

# Epoxy Resins for High-Temperature Applications

## Strong hold in extreme heat

Adhesives resistant to elevated temperatures are in high demand in many industries and applications, including automotive, aerospace, mechanical engineering, and electric motors, among others. They must provide high strength, and permanent resistance to environmental influences, such as gear oil. However, the strength of

adhesives is highly dependent on the temperature. Many adhesives exhibit a strong performance drop at temperatures above +150 °C. The new DELOMONOPOX HT adhesives are designed for increased and long-term stability at such temperatures.

<sup>\*</sup>HT = High Temperature

## Application areas

High-strength and rigid bonding (particularly for metals and high-performance plastics) in extreme environments:

- Mechanical engineering: hydraulic components, components used in feeding and forming technology
- Electric motors: magnet bonding, fixing of shafts and bearings
- Automotive: bonding in the engine compartment and exhaust gas system, e.g. at the turbo charger

## Customer's benefits

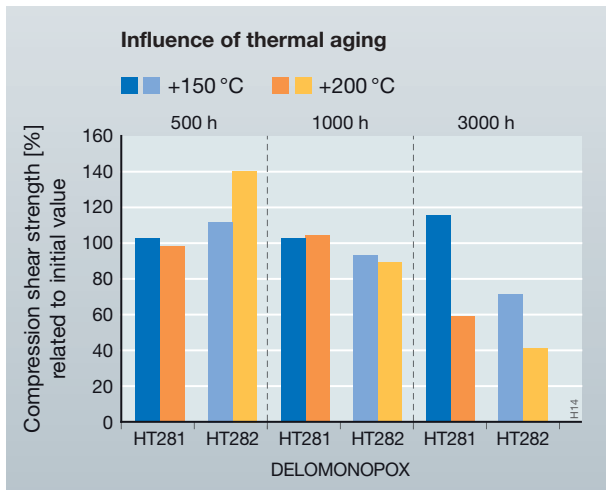
- Functional reliability due to increased temperature stability at temperatures up to +220 °C
- Use in areas with permanently high thermal impact
- Increased efficiency of mechanical and electrical components
- Easy, proven dispensing (1C from Euro cartridge or hobcock) and storage (0 to +10 °C; 6 months)
- Long processing time at room temperature (typ. 4 weeks) enables efficient production

## Product properties

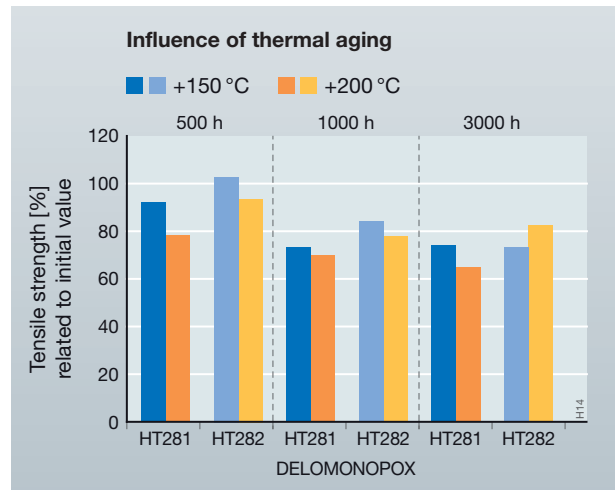
- Temperature stability increased by 50 %
- Extended temperature range of use: -55 to +220 °C
- Thermal long-term stability: 3,000 h at +200 °C: retains 80 % of original tensile strength
- Various fillers available, highly steady variants possible

- Impact-resistant for dynamic stress: DELOMONOPOX HT282
- High glass transition temperatures  $\geq +150$  °C
- Excellent chemical resistance, for example to gear oil or ethanol
- Good adhesion even to nickel-plated surfaces

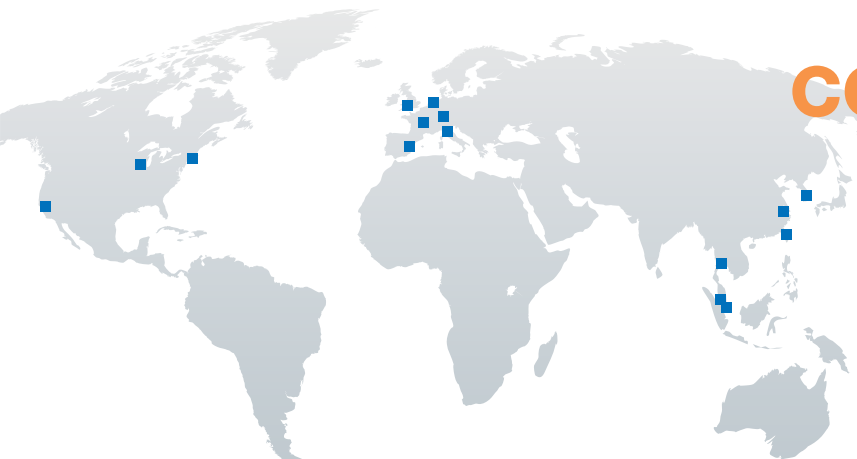
		DELOMONOPOX	
		HT281	HT282
<b>Filler</b>		quartz	aluminum
<b>Impact resistance</b>		–	✓
<b>Viscosity [mPas]</b>	rheometer	125,000	125,000
<b>Curing time [min]</b>	in air convection oven at +150 °C	40	40
<b>Tensile strength [MPa]</b>	by the criteria of DIN EN ISO 527, layer thickness 2 mm, after 40 min at +150 °C	66	60
<b>Young's modulus [MPa]</b>		5,700	4,800
<b>Glass transition temperature <math>T_g</math> [°C]</b>		150	157
<b>Temperature stability [MPa]</b> by the criteria of DIN EN 1565, sand-blasted, component thickness 1.6 mm	at rt	24	29
	at +150 °C	12	12
	at +220 °C	4	3.5
<b>Compression shear strength [MPa]</b> DELO Standard 5, curing: 40 min at +150 °C	Al/Al	55	49
	Ni/Ni	40	38
	VAVA	54	56
<b>Storage life</b>	at rt (appr. +23 °C)	4 weeks	4 weeks
	at 0 to +10 °C	6 months	6 months



Compression shear strength after thermal aging measured at +23 °C, tested acc. to DELO Standard 5 (bonding gap 200 µm), curing: 40 min at +150 °C



Tensile strength after thermal aging measured at +23 °C by the criteria of DIN EN ISO 527 (layer thickness 2 mm), curing: 40 min at +150 °C



## CONTACT

**DELO** Industrial Adhesives  
 ► Headquarters Germany  
 DELO-Allee 1  
 86949 Windach/Munich  
 Phone +49 8193 9900-0  
 info@DELO.de  
 www.DELO.de

09/14

Adhesives

Dispensing

Curing

Consulting

**DELO**

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 user's responsibility to test the suitability of the product for the intended purpose by considering all specific requirements. 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. Verbal ancillary agreements are deemed not to exist.