

Conformal coating

ELPEGUARD® SL 1307 FLZ-T

Base: modified acrylate resins

- colourless transparent, fluorescent
- ultra-thixotropic adjustment of **SL 1307 FLZ**
- for dispenser application
- ideal for building dams to limit the application area of a subsequent conformal coating (dam and fill)
- simple, high-definition application
- can be removed by means of the thinner **V 1307 FLZ/2** for repair purposes

Indices: **SL** = conformal coating
FLZ = fluorescent
T = thixotropic

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Please read this technical report, the corresponding material safety data sheet and the Application Information sheet AI 1/1 (see Item 7) carefully before using the product.

1. General information

The conformal coating **ELPEGUARD® SL 1307 FLZ-T** is a physically drying 1-pack conformal coating based on modified acrylate resins.

All symbols that are used in this technical data sheet and on our containers, such as DIL, are explained on our website www.peters.de in the section “Service – Symbols on labels“.

2. Application

The colourless transparent, fluorescent conformal coating **ELPEGUARD® SL 1307 FLZ-T** is an ultra-thixotropic adjustment of the conformal coating **ELPEGUARD® SL 1307 FLZ/2** 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). The liquid flow after application ensures that component leads are completely surrounded.

The conformal coating **ELPEGUARD® SL 1307 FLZ-T** can be removed with the thinner **V 1307 FLZ/2** for repair purposes and reapplied later.

3. Special notes

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

The conformal coating **ELPEGUARD® SL 1307 FLZ-T** is suitable for use over a permanent temperature load (DIN EN 60216; 20,000 h) from –40 to +125 °C [–40 to +257 °F], although at the lower and upper ends of this range the behaviour and performance of the material might be negatively impaired in some applications. Additional tests are mandatory.

4. Safety recommendations

- Please read the corresponding material safety data sheet where you will find detailed specifications of safety precautions, environmental protection, waste disposal, storage, handling, transport as well as other characteristics.
- When using chemicals, the common precautions should be carefully noted.
- Solvent vapours are heavier than air, thus when planning workplace ventilation arrangements, ensure that extractor units are positioned at worktop height.
- Please also pay attention to national guidelines or directives concerning the handling of flammable liquids as for example the German TRbF (technical regulations for flammable liquids) or European directives.

5. Characteristics

Colour/appearance	colourless transparent, fluorescent
Solids content, ISO 3251, 1 h, 125 °C [257 °F], 1 g weighed quantity	40 ± 2 %
Viscosity* at 20 °C [68 °F], ISO 3219	1 250 ± 500 mPas
Density at 20 °C [68 °F], ISO 2811-1	1.00 ± 0.05 g/cm ³

* measured Haake RS 600, C 35/1°, D = 100 s⁻¹, viscosity measuring unit supplied by:
 Thermo Electron (Karlsruhe) GmbH (formerly Haake-Messtechnik GmbH + Co)
 Dieselstraße 4, 76227 Karlsruhe, Germany
 Phone +49 (0) 721 - 40 94 - 0; Fax +49 (0) 721 - 40 94 - 300
www.thermo.com

6. Properties

The conformal coating **ELPEGUARD® SL 1307 FLZ-T** is distinguished by the following properties:

6.1 General properties

- does not contain substances listed in the RoHS directive 2002/95/EC, EU End-Of-Life Vehicle directive 2000/53/EC and WEEE directive 2002/96/EC
- does not contain substances listed in the United States' EPA 33/50 program (Environmental Protection Agency) which aims for a reduction in the use of certain substances that are hazardous to the environment and health
- due to the ultra-thixotropic adjustment, ideal for dispenser application of dams to limit the application area of a subsequent conformal coating (dam and fill)
- simple, high-definition application
- due to the special solvent composition virtually no risk of incipient dissolution of components and marking inks
- owing to the fluorescent adjustment (Index **FLZ**) the coating can be easily controlled under UV light (black light with a UV-A impulse at 350–375 nm)
- very good ageing and yellowing resistance
- protects against corrosion on account of the good resistance to moisture and condensation
- meets requirements per IPC-CC-830B
- can be completely removed by means of the thinner **V 1307 FLZ/2** for repair purposes.

6.2 Physical and mechanical properties

Property	Test method	Result
Flexibility	IPC-CC-830B, 3.5.5	passed
Glass transition temperature T _g	thermo mechanical analysis (DMA)	approx. -4 °C [24.8°F]
Coefficient of thermal expansion (CTE)	thermo mechanical analysis (TMA)	160 ppm/°C ≤ RT

6.3 Electrical properties

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

Property	Test method	Result
Dielectric strength	IPC-TM-650, 2.5.6.1 DIN EN 60243-1	22 kV/mm
	IPC-CC-830B, 3.6.1	passed
Specific volume resistivity	VDE 0303, part 30/DIN IEC 60093 IPC-TM-650, 2.5.17.1	3.5×10^{12} Ohm x cm
Surface resistance	VDE 0303, part 30/DIN IEC 60093 IPC-TM-650, 2.5.17.1	2.6×10^{12} Ohm
Moisture and insulation resistance	IPC-CC-830B, 3.7.1 (65 °C [149 °F]/90 % r. h.)	passed
	85/85 test; ramp formed storage at high air moisture and high temperature, amongst others 3 days at 85 °C [185 °F] and 85 % r. h.	$>1.0 \times 10^8$ Ohm

Property	Test method	Result
Thermal shock	IPC-CC-830B, 3.7.2	passed
Comparative Tracking Index (CTI, tracking resistance)	DIN EN 60112 on FR4 base material with CTI 250	CTI > 600
Resistance to condensation	based on DIN EN ISO 6270-2 (BIAS 12 V, 40 °C [104 °F], 100% r. h.)	1.8 x 10 ⁸ Ohm
TI (temperature index)	DIN EN 60216 (IEC 60216) issue 2001	125 °C [257 °F] (20 000 h)* 150 °C [302 °F] (5 000 h)*

* Limit values for classification were a 25 % loss in mass and/or dielectric strength in comparison to the appropriate reference values.

7. Processing

→ Please read our **Application Information sheet AI 1/1** "Processing instructions for the conformal coatings of the series' ELPEGUARD® SL 1300 to SL 1309 N and SL 1400" where you will find detailed advice on processing. On our report manual CD and on our website you will find application information sheets in the "Service" section.

The conformal coating **ELPEGUARD® SL 1307 FLZ-T** can only be processed by means of a dispenser.

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

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

→ These solvents must be removed. Do not stir them in.

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. 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/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.

7.1 Adjustment of viscosity

The conformal coating **ELPEGUARD® SL 1307 FLZ-T** must be processed in the condition as supplied.



Do not add solvents or thinners to reduce the viscosity.

7.2 Auxiliary products

- **Thinner V 1307 FLZ/2**

The conformal coating can be removed for repair purposes with thinner **V 1307 FLZ/2**.

- **Cleaning agent R 5817**

For cleaning work place and tools we recommend our cleaning agent **R 5817**.



Do not use the cleaning agent to clean hands. Solvents extract the natural grease from the skin.

A special technical report on the cleaning agent is available upon request. On our report manual CD you will find technical reports in the "Products" section.

8. Drying/curing

Drying can be effected directly after coating at room temperature or in hot-air or IR drying units or in a combination of both. Drying is finished after complete evaporation of the solvents.

→ Observe the advice given in Section 7 of the **Application Information sheet AI 1/1 "Drying/Curing"**.

→ Dry the assembly without the casing to ensure sufficient air circulation.

The following parameters serve as a guideline:

- **Drying at room temperature**

surface is tack-free after approx. 70 min

- **Drying in circulating hot-air units**

surface is tack-free after approx. 15 min at 80 °C [176 °F]

→ Note that the applied dams may liquify when heat is used.

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

→ Consider the temperature resistance of the assembly and the components.

The coated assemblies may only be installed in casings, operated, packed or shipped after they have been allowed to dry completely. The time needed for drying depends on the film thickness applied, the component geometry, population, loading of the oven (when oven drying), etc.

→ **Perform pre-trials to ascertain the drying time.**

→ Check the electrical properties of the coating (see Section 6.3) to ensure drying is completed.

→ In the case of oven drying, wait until the assemblies have cooled down to room temperature before packing.

9. Standard packaging

The conformal coating **ELPEGUARD® SL 1307 FLZ-T** is packed for delivery as follows:

- 70 cartridges of 30 ml
- 35 cartridges of 55 ml
- sample kit consisting of one 55 ml cartridge, appropriate dispensing pistol and four dispensing needles in different grades
- tin of 1 kg.

10. Shelf life and storage conditions

Labels on containers show 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.

11. Further literature/Technical publications

In addition to the recommendations given in this technical report, we can provide technical papers and information sheets written and compiled by members of our staff. Visit our website at <http://www.peters.de> or click on the "Service" section on our report manual CD.

12. Further products for the production of pcbs

We offer a wide range of **etch resists (photoimageable, UV curing, conventional curing), plating resists, solder resists (photoimageable, UV curing, conventional curing) as well as peelable solder masks, marking inks (photoimageable, UV curing, conventional curing), carbon-conductive inks, via hole fillers (purely thermal curing), thick film fillers, plugging pastes, heatsink pastes, special strippers for solder resists and further auxiliary products for screen printing (e. g. cleaning agents, thinners).**

Special technical reports are also available for these products and can be provided on request. On our report manual CD you will find technical reports in the "Products" section.

13. Further products for the electronics/electrical engineering industries

We boast a wide range of **conformal coatings, thick film lacquers, casting compounds, casting resins, electro pastes, insulating lacquers, impregnating varnishes, adhesive lacquers and auxiliary products for electronics.**

Special technical reports are also available for these products and can be provided on request. On our report manual CD you will find technical reports in the "Products" section.

Any questions?

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

The above information as well as advice given by our Application Technology Department whether in verbal or written form or during product evaluations is provided to the best of our knowledge, but must be regarded as non-binding recommendations, also with respect to possible third-party proprietary rights.

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 of our material safety data sheets and technical information sheets, and of our products 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.

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