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Preliminary Technical Data Sheet

Elan-glue®**PK 5550**

Electronic Adhesive

Modified Polyurethane - One Component - Thermal Cure
High Thermal Resistance - Flexible

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Description

Elan-glue® PK 5550 is a single component, viscous resin system which cures by temperature to form a soft polyurethane duroplastic. It comprises a liquid polyol system with a dispersed solid encapsulated polyisocyanate. Heating the resin releases the encapsulated polyisocyanate resulting in a poly-addition reaction to give a resistant duroplastic cured material. In contrast to the usual two-component resin systems ELAN-glue® PK 5550 is ready to use and distinguished by excellent properties and especially good environmental compatibility.

Elan-glue® PK 5550 is suitable for a broad range of applications in electronics and provides excellent adhesion on common substrates. The product satisfies the requirements of RoHS and REACH.

Areas of application

Elan-glue® PK 5550 is designed as a constructive adhesive to connect metal or polymer parts in electronic applications or potting of small sensors. Typical applications are the flexible mounting of an electronic board inside a housing or the L-shape fixing of an electronic component on a printed circuit board with a gap width in the mm-range. Furthermore Elan-glue® PK 5550 shows excellent dielectric and electrical insulation properties. Elan-glue® PK 5550 also provides chemical protection of parts against moisture and contamination and hence for securing components on an electronic board against mechanical shock and vibration.

Properties of cured product

The product exhibits good adhesion to plastics, glass and metals and low shrinkage during cure. The polyurethane chemistry provides protection against moisture and migration. Elan-glue® PK 5550 shows good protection and adhesion under thermal stress including thermal shocks, due to low thermal expansion. Cured ELAN-glue® PK 5550 displays high elasticity and strength producing excellent temperature cycling behavior within a large temperature range as well as resistance to vibrations. This ensures minimal crazing even in thick layered applications.

ELAN-glue® PK 5550 exhibits excellent chemical resistance to a wide range of aggressive liquids common in automotive applications. The material is solvent free and hence complies with latest requirements for sustainable solutions.

Storage and stability

Elan-glue® PK 5550 represents a single component polyurethane adhesive. Storage temperature can range from refrigerator temperature to room temperature.

Store accordingly to any specific instruction listed on the product label. Product must be used prior to the expiry date shown on the label.

Preparation

Elan-glue® PK 5550 is supplied in syringes of different volume, with Luer-Lock connection or in pails. Please allow material to reach room temperature before use. In order to avoid condensation of moisture, warm-up should be carried out in the sealed aluminum bags or closed containers.

Elan-glue® PK 5550 as uncured liquid deteriorates by moisture and humidity. Handling prior to cure must be done by exclusion of moisture. Should sedimentation occur after long time of storage, homogenization of the material is required prior to application.

Processing methods

Elan-glue® PK 5550 should be applied directly from the original packages with a suitable nozzle. Due to its high viscosity the material moves only little during cure just as much to ease coverage of edges and cavities. Quick handling and immediate thermal cure after application is highly recommended.

Curing/Post-curing

Elan-glue® PK 5550 cures by temperature between 80 – 120°C. The higher the temperature, the shorter the cure time. Both a batch oven as well as conveyor furnaces can be used for thermal cure.

Please consider moisture is present in ambient air.

To ensure satisfactory adhesion all surfaces should be dry, clean, and free of residues. Additional activation of the surface may increase the adhesion of the product. Compatibility of adhesive and respective surface should be checked individually by application.

Handling precautions

Refer to the safety data sheet and comply with regulations relating to industrial health and waste disposal.

Sales specifications

Properties	Conditions	Test Method	Value	M/U
Gel time	80 °C	DIN 16945 (Internal Test H17B1)	5 ÷ 12	min
Viscosity	23 °C	DIN 53019 (Internal Test V18/b/c)	26000 ÷ 35000	mPa·s

Typical system properties

Properties	Conditions	Test Method	Value	M/U
Shelf life	5 - 7 °C	Internal Test	6	months
Density	23 °C	ISO 2811-2 (Internal Test M27)	1,05 ÷ 1,10	g/cm³

Curing conditions

Properties	Conditions	Test Method	Value	M/U
Thermal curing	90 °C	intern	30	min
	100 °C		15	min
	120 °C		10	min

Typical mechanical properties of the cured product

Properties	Conditions	Test Method	Value	M/U
Tensile Strength	23 °C	ISO 37 (Internal Test 29)	2,75 ÷ 3,75	N/mm²
Hardness Shore A/1	23 °C	ISO 868 (Internal Test M30b)	55 ÷ 60	Shore A
Elongation at break	23 °C	ISO 37 (Internal Test 29)	120 ÷ 160	%
Shear resistance	23 °C - polycarbonate	ISO 527-2 / ISO 37 (Internal Test M29b)	4 ÷ 6	N/mm²

Typical thermal properties of the cured product

Properties	Conditions	Test Method	Value	M/U
Temperature range		Internal Test	-40 ÷ +145	°C
Linear expansions coefficient	-10 - 120 °C	TMA (Internal Test M56)	250 ÷ 290	ppm/K
Glass transition temperature (Tg)	100 - 0,1 Hz	DMA	-30 ÷ -20	°C

Typical dielectric properties of the cured product

Properties	Conditions	Test Method	Value	M/U
Volume resistivity	23 °C - Initial value	IEC 60464 -2 (Internal Test M5)	6,0 10 ¹⁴	Ω·cm
	23 °C - After 7d water immersion		2,7 10 ¹⁴	Ω·cm
Dielectric Strength	23 °C - 1 mm foil / sphere against plate	IEC 60455-2 (Internal Test M31)	20 ÷ 24	kV/mm
Dielectric constant	22 °C; 10 kHz	IEC 60250 (Internal Test M3b)	5,6	
	155 °C; 10 kHz		5,2	
Dielectric dissipation at 10 kHz	22 °C	IEC 60250 (Internal Test M03b)	< 0,02	
	155 °C		< 0,01	

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