

DELO

Instructions for Use &
General Information
on the Product Group

DELO-DUOPOX®

Two-component, **heat-curing** epoxy resins
and potting compounds

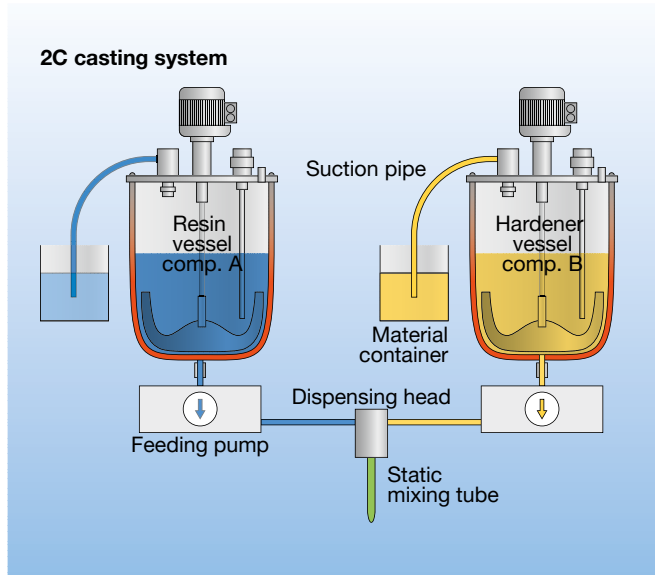


Product details and application areas

Heat-curing DELO-DUOPOX products include filled, two-component epoxy potting resins which are suitable as universal potting compounds.

Application areas include potting applications in aircraft construction, mechanical engineering, tool construction, electrical engineering and electronics.

The filled potting resins show a low exothermic reaction. Therefore, they are suitable for large batches or potting volumes per component. They were specifically developed for being processed on 2C dispensing systems (see figure below).



Schematic illustration of a 2C dispensing system

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.

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. You can find further information in the written information on surface pretreatment.

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

Processing from large containers/barrels

Preparation of the adhesive

Products containing a filler that might sediment, must be homogenized per component through appropriate measures before use.

We particularly recommend a biaxial mixer, e.g. from Collomix. After homogenization with the Collomix, the barrel can be used for 24 hours. Renewed mixing is not intended. We recommend that the homogenized adhesive is refilled into a suitable dispensing system.

Processing

Any formation of bubbles during homogenization or mixing can be significantly minimized by using a processing system with vacuum unit, stirring unit and optional tempering of the reservoir. Tempering the adhesive facilitates degassing and improves the flow behavior of the adhesive.

In case of filled products, the agitator prevents the fillers from sedimenting again.

Typical system parameters during operation are in the range of 20 mbar – 50 mbar and an adhesive temperature of +40 °C – +50 °C.

The system parameters should be coordinated and tested on the respective system under process-related conditions.

In order to improve the flow behavior of the adhesive during dispensing, the supply lines and the dispensing head of the system can be additionally heated. Electric heating sleeves are suitable for this purpose, particularly when using humidity-sensitive adhesives.

Adhesive in the reservoir or in the system is to be used up within typically 4 weeks. It must be ensured that the adhesive stock remains closed so that no air or humidity can enter the containers.

Two-component products consist of component A and B, which produce the ready-to-use adhesive only after careful and homogeneous mixing in the correct mixing ratio. Therefore, the two-component products are offered as a set of both components with matched fill quantity and one single batch number. The data sheet and specification values are exclusively determined with components of the same batch and are only valid in this combination.

System configuration

The system configuration must be checked for the individual application.

During maintenance work, product exchange, etc. on dispensing systems, we recommend exchanging the media-carrying supply lines instead of cleaning or rinsing them.

Please check the media-carrying parts, such as dispensing valves and product hoses, for compatibility with the adhesive or the components. Suitable materials mainly include stainless steel and common plastics, such as PE, PP, PTFE, PU (PU is not suitable for cationic-based products). When choosing the material, the compatibility with epoxy resins and liquid amines must be verified. We do not recommend using non-ferrous metals, copper and its alloys (e.g. Zn, Ni, Cu, Fe).

When using 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.

Application and joining

Anhydride-based adhesives should be processed quickly as they are humidity-sensitive in uncured condition due to their chemical nature. Too long humidity influence can impair the achievable properties, such as adhesion or glass transition temperature.

In order to prevent a damaging influence of humidity, the product should be cured within a few hours after application. In case of high humidity (> 50 %, +23 °C), shorter times may be reasonable. In addition, the time can also be shortened depending on the substrate.

Larger areas and thick layers are particularly critical. Due to the large surface/volume ratio, much humidity can be absorbed within a short period of time.

Processing of adhesive samples from spout bags

e.g. DELO-DUOPOX CR8720:

Packaging unit: ~190 ml per component in spout bag

The spout bags should be stored in an upright position and care should be taken to ensure that the bottom fold is unfolded.

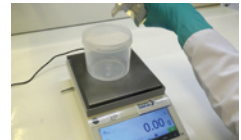
The following instructions describe the manual handling of samples on a laboratory scale.

Manual handling of samples

1. Mill/knead the closed foil bags of both components thoroughly by hand for approx. 5 to 10 minutes immediately before use to homogenize the content



2. Place the mixing cup on the scales and weigh components A and B according to the mixing ratio.

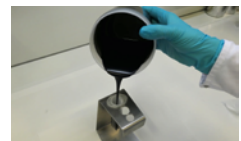


3. The components must be homogenized. An electric laboratory stirrer or a speed mixer from Hauschild (www.speedmixer.de) are suitable.

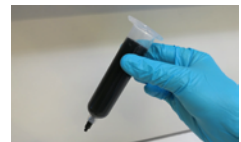


4. During homogenization, it is important to ensure that no bubbles are incorporated. Existing bubbles should be removed in a vacuum chamber.

5. To improve dispensing of small quantities (e.g. volumetric dispensing), the casting resin can be filled into another container for further process steps (e.g. in cartridges).



6. The product is ready for use. Please consider the processing time!



Curing

The adhesive is cured by exposure to heat.

Curing temperatures and times 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. 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 temperature ranges 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.

Instructions and advice for occupational health and safety

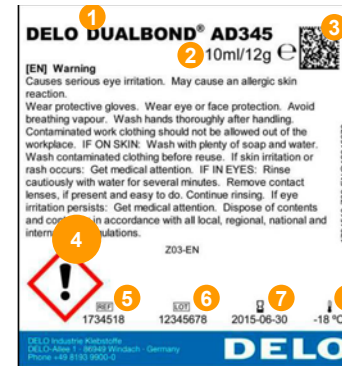
Pay attention to the details provided in the Material Safety Data Sheet of the specific product and the hazard symbols on the labels of the adhesive containers.

Storage

Storage life and storage temperature can be drawn from the technical data sheet. The product may be stored in the unopened original container only.

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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- **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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