

ELPEGUARD® conformal coating SL 1347

The conformal coating **ELPEGUARD® SL 1347** is used to protect and insulate electronic assemblies 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 electrochemical corrosion and migration) is possible.

The **ELPEGUARD®** conformal coating **SL 1347** is used primarily in lighting electronics / LED technology to protect LED assemblies.

With this black conformal coating a strong contrast of the LEDs to the non-reflective substrate can be achieved.

- Base: acrylate resins (AR)
- fast physical drying
- corresponds to the best flame class V-0 according to UL 94
- can be removed for repair purposes with thinner **V 1307 FLZ/2** and subsequently re-applied
- very good ageing resistance
- temperature range from -65 up to +125 °C [-85 up to 257 °F]
- good edge coverage due to the slightly thixotropic adjustment
- suitable for coating flexible circuit boards („flex-to-install“, exposure to bend stress limited to the time of assembly)

Characteristics

Colour/appearance	black opaque, mat
Solids content, DIN EN ISO 3251 1 h, 125 °C [257 °F], 1 g weighed quantity	45 ± 2 % by weight
Viscosity* at 20 °C [68 °F], DIN EN ISO 3219	200 ± 50 mPas
Density at 20 °C [68 °F], DIN EN ISO 2811-1	1,21 ± 0,05 g/cm ³

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

Index: SL = conformal coating

Physical and mechanical properties

Property	Test method	Result
Flexibility	IPC-CC-830B, 3.5.5	passed
Glass transition temperature Tg	TMA	≈ 45 °C [113 °F]
Coefficient of thermal expansion (CTE)	TMA	≈ 100 ppm/°C < Tg ≈ 150 ppm/°C > Tg


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	≥ 90 kV/mm
	IPC-CC-830B, 3.6.1	passed
Specific volume resistivity	DIN EN 62631-3-1	≥ 1,2 x 10 ¹⁴ Ohm x cm
Surface resistance	DIN EN 62631-3-2	≥ 2,0 x 10 ¹¹ 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.)	≥ 5,0 x 10 ⁹ Ohm
Thermal shock resistance	IPC-CC-830B, 3.7.2 -65 to +125 °C [-85 to +257 °F]	passed
Hydrolytic stability	IPC-CC-830B, 3.7.3	passed
Comparative Tracking Index (CTI, tracking resistance)	DIN EN 60112 on FR 4 base material with CTI 250 CTI 600	CTI ≥ 300 CTI ≥ 600
TI (temperature index)	DIN EN 60216 (IEC 60216) issue 2001	≥ 125 °C [257 °F] (20 000 h)* ≥ 150 °C [302 °F] (5 000 h)*

* can be used in a temp. range of -65 to at least +125 °C [-85 to +257 °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 such cases, additional pre-trials and tests are required. For determining the TI, a loss in mass and/or dielectric strength of 25 % compared to the initial values has been fixed as a limit, tested on the transparent, unfilled resin system **ELPEGUARD® conformal coating SL 1307 FLZ/2**.

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 1347** can be applied by dipping, brushing or by means of automatic selective coating units.

Due to the thixotropic adjustment, processing is subject to the following restrictions:

Application by film coater is only suitable under certain conditions, as a constant curtain cannot be ensured.

Dipping application is only suitable to a limited extent: If the system is at rest for a longer time, the apparent viscosity is significantly higher than in the moving (stirred) system. Generally, a high layer build-up occurs during dipping.

When processing automatically, regular stirring in the storage container is recommended.



Protect against humidity



Stir before use

For stirring we recommend using mechanical stirring equipment. Our **Technical Information sheet TI 15/10: "Processing of 2-pack systems"** gives detailed advice.

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.

Viscosity adjustment

ELPEGUARD® conformal coating **SL 1347** is adjusted in such a way that processing is normally possible in the condition as supplied. For a process-related reduction of viscosity:

DIL To be diluted with **V 1307 FLZ/2**

→ Please be aware that adding thinner can reduce the thixotropy effect and thus the high edge coverage.

Auxiliary products recommended

- **Thinner V 1307 FLZ/2**
for removing the conformal coating within repair jobs
- [ELPESPEC® cleaning agent R 5817](#)
for the cleaning of work place and tools/equipment

Drying/curing

Drying is finished after complete evaporation of the solvents.

→ Follow the instructions of the [Application information sheet AI 1/1](#), see item “Drying/curing”.

The time required for drying depends, among others, on the geometry of the assemblies, the population and ink layer thickness. In the case of oven drying it depends on the oven loading, etc. The following data serves as a guideline:

Drying (tack-free) based on DIN EN 60464 (IEC 60464)	0,5 – 2,5 h (RT)
	15 – 30 min (80 °C) [176 °F]
Drying time until packaging	1,5 – 4,0 h (RT)
	15 – 30 min (80 °C) [176 °F]

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

peters
Coating Innovations
for Electronics