

# DELO<sup>®</sup> MONOPOX DA588

**modified epoxy resin | 1C | heat-curing**

free of solvents | thixotropic

### Special features of product

- compliant with RoHS Directive 2015/863/EU
- halogen-free according to IEC 61249-2-21

### Function

- die attach adhesive

### Typical area of use

- -40 - 150 °C
- smart card applications
- bonding of bare semiconductors
- chip bonding

### Curing

Recommended curing time

<i>at +130 °C in air convection oven</i>	5	min
<i>at +150 °C in air convection oven</i>	2	min

### Processing

Conditioning time (typical)

<i>when stored in cold conditions in containers up to 10 ml</i>	0.5	h
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Processing time

<i>in standard climate +23 °C / 50 % r. h.</i>	72	h
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Storage life in unopened original container

<i>at -45 °C to -15 °C</i>	6	month(s)
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### Technical properties

Color in cured condition in 1 mm layer thickness	blue
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Transparency in cured condition in 1 mm layer thickness opaque

**Parameters**

Density 1.45 g/cm<sup>3</sup>  
*DELO Standard 13 | Liquid*

Viscosity 31000 mPa·s  
*Liquid | Rheometer | Shear rate: 10 1/s | Gap: 500 µm*

Die shear strength 150 N  
*DELO Standard 30 | Chip 2 mm x 2 mm | **Si** | **Au** | 150 °C | 15 min*

Die shear strength 160 N  
*DELO Standard 30 | Chip 2 mm x 2 mm | **Si** | Foil | **PET** | 150 °C | 15 min*

Die shear strength 200 N  
*DELO Standard 30 | Chip 2 mm x 2 mm | **Si** | **PEI** | 150 °C | 15 min*

Die shear strength 200 N  
*DELO Standard 30 | Chip 2 mm x 2 mm | **Si** | **FR4** | Pretreatment: sand-blasted | 150 °C | 15 min*

Tensile strength 40 MPa  
*Based on DIN EN ISO 527 | 130 min | 30 min*

Elongation at tear 8 %  
*Based on DIN EN ISO 527 | 130 °C | 30 min*

Young's modulus 2200 MPa  
*Based on DIN EN ISO 527 | 130 °C | 30 min*

Shore hardness D 71  
*Based on DIN EN ISO 868 | 130 °C | 15 min*

Glass transition temperature 66 °C  
*DELO Standard 26 | TMA | 130 °C | 15 min*

Coefficient of linear expansion 70 ppm/K  
*DELO Standard 26 | TMA | Evaluation T: 30 °C - 60 °C*

Coefficient of linear expansion 166 ppm/K  
*DELO Standard 26 | TMA | Evaluation T: 80 °C - 150 °C*

Shrinkage 3.2 vol. %  
*DELO Standard 13*

Water absorption <i>Based on DIN EN ISO 62</i>	0.3	wt. %
Decomposition temperature <i>DELO Standard 36</i>	286	°C
Extractable fluoride ions <i>Liquid</i>	<100	ppm
Extractable chloride ions <i>Liquid</i>	<10	ppm
Extractable potassium ions <i>Liquid</i>	<10	ppm
Extractable sodium ions <i>Liquid</i>	<20	ppm

**Converting table**

°F = (°C x 1.8) + 32	1 MPa = 145.04 psi
1 inch = 25.4 mm	1 GPa = 145.04 ksi
1 mil = 25.4 µm	1 cP = 1 mPa·s
1 oz = 28.3495 g	1 N = 0.225 lb

**General curing and processing information**

The curing time stated in the technical data was determined in the laboratory. It can vary depending on the adhesive quantity and component geometry and is therefore a reference value. The heating time of the components must be added to the actual curing time. It depends on component size and oven type. The specified curing temperature must be reached directly at the adhesive. Increasing or decreasing the curing temperature and / or irradiation intensity shortens or prolongs the curing time and can lead to changed physical properties. Depending on the adhesive quantity used, exothermic reaction heat is generated which can lead to overheating. In this case, a lower curing temperature is to be selected. Values measured after 24 h at approx. 23 °C / 50 % r.h., unless otherwise specified.

**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 instructions for use are available on [www.DELO-adhesives.com](http://www.DELO-adhesives.com).  
We will be pleased to send them to you on demand.

### Occupational health and safety

See material safety data sheet.

### Specification

Nothing contained in this Technical Datasheet shall be interpreted as any express warranty or guarantee. This Technical Datasheet is for reference only and does not constitute a product specification. Please ask our responsible Sales Engineer for the applicable product specification which includes defined ranges. DELO is neither liable for any values and content of this Technical Datasheet nor for oral or written recommendations regarding the use, unless otherwise agreed in writing. This limitation of liability is not applicable for damages resulting from intent, gross negligence or culpable breach of cardinal obligations, nor shall it apply in case of death or personal injury or in case of liability under any applicable compulsory law.

## CONTACT

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