DELO

Technical Information

# DELOMONOPOX® DA255

Heat-curing adhesive for electronics

## Base

- modified epoxy resin
- one-component, heat-curing, solvent-free

## Use

- for the bonding of bare semiconductors (ICs) to metal lead frames, rigid printed circuit boards and ceramic substrates
- very good adhesion to FR4, gold, preplated leadframe and aluminum
- the cured product is normally used in a temperature range of -40 °C to +180 °C; depending on the application, other limits may be more reasonable
- the storage temperature may not fall below -21 °C
- compliant with RoHS directive 2015/863/EU
- halogen-free according to IEC 61249-2-21

## Processing

- the adhesive is supplied ready for use, in case of cool or refrigerated storage, it must be ensured that the container is conditioned to room temperature before use
- the containers are conditioned at room temperature (max. +25 °C); the conditioning time is approx. 0.5 h for containers up to 10 ml, approx. 1 h for containers up to 50 ml and approx. 2 h for containers up to 310 ml; additional heat addition is not allowed
- the adhesive is applied by dispensing, jetting or stencil- and screen printing
- dosing valves and product leading parts have to be cleaned deeply immediately after usage of the adhesive
- the surfaces to be bonded must be dry as well as free of dust, grease and other contaminations

## Curing

- curing proceeds at temperatures of +90 °C to +180 °C at the adhesive using an air convection oven
- curing proceeds, e. g., at temperatures between +150 °C and +210 °C at the adhesive in 6 to 20 seconds using a thermode
- increased temperatures shorten the curing process, lower temperatures extend it, and can change the properties of the cured product

## Technical data

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|---|---|
| *Color* | grey |
| Density [g/cm³]<br>DELO standard 13 | 1.34 |
| *Viscosity* [mPas]<br>at 23 °C, rheometer, shear rate 10 1/s | 25000 |

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| | |
|---|---|
| Curing time with thermode [s]<br>at +180 °C adhesive temperature | 6 |
| Curing time with air convection oven [min]<br>at +150 °C adhesive temperature | 2 |
| Curing time with air convection oven [min]<br>at +120 °C adhesive temperature | 8 |
| *Compression shear strength Al/Al* [MPa]<br>DELO Standard 5<br>curing: 20 min at 150 °C<br>after 24 h at room temperature (approx. +23 °C) | 48 |
| Compression shear strength PA6/PA6 [MPa]<br>DELO Standard 5<br>curing: 20 min at 150 °C<br>after 24 h at room temperature (approx. +23 °C) | 33 |
| Compression shear strength PBT/PBT [MPa]<br>DELO Standard 5<br>curing: 20 min at 150 °C<br>after 24 h at room temperature (approx. +23 °C) | 14 |
| Compression shear strength LCP/LCP (E130i) [MPa]<br>DELO Standard 5<br>curing: 20 min at 150 °C<br>after 24 h at room temperature (approx. +23 °C) | 15 |
| Compression shear strength LCP/LCP (E471i) [MPa]<br>DELO Standard 5<br>curing: 20 min at 150 °C<br>after 24 h at room temperature (approx. +23 °C) | 9 |
| Compression shear strength LCP/LCP (E540i) [MPa]<br>DELO Standard 5<br>curing: 20 min at 150 °C<br>after 24 h at room temperature (approx. +23 °C) | 10 |
| Die shear strength [N]<br>DELO Standard 30<br>substrate FR4, chip 2.0 x 2.0 mm<br>curing: 20 min at +150 °C<br>after 24 h at room temperature (approx. +23 °C) | 210 |
| Die shear strength [N]<br>DELO Standard 30<br>substrate FR4 / Au, chip 2.0 x 2.0 mm<br>curing: 20 min at +150 °C<br>after 24 h at room temperature (approx. +23 °C) | 149 |
| Tensile strength [MPa]<br>according to DIN EN ISO 527<br>layer thickness: 2 mm<br>curing: 45 min at +130 °C<br>after 24 h at room temperature (approx. +23 °C) | 40 |
| Elongation at tear [%]<br>according to DIN EN ISO 527<br>layer thickness: 2 mm<br>curing: 45 min at +130 °C<br>after 24 h at room temperature (approx. +23 °C) | 1.2 |
| Young's modulus [MPa]<br>at 23 °C, DMTA<br>curing: 20 min at +150 °C | 3200 |
| Shore hardness D<br>according to DIN EN ISO 868<br>layer thickness: 4 mm<br>curing: 20 min at +150 °C | 86 |

| | |
|---|---|
| *Glass transition temperature* [°C]<br>DMTA | 139 |
| Coefficient of linear expansion [ppm/K]<br>TMA, DELO Standard 26<br>in a temperature range of +30 °C to +100 °C | 58 |
| Coefficient of linear expansion [ppm/K]<br>TMA, DELO Standard 26<br>in a temperature range of +120 °C to +160 °C | 170 |
| Shrinkage [%]<br>DELO Standard 13 | 1.7 |
| Water absorption [%]<br>according to DIN EN ISO 62, 24 h at room temperature (approx. 23 °C) | 0.2 |
| *Ion content Na+* [ppm]<br>extraction | <10 |
| *Ion content K+* [ppm]<br>extraction | <10 |
| *Ion content Cl-* [ppm]<br>extraction | <20 |
| *Ion content F-* [ppm]<br>extraction | <10 |
| Storage life at room temperature (max. 25 °C) [h]<br>in unopened original container | 72 |
| Storage life at -18°C<br>in unopened original container | 6 months |

## Instructions and advice

### General

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 the product for the intended purpose by considering all specific requirements. Type and 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. The data and information provided are therefore no guarantee for specific product properties or the suitability of the product for the intended purpose.
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All products provided by DELO are subject to DELOs' General Terms of Business. Verbal side agreements are not permitted. This document is subject to change.

### Instructions for use

The instructions for use of DELOMONOPOX are available on: www.DELO.de. We will be pleased to send them to you on demand.

### Occupational health and safety

see material safety data sheet

### Specification

The properties in italics are part of the specification. Ranges with clear limits are defined for them and others, where applicable. In the course of the QA test, each batch is tested for these properties and the maintenance of the limits is ensured. The measuring methods used can deviate from those specified in the data sheet. Details can be found in the QA test report.