

### **DELOMONOPOX® AC245**

Anisotropic conductive, heat-curing adhesive to contact flip chip

#### **Base**

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

#### **Use**

- especially suitable for the smart card and smart label sector
- fast curing at moderate temperatures (+150 to +210 °C at the adhesive)
- low water absorption and, therefore, high reliability in the test +85 °C / 85 % relative humidity
- the storage temperature may not fall below -21 °C
- very good adhesion to PET, FR4, copper, aluminum and silver
- the cured product is normally used in a temperature range of -40 °C to +150 °C; depending on the application, other limits may be more reasonable
- compliant with RoHS directive 2011/65/EU
- halogen-free according to IEC 61249-2-21
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#### **Processing**

- for the bonding and electrical contacting of bare semiconductors (ICs) in flip-chip technology
- 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; additional heat addition is not allowed
- the adhesive can be applied by needle-dispensing, stencil printing or jetting
- the process steps for the adhesive application are as follows:
  1. Application of adhesive to the substrate. It must be ensured that the adhesive layer is bubble-free.
  2. Placement of the semiconductor into the adhesive.
  3. Pressing of the semiconductor with defined contact pressure and pressing time (at temperatures between +150 and +210 °C at the adhesive) by means of a thermode.
  4. In case of especially high requirements, postcuring of 2 min at +140 °C is recommended.
- the surfaces to be bonded must be dry as well as free of dust, grease and other contaminations

## **Curing**

- curing proceeds, e. g., at temperatures between +150 and +210 °C at the adhesive in 6 to 19 seconds using a thermode
- increased temperatures shorten the curing process, lower temperatures extend it, and can change the properties of the cured product
- the minimal curing temperature is +100 °C, for thermode process +150°C
- the actual curing times at the respective temperatures are dependent on the heating time of the components, the heating time of the components must be added to the curing time of the adhesive
- the curing times of the adhesive at the curing temperatures recommended can be drawn from the technical data
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## **Technical data**

<i>Color</i>	grey
particle	Ni compound
Particle size [ $\mu\text{m}$ ] d50	5.3
Density [ $\text{g}/\text{cm}^3$ ] DELO Standard 13 at room temperature (approx. 23 °C)	1.48
<i>Viscosity</i> [mPas] at 23 °C, rheometer, shear rate 10 1/s	33000
Curing time with thermode [s] at +180 °C adhesive temperature	8
Curing time with thermode [s] at +200 °C adhesive temperature	6
Die shear strength [MPa] DELO-Norm 30 Curing: 8 s at +190/180 °C substrate: Toyo Al/PET antenna Si-chip 0.4 x 0.4 mm with Au-bumps after 24h at room temperature (max. 25 °C)	74
Young's modulus [MPa] at 25 °C, DMTA	3900
Shore hardness D according to DIN EN ISO 868 after 20 min at +140 °C	85
Glass transition temperature [°C] DMTA	149
Shrinkage [%] DELO Standard 13 curing: 20 min at +140 °C	1.6
Coefficient of linear expansion [ppm/K] TMA, DELO Standard 26 in a temperature range of +30 °C to +100 °C	55
Coefficient of linear expansion [ppm/K] TMA, DELO Standard 26 in a temperature range of +130 °C to +180 °C	180

Water absorption [weight %] according to DIN EN ISO 62 after 40 min at +140 °C	0.1
<i>Ion content Na+</i> extraction	<10
<i>Ion content K+</i> extraction	<10
<i>Ion content Cl-</i> extraction	<10
<i>Ion content F-</i> extraction	<10
Storage life at room temperature (max. 25 °C) in unopened original container	1 week
storage life at -18°C 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.

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 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](http://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.