ELPEGUARD®
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TR TECHNICAL REPORT

Gels of the series ELPEGUARD® SL 1307 FLZ-T

The gels of the series **ELPEGUARD® SL 1307 FLZ-T** are thixotropic or highly thixotropic coatings which can be easily and precisely applied by means of a dispenser. This way, dams can be built around connectors, components and pads to prevent the penetration or spreading of a subsequently applied conformal coating (dam and fill).

SL 1307 FLZ-T slightly flows after application, so that component leads are completely surrounded.

SL 1307 FLZ-HT does not flow and can therefore be used on critical plug connectors and components with high capillary action**.** A reliable protection against contact can be achieved on unpopulated solder sides by precisely coating the leads with **SL 1307 FLZ-HT**.

The barrier formed by **ELPEGUARD® SL 1307 FLZ-T** should be completely dry before the conformal coating is blanket-applied. **ELPEGUARD® SL 1307 FLZ-T** may swell or start to dissolve when in contact with the solvents in the subsequently applied conformal coating, but will dry again.

Applying the conformal coating without intermediate drying of **ELPEGUARD® SL 1307 FLZ-HT** is generally possible. However, we recommend performing pre-trials.

- Basis: Acrylate resins (AR)
- physical drying
- UL Recognised Component acc. to UL 94, UL File No. E80315
- can be completely removed for repair purposes by means of the thinner **V 1307 FLZ/2,** and re-applied after completion of repair work
- available in cartridges

Characteristics

	SL 1307 FLZ-T	SL 1307 FLZ-HT
Colour/appearance	colourless, fluorescent	colourless, fluorescent
Solids content DIN EN ISO 3251 1 h, 125 °C [257 °°F], 1 g weighed quantity	43 ± 3 % by weight	48 ± 3 % by weight
Viscosity* at 20 °C [68 °°F], DIN EN ISO 3219	1 250 ± 500 mPas	5 500 ± 1 500 mPas
Density at 20 °C [68 °°F], DIN EN ISO 2811-1	1.01 ± 0.05 g/cm³	1.02 ± 0.05 g/cm³

* measured with Haake RS 600, C 35/1°, D = 100 s^{-1},
viscosity measuring unit supplied by Thermo Fisher Scientific, www.thermofisher.com

Indices: SL = conformal coating, FLZ = fluorescent, T = thixotropic, HT = highly thixotropic

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Physical and mechanical properties

Property	Test method	Result
Flexibility	IPC-CC-830C, 3.5.5	passed
Glass transition temperature Tg	DMA TMA	≈ -4 °C [24.8 °F] ≈ 45 °C [113 °F]
Coefficient of thermal expansion (CTE)	TMA	≈ 160 ppm/°C ≤ RT

Electrical properties

These values are reached after 7 days' storage at room temperature.

Property	Test method	SL 1307 FLZ-T	SL 1307 FLZ-HT
Dielectric strength	IPC-TM-650, 2.5.6.1	≥ 22 kV/mm	≥ 53 kV/mm
	IPC-CC-830C, 3.6.1	passed	passed
Specific volume resistivity	DIN EN 62631-3-1	≥ 3.5 x 10^{12} Ohm x cm	≥ 6.3 x 10^{12} Ohm x cm
Surface resistance	DIN EN 62631-3-2	≥ 2.6 x 10^{12} Ohm	≥ 4.3 x 10^{12} Ohm
Moisture and insulation resistance	IPC-CC-830C, 3.7.1 (65 °C [149 °F]/90 % RH)	passed	passed
	85/85-Test (3 d, 85 °C [185 °F], 85 % RH)	≥1.0 x 10^{8} Ohm	≥1.0 x 10^{8} Ohm
Thermal shock	IPC-CC-830C, 3.7.2, -65 to +125 °C [-85 to 392 °F]	passed	passed
Comparative tracking index**	DIN EN 60112, on FR4 base material with CTI 250	CTI > 600	CTI 475
Resistance to condensation	based on DIN EN ISO 6270-2 (BIAS 12 V, 40 °C [104 °F], 100% RH)	≥ 1.8 x 10^{8} Ohm	≥ 1 x 10^{8} Ohm
TI (temperature index)	DIN EN 60216 (IEC 60216) Stand 2001, measured on ELPEGUARD® SL 1307 FLZ	≥ 125 °C [257 °F] (20 000 h)* ≥ 150 °C [302 °F] (5 000 h)*	≥ 125 °C [257 °F] (20 000 h)* ≥ 150 °C [302 °F] (5 000 h)*

* can be used in a temperature range of **-65 up to at least +125 °C [-85 up to at least 392 °F]**. 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 these cases, additional pre-trials and tests are required. Limit values for classification were a 25 % loss in mass and/or dielectric strength in comparison to the appropriate reference values.

** CTI, tracking resistance

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“

The gels of the series **ELPEGUARD® SL 1307 FLZ-T** are applied by means of a dispenser.

➔ Because of the thixotropic adjustment avoid vigorous mixing as this can easily trap air which mostly remains in the gel after drying.

After a longer standing time, solvents may separate on the surface of the series **ELPEGUARD® SL 1307 FLZ-T.**

➔ Remove these solvents; do not stir them in. We recommend decantation or using pipettes.

According to our current knowledge, this does not have any effect on the drying behaviour or efficacy of the product.

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 if necessary while observing suitable test conditions on processed products.

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).

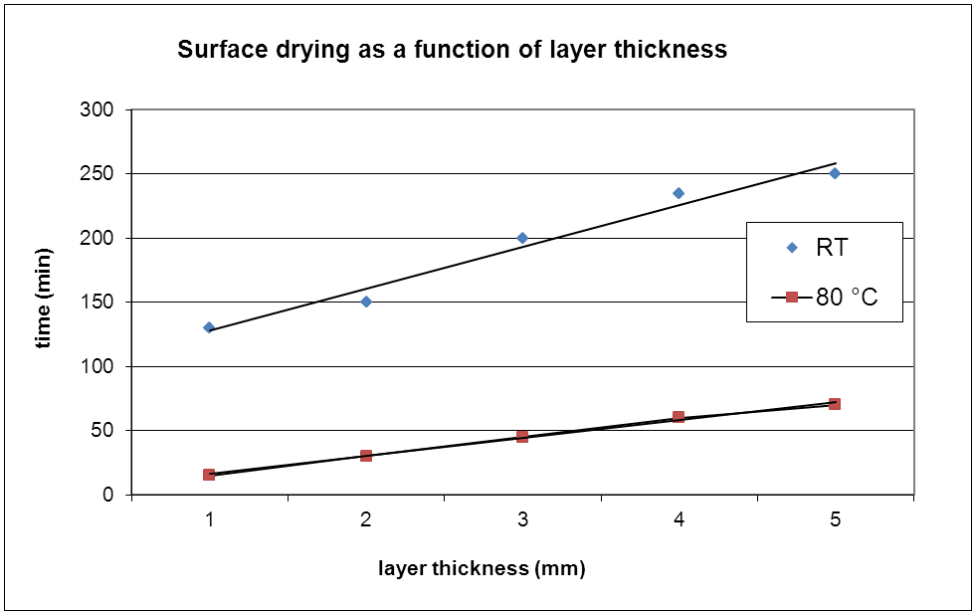
Auxiliary products recommended

- Thinner V 1307 FLZ/2
  for removing the conformal coating in case of repair
- ELPESPEC® cleaning agent R 5817
  for the cleaning of work place and tools/equipment
- ELPESPEC® cleaning agent R 5888
  water-soluble, biodegradable cleaning agent for product carriers and tools

Drying/curing

Drying is finished after complete evaporation of the solvents.

The drying parameters strongly depend on the thickness of the layer applied, besides on the geometry of the assembly, the layout of the components or, in case of oven curing, from the oven loading etc. The following parameters serve as a guideline:



Complete drying is dependent on the layer thickness and may take up to 7 days.

➔ Note that the applied dams may liquefy when dried in an oven, due to warming up.

➔ Adjust a slow temperature ramp to prevent trapping of air bubbles and to remove the solvents completely from the ink.

Packaging

The packing units available are indicated in our offer which we will send you upon request.

Shelf life and storage conditions

Shelf life: In sealed original containers at least 6 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.

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

Lackwerke Peters GmbH & Co. KG
Hooghe Weg 13, 47906 Kempen, Germany
Internet: www.peters.de
E-Mail: peters@peters.de
Phone +49 2152 2009-0
Fax +49 2152 2009-70

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