

# DELO

## Instructions for Use & General Information on the Product Group

### DELO® PHOTOBOND® PS

Pressure-sensitive acrylates



### Areas of use

DELO PHOTOBOND PS products are mainly used in semiconductor packaging, microelectronics, electrical engineering, and in the automotive industry for bonding, coating and fixing.

They are characterized by a tape phase in which an immediate build-up of adhesion is possible, flexibility, immediate strength after irradiation and high elongation at tear. The suitability and strength of the adhesive are to be verified on original components under application-specific conditions.

## **Preparation of the components to be bonded**

For optimal bond strength, the surfaces to be bonded must be free of humidity, oil, grease, separating agents and other contaminations. We recommend cleaning agents of the DELOTHEN series for cleaning. You can find more details about suitable cleaning agents in the "Cleaning Agents" information.

When using aqueous cleaning agents with alkaline properties, these must be removed from the bonding surfaces after cleaning through appropriate rinsing cycles. In addition to wet-chemical cleaning, adhesion can be further improved by a suitable chemical and physical surface pretreatment. You can find further information in the Technical Information "Surface Pretreatment".

## **Preparation of the adhesive**

The products are usually supplied ready for use.

In case of cool storage, the containers must be conditioned to room temperature before use to prevent condensation during adhesive application. Heat addition is not permitted. The conditioning times depend on the container size and the storage time.

You can find detailed, product-specific information on adhesive preparation in the specific Technical Data Sheet.

## **Processing**

All parts in contact with the product must be cleaned thoroughly with e.g. isopropanol or acetone. Suitable cleaning agents for removing DELO PHOTOBOND residues can be found in the Technical Information "Cleaning Agents".

We recommend dispensing from the original container. If adhesive must be refilled due to system-related circumstances, it must be ensured that the adhesive does not get contaminated by foreign substances or humidity.

In addition, the adhesive must be completely protected against light in the specific spectrum relevant for curing. It is recommended that the adhesive is refilled under dark room conditions or keep out light by using appropriate filter foils.

So far, the products could be processed very well under laboratory conditions and no impairment of the processing properties could be recognized.

Detailed information about how to handle the products can be found in the specific Technical Data Sheet.

## **General processing instructions**

Process DELO PHOTOBOND 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.

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

The materials used must be sufficiently media-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.

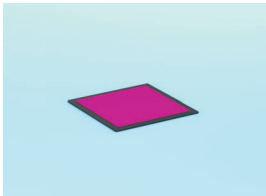
If there is cured adhesive in the dispensing system, replace or clean the affected components.

## Curing of the adhesive

Through irradiation, the adhesive is transferred into a tape phase. Curing of the adhesive layer is also influenced by environmental conditions, such as temperature and humidity. When designing bonding processes, seasonal fluctuations of the room climate must be considered and should be evaluated in the qualification phase.

**The processing sequences for DELO PHOTOBOND PS products are as follows:**

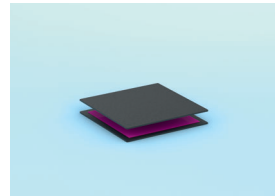
1. Preparation of the adhesive and the components
2. Adhesive application
3. Transfer the adhesive to the tape phase through irradiation
4. Joining with pressure within the tape phase (see below for definition);



*Adhesive application*



*Transfer the adhesive to the tape phase*



*Joining of the components with defined pressure within the tape phase*

When irradiating the adhesive, it must be kept in mind that the light intensity decreases with increasing penetration depth. The maximum curable layer thickness depends on the adhesive and is a function of the light spectrum (wavelength) and the light intensity. Reference values for the max. curable layer thickness can be found in the specific Technical Data Sheet.

The typical irradiation time is a reference value determined under laboratory conditions. Irradiation causes the adhesive to change to the tape phase.

The following joining process should take place within the tape phase with pressure parameters (contact pressure and contact time) adapted to the process. The optimum contact pressure depends on the geometry (e. g. shape of adhesive application, stiffness of substrates), adhesive (hardness of adhesive in tape phase) and process (irradiation parameters, adhesive temperature, time between irradiation and joining) and must be determined under production-related conditions.

**The tape phase is the time after irradiation in which the adhesive has a tacky surface. During this time, adhesion to the substrate can be build up through contact pressure. The adhesive is already completely cured and remains tacky on the surface.**

Typical pressure parameters are listed in the Technical Data Sheet and are reference values determined under laboratory conditions.

## Details about curing

The irradiation parameters must be individually determined on original components under production conditions for every application. In order to obtain reproducible process results, the process parameters must be kept consistent in production. The values for the irradiation parameters specified in the Technical Data Sheet are determined according to DELO Standards with specified methods, devices and specimens. Therefore, they are only reference values.

## General curing instructions

DELO PHOTOBOND products can be irradiated in a wavelength range from 365 nm to 460 nm.

You can find the suitable wavelength for a product in the respective Technical Data Sheet.

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

The maximum layer thickness that can be cured must be determined for the intended application task.

The curing speed of the respective products can be varied through the parameters lamp type, lamp intensity, and irradiation time.

### Conditions for curing

- Complete irradiation of the entire adhesive volume
- Suitable intensity
- Constant intensity through regular monitoring (e. g. with the DELOLUXcontrol light intensity meter)
- Sufficiently long irradiation time
- Suitable adhesive layer thickness

## Instructions and advice for occupational health and safety

Pay attention to the details provided in the Material Safety Data Sheet of the specific product and the hazard symbols on the labels of the adhesive containers.

Skin and eyes must be protected against ultraviolet light, glare of the lamp, possible reflections and scattered light. Complete shielding of the emissions by suitable optical filters is recommended. If the light source is not completely shielded, suitable clothing for eye and skin protection must be worn. Please contact your safety officer for further details. Sufficient ventilation must be ensured during processing.

## Storage

### Storage of the containers

After delivery in the unopened, opaque original container.

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.

Improper storage must be prevented as this may unpredictably change the adhesive's properties.

Depending on the product, the adhesive must be stored in the unopened original container in a cold (0 to +25 °C) or frozen (-25 °C to -15 °C) and dry place. Do not expose the container to direct sunlight, as this may cause it to heat up considerably. This can lead to a decrease in reactivity or even to adhesive curing.

The Technical Data Sheet and the container label provide details about the storage life and the recommended storage conditions of the specific adhesive.

## 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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11/20

ADHESIVES

DISPENSING

CURING

CONSULTING

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