

DELO

Instructions for Use &
General Information
on the Product Group

DELO® MONOPOX



Application areas

DELO MONOPOX MONOPOX products are one-component, heat-curing products. They are predominantly used in electronics, microelectronics, electrical engineering, precision engineering and sometimes in mechanical engineering for bonding, fixing or potting/encapsulating.

Preparation of the components to be bonded

The surfaces to be bonded must be dry, free of oil, grease and other contaminations in order to achieve optimal bond strength. You can find more details in the technical information about cleaning agents.

Condensation water on components must evaporate before adhesive application. Residues of the cleaning on the substrate are to be avoided.

Depending on the substrate, defined drying may be necessary for optimal results.

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

The suitability and strength of the adhesive are to be verified on original components under application-specific conditions.

Preparation of the adhesive

Adhesives of the DELO MONOPOX product group are supplied ready for use. In case of cool or refrigerated storage, the containers must be conditioned to room temperature before use. The containers are conditioned at room temperature (approx. +23 °C, ~50 % r.h.). Heat addition is not permissible. The conditioning times depend on the container size and the storage time.

You can draw details from the specific Technical Data Sheet.

Condensation water on the substrate should be prevented. Blistered products may be humidity-sensitive.

The adhesive must not be frozen and thawed again.

Processing

After conditioning to room temperature, the products can be directly applied from the container or with a dispensing system.

Dispensing valves and product-guiding components must be thoroughly cleaned directly before use of the adhesives. Residues of other products must be removed completely. Acetone or BDGA (butyl diglycol acetate) in combination with acetone are recommended as cleaning agents. You can find more details in the technical information about cleaning agents. The cleaning agent to be used also depends on the dispensing equipment manufacturer's specifications. We recommend using dispensing valves and media-carrying elements made of inert material. Suitable materials include PE, HDPE, PP, PTFE and stainless steel. Other materials require compatibility assessment. The use of polyurethanes is not recommended.

Processing of DELO MONOPOX products from original containers as intended is effected at a temperature of approx +23 °C and a relative air humidity of ~50 %. So far, we have not made any negative experience as to processing under these conditions.

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

The product-specific processing time of the specific product can be found in the corresponding technical data sheet.

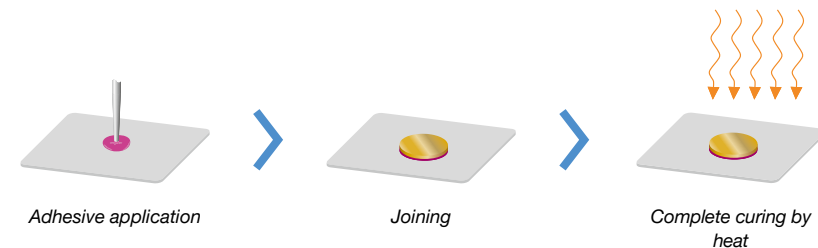
After adhesive application, the components are to be joined speedily. As adhesives may be sensitive to humidity due to their chemical nature, processing should continue preferably quickly after adhesive application. Too long humidity influence can impair the achievable properties, such as adhesion or glass transition temperature.

Containers must be reclosed when not in use. Dispensing needles must be cleaned or exchanged after downtimes.

Adhesive application/joining/curing

Production flow for bonding components:

1. Preparation of the adhesive and the components
2. Adhesive application to one component
3. Joining
4. Curing of the adhesive by heat



The adhesive is cured by exposure to heat.

Curing temperatures depend on the product and can be found in the specific technical data sheet.

The curing speed of the specific products can be varied through the parameters adhesive quantity, temperature and heat curing time. In order to obtain reproducible process results, these parameters must be kept consistent in production. The heating time of the components must be added to the curing time. Reaching of the curing temperature depends on the geometry and the material of the components to be joined. Heating can proceed in air convection ovens, with IR transmitters, or with other suitable heat sources. It must be ensured that the adhesive must have the curing temperature. If the temperatures used for curing are below the temperature ranges specified in the Technical Data Sheet, curing is decelerated, or the product will not completely cure.

When bonding large areas, tensions during the heating, curing and cooling phases (for example by tempering) must be avoided.

The curing parameters specified in the Technical Data Sheet are determined according to DELO Standards with specified methods, devices and specimens.

Polymerization of the adhesive is an exothermic reaction. When using very large adhesive quantities, the heat released during this reaction may damage the component or the adhesive.

Troubleshooting

Perfect bonding results require the maintenance of ideal processing parameters. In case of deviations, the results achieved may also be accordingly unsatisfactory. The following chart gives an overview of errors which may occur when using these products and it provides information on possible causes and remedies. If you have any other questions about how to use our products, please feel free to directly contact our application experts.

Error pattern	Error	Possible cause	Remedies
Insufficient adhesion	Changed component surface	Inhibition of the adhesive due to basic component surface	Neutralize or dry the component surface
	Contamination	Contamination by oils, greases, silicones, dust, etc.	Remove the cause of contamination Clean the surface
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
Incomplete curing	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
		Temperature input during heat curing too low	Too low curing temperature Too short curing time
Only for blistered cartridges: Changed properties	E.g. reduced adhesion, changed glass transition temperature	Too long exposure to humidity	Condition in blister
			Keep joining time as short as possible after application

Instructions and advice for occupational health and safety

See Material Safety Data Sheet

Storage

After delivery, remove the package from the transport packaging and condition to the storage temperature in unopened condition for at least 4 h.

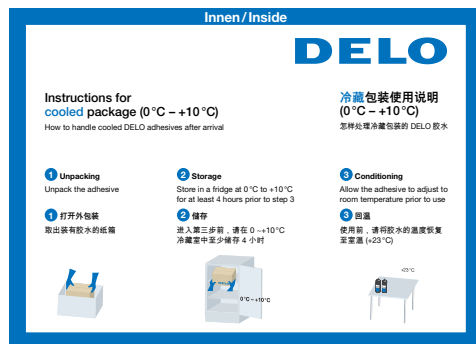


Please make sure that frozen container is only minimally touched as large temperature difference between container and adhesive may lead to the adhesive becoming “detached” from the inner cartridge wall. It is recommended that the container is removed at its rear end or thermally insulating gloves are used.

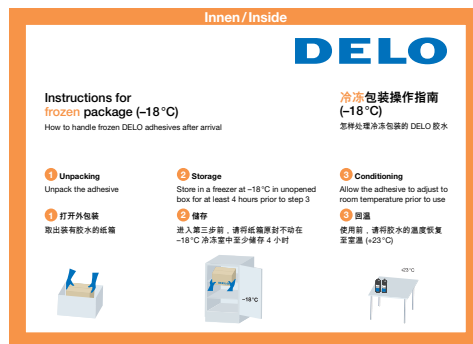
Storage life and storage temperature can be drawn from the technical data sheet.

The product may be stored in the unopened original container only.

The container must not be exposed to direct solar radiation. This may lead to an unintended decrease in reactivity or even curing.



Handling of cooled package 0 °C – +10 °C storage



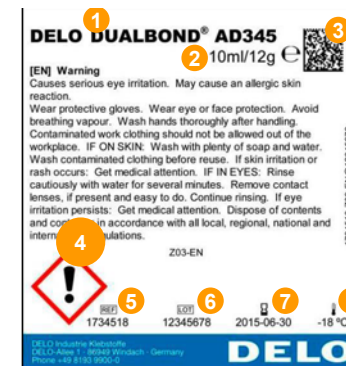
Handling of dry ice package -18 °C storage



Handling of dry ice package -40 °C storage

Label

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



- 1 Produktname
- 2 Gebindeinhalt (Volumen/Gewicht)
- 3 Datamatrix
Erweiterte Artikelnummer@Charge@Haltbarkeit@Produktname
(1734518-Z03-EN@12345678@2015-06-30@DELO DUALBOND AD345)
- 4 GHS-Kennzeichnung
- 5 Artikelnummer
- 6 Chargennummer
- 7 Mindesthaltbarkeitsdatum
- 8 Lagertemperatur

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- **Malaysia** · Kuala Lumpur
- **Singapore**
- **South Korea** · Seoul
- **Taiwan** · Taipei
- **Thailand** · Bangkok
- **USA** · Sudbury, MA

..... www.DELO-adhesives.com

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 a product for the intended purpose by considering all specific requirements and by applying standards the customer deems suitable (e. g. DIN 2304-1). Type, 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. 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 DELO's General Terms of Business. Verbal ancillary agreements are deemed not to exist.

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07/19