ELPEGUARD®
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PTR PRELIMINARY TECHNICAL REPORT

2-pack conformal coating ELPEGUARD® SL 9400 FLZ

The 2-pack conformal coating **ELPEGUARD® SL 9400 FLZ** is used to protect and insulate assembled pcbs so that they can fulfil higher requirements regarding reliability and service life. Owing to their very good resistance against moisture and condensation an excellent protection against corrosion (such as electro corrosion and migration) is possible even under harsh climatic conditions.

- Base: polyurethane resin (UR)
- excellent chemical and climatical resistance
- high hardness/mechanical resistance
- very good adhesion on many substrates
- temperature range -40 to +125 °C [-40 to 257 °F]*
- suitable for coating flexible circuits („flex-to-install“)
- suitable for electromechanical engineering and general electrical engineering
- can be soldered through or mechanically removed (blasting method) for repair purposes

* Both at the lower and upper ends of this range the performance and reliability of the material can be negatively affected in some applications. In such cases, additional pretrials and tests are required.

Characteristics

Colour/aspect	colourless, fluorescent
Solids content of mixture acc. to DIN EN ISO 3251 1 h, 125 °C [257 °F], 1 g weighed quantity	44 ± 2 % by weight
Viscosity of mixture at 20 °C [68 °F], flow time acc. to DIN 53211, 4 mm DIN flow cup	13 ± 2 s
Viscosity of mixture at 20 °C [68 °], flow time acc. to DIN EN ISO 2431, 4 mm ISO flow cup	20 ± 2 s
Density at 20 °C [68 °F], DIN EN ISO 2811-1 Component A Component B Mixture	 0.95 ± 0.02 g/cm³ 1.18 ± 0.02 g/cm³ 1.02 ± 0.02 g/cm³
Pot life of mixture at 18-23 °C [64.4 - 73.4 °F] (Setup quantity 500 g)	approx. 15 h

Indices: SL = conformal coating, FLZ = fluorescent

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Physical and mechanical properties

Property	Test method	Results
Glass transition temperature Tg	TMA	≈ 90 °C
Coefficient of thermal extension (CTE)	TMA	≈ 130 ppm/°C < Tg ≈ 270 ppm/°C > Tg

Electrical properties

Property	Test method	Results
Dielectric strength	IPC-TM-650, 2.5.6.1 DIN EN 60243-1	95 kV/mm
	IPC-CC-830B, 3.6.1	passed
Specific volume resistivity	VDE 0303, Teil 30/DIN IEC 60093 IPC-TM-650, 2.5.17.1	1.8 x 10^{13} Ohm x cm
Surface resistance	VDE 0303, Teil 30/DIN IEC 60093 IPC-TM-650, 2.5.17.1	2.0 x 10^{14} Ohm
Moisture and insulation resistance	IPC-CC-830B, 3.7.1 (65 °C/90 % R. H.)	passed
	85/85-Test (3 d, 85 °C [185 °F], 85 % R.H.)	1 x 10^{9} Ohm
Resistance to condensation	based on DIN EN ISO 6270-2 (BIAS 12 V, 40 °C, 100% R.H.)	1 x 10^{10} Ohm
Comparative tracking index (CTI, tracking resistance)	DIN EN 60112, on FR4 base material with CTI 300	CTI 600

Processing

	Please read this technical report and the publications listed below carefully before using the product. These sheets are enclosed with the first shipment of product or sample
MSDS	The corresponding material safety data sheet contains detailed information and characteristics on safety precautions, environmental protection, transport, storage, handling and waste disposal.
AI	Application information AI 1/1 ”Processing instructions for ELPEGUARD® conformal coatings (thin film coatings)“
TI	Technical information TI 15/3 “Protective measures when using chemicals including lacquers, casting compounds, thinners, cleaning agents“
TI	Technical information TI 15/10 ”Processing of 2-pack systems“

The conformal coating **ELPEGUARD® SL 9400 FLZ** can be applied by brushing and spraying.

Since the many different permutations make it impossible to evaluate the whole spectrum (parameters, reactions with materials used, chemical processes and machines) of processes and subsequent processes in all their variations, the parameters we recommend are to be viewed as guidelines only that were determined in laboratory conditions. We advise you to determine the exact process limitations within your production environment, in particular as regards compatibility with your specific follow-up processes, in order to ensure a stable fabrication process and products of the highest possible quality.

The specified product data is based upon standard processing conditions/test conditions of the mentioned norms and must be verified observing suitable test conditions on processed printed circuit boards.

Feel free to contact our application technology department (ATD) if you have any questions or for a consultation.

Safety recommendations

➔ When using chemicals, the common precautions should be carefully noted.

➔ Ensure that extractor units of workplace ventilation arrangements are positioned at solvent source level.

➔ Please also pay attention to national guidelines or directives concerning operating safety such as the German TRBS (technical rules for operating safety) and those concerning the handling of flammable liquids as for example the German TRbF (technical rules for flammable liquids) or European directives.

Mixing

Component A : Component B = 2 : 1 (parts by weight)

Viscosity adjustment

The conformal coating **ELPEGUARD® SL 9400 FLZ** is adjusted in such a manner that it can normally be processed in the condition supplied. To reduce its viscosity for processing purposes

DIL dilute with thinner **V 9400**

Auxiliary products recommended

- **Cleaning agent R 5817**
  for the manual cleaning of screens and tools

Drying/curing

Curing already takes place at room temperature; however, oven curing is recommended, in particular when high thicknesses have been applied.

The following data related to a wet film thickness of approx. 75 µm serves as a guideline.

	At room temperature (approx. +23 °C [73.4 °F])	**In circulating hot air units at 80 °C [176 °F]**
Drying (dust-dry)	approx. 20 min	—
Drying (tack-free) acc. to DIN EN 60464 (IEC 60464)	approx. 2 h	approx. 25 min at 80 °C [176 °F]

Standard packaging

	Component A	**Component B**	**Selling unit**
SL 9400 FLZ	1 can of 10 kg	1 can of 5 kg	15 kg
V 9400	1 can of 15 kg	—	15 kg

Smaller quantities available against surcharge.

Shelf life and storage conditions

Shelf life: In sealed original containers at least 9 months

Storage conditions: +5 °C to +25 °C [+41 °F to +77 °F]

Protect against humidity

For warehousing reasons, isolated cases may occur where the shelf life upon shipment is less than the shelf life indicated in this technical report. However, it is ensured that our products have **at least** two-thirds of their shelf life remaining when they leave our company. Labels on containers show shelf life and storage conditions.

Disclaimer

All descriptions and images of our goods and products contained in our technical literature, catalogues, flyers, circular letters, advertisements, price lists, websites, data sheets and brochures, and in particular the information given in this literature are non-binding unless expressly stated otherwise in the Agreement. This shall also include the property rights of third parties if applicable.

The products are exclusively intended for the applications indicated in the corresponding technical data sheets. The advisory service does not exempt you from performing your own assessments, in particular as regards their suitability for the applications intended. The application, use and processing of our products and of the products manufactured by you based on the advice given by our Application Technology Department are beyond our control and thus entirely your responsibility. The sale of our products is effected in accordance with our current terms of sale and delivery.

ATTENTION!
For new products, according to preliminary technical reports, adequate practical results are not always available which would permit a comprehensive assessment of such a product. It is therefore imperative to exercise particular care in the testing of such products with regard to the application intended!

Any questions?

We would be pleased to offer you advice and assistance in solving your problems. Samples and technical literature are available upon request

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