4 weeks).

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, store the product in the unopened, opaque original container as described in the Technical Data Sheet.

Storage life: see Technical Data Sheet for storage in unopened original container. The storage temperatures specified in the technical data sheet are binding. Maintain them in any case!

The container should not be exposed to direct solar radiation. Due to heat development, this may lead to an unwanted reactivity reduction or the adhesive may even cure.

Label

Typical design of a GHS label at DELO. Depending on the container size, the design and content of the label 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

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