

DELO® MONOPOX DA588

Heat curing Die Attach adhesive for Smart-Card technology

Base

- modified epoxy resin
- one-component, heat-curing, solvent-free, thixotropic
- colored blue

Use

- for the bonding of bare semiconductors (ICs) to epoxy tapes for smart card technology, metal lead frames, rigid and flexible printed circuit boards
- the adhesive is ideal for the use in connection with the UV-curing chip encapsulation compounds DELO KATIOBOND; of course, it can also be combined with other chip encapsulation compounds
- due to fast curing at low temperatures, the product is especially suitable for the use on temperature-sensitive substrates, e. g., in smart card technology
- 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 2015/863/EU
- halogen-free according to IEC 61249-2-21

Processing

- the adhesive is supplied ready for use; in case of 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. 1.5 h for containers up to 30 ml; additional heat addition is not allowed
- the adhesive is normally applied by dispensing
- the adhesive can be optimally processed within the processing time (storage life at room temperature) as the flow properties and the viscosity remain unchanged; if the storage life is exceeded, a reactivity loss sets in which becomes noticeable through delayed curing
- slight variations of the colour of the product within the cartridge are possible, however, they do not affect the quality of the product
- the surfaces to be bonded must be dry as well as free of dust, grease and other contaminations
- when using aqueous cleaners with alkaline properties, they must be removed from the bonding surface after cleaning through appropriate rinsing cycles
- dispensing valves and product-bearing elements must be carefully cleaned before use, residues of other products must be completely removed; DELOTHEN EP as well as acetone are recommended to remove DELO MONOPOX residues
- for further information please refer to our instruction for use of die attach adhesives for smart cards

Curing

- curing proceeds at a temperature of +130 °C to +160 °C
- increased temperatures shorten the curing process, lower temperatures extend it, and can change the properties of the cured product
- the minimal curing temperature is +120 °C
- the maximal curing temperature is +170 °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 heating time depends on the component size and the oven type

Technical data

<i>Color</i>	blue
Density [g/cm ³] at room temperature (approx. 23 °C)	1.45
Viscosity [mPas] at 23 °C, rheometer, 10 1/s	31000
Curing time until final strength [min] at +130 °C	5
Curing time until final strength [min] at +150 °C	2
Processing time at room temperature (max. 25 °C)	72 hours
Die shear strength on glass/epoxy tape [N] DELO Standard 30 substrate glass/epoxy tape sandblasted; Si Die 2.0 x 2.0 mm at room temperature (approx. 23 °C)	200
Die shear strength on Au [N] DELO Standard 30 substrate Au electroplated, Si chip 2.0 x 2.0 mm at room temperature (approx. 23 °C)	150
Die shear strength on PEI [N] DELO Standard 30 substrate PEI film; Si Die 2.0 x 2.0 mm at room temperature (approx. 23 °C)	200
Die shear strength on PET [N] DELO Standard 30 substrate PET film; Si Die 2.0 x 2.0 mm at room temperature (approx. 23 °C)	160
Tensile strength [MPa] according to DIN EN ISO 527 layer thickness: 2 mm	40
Elongation at tear [%] according to DIN EN ISO 527 layer thickness: 2 mm	8
Young's modulus [MPa] according to DIN EN ISO 527 layer thickness: 2 mm	2200
Shore hardness D according to DIN EN ISO 868	71
Decomposition temperature [°C] DELO Standard 36	286

<i>Glass transition temperature</i> [°C] rheometer	78
<i>Glass transition temperature</i> [°C] TMA	66
<i>Coefficient of linear expansion</i> [ppm/K] TMA, in a temperature range of +30 to +60 °C	70
<i>Coefficient of linear expansion</i> [ppm/K] TMA, in a temperature range of +80 to +150 °C	166
<i>Water absorption</i> [weight %] according to DIN EN ISO 62, 24 h at room temperature (approx. 23 °C)	0.3
<i>Shrinkage</i> [vol. %] DELO Standard 13	3.2
<i>Ion content Na+</i> [ppm] extraction	<20
<i>Ion content K+</i> [ppm] extraction	<10
<i>Ion content Cl-</i> [ppm] extraction	<10
<i>Ion content F-</i> [ppm] extraction	<100
<i>Storage life at ≤ -18 °C</i> 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 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.

Instructions for use

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

The applied instruction for use of die attach adhesives for smart cards will be also send 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.