

# Conformal coating

## ELPEGUARD® SL 1307 FLZ/203

The conformal coating **ELPEGUARD® SL 1307 FLZ/203** is used to protect and insulate electronic assemblies so that they can fulfil higher requirements regarding reliability and service life. Owing to its very good resistance against moisture and condensation, an excellent protection against corrosion (such as electrochemical corrosion and migration) is possible.

This product is a thixotropic adjustment which permits an optimum edge coverage even on sharp-edged component leads for a high resistance in extreme climatic conditions.

- Base: acrylate resins (AR)
- rapid physical drying
- SL 1307 FLZ/& tested by Trace Laboratories-East in acc. with **IPC-CC-830B** and **MIL-I-46058C**
- can be soldered through at solder iron temperature for repair purposes, or removed with thinner **V 1307 FLZ/2**, and reapplied after repair
- used by leading automotive suppliers
- very good ageing and yellowing resistance
- operating temperature range from -65 to at least +125 °C [-85 to 257 °F]
- very good TCT resistance:  
-40 to +150 °C [-40 to 302 °F] and -65 to +125 °C [-85 to +257 °F]
- fungus resistant in acc. with IPC-TM-650, 2.6.1.1. with growth index = 0
- resistant in 4-part noxious gas test acc. to DIN EN 60068-2-60 and BMW GS 95003-4
- suitable for coating flexible circuits ("flex-to-install", exposure to bend stress limited to time of assembly)

### Characteristics

Colour / appearance	colourless, fluorescent
Solids content, DIN EN ISO 3251, 1 h, 125 °C [257 °F], 1 g weighed quantity	30 ± 2 % by weight
Viscosity* at 25 °C [68 °F], DIN EN ISO 3219	200 ± 50 mPas
Density at 20 °C, DIN EN ISO 2811-1	1.01 ± 0.05 g/cm <sup>3</sup>

\* measured with Haake RS 600, C 35/1°, D = 100 s<sup>-1</sup>, viscosity measuring unit supplied by Thermo Fisher Scientific, [www.thermofisher.com](http://www.thermofisher.com)

Indices: SL = conformal coating, FLZ = fluorescent, /203 = from the series /3 having a viscosity of 20 dPas

## Physical and mechanical properties

Property	Test method	Result
Flexibility	IPC-CC-830B, 3.5.5	passed
Glass transition temperature T <sub>g</sub>	TMA	≈ 50 °C [122 °F]
Coefficient of thermal extension (CTE)	TMA	≈ 160 ppm/°C ≤ T <sub>g</sub>

## Electrical properties

Property	Test method	Result
Dielectric strength	IPC-TM-650, 2.5.6.1 DIN EN 60243-1	≥ 60 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	> 5 x 10 <sup>12</sup> Ohm x cm
Surface resistance	VDE 0303, part 30/DIN IEC 60093 IPC-TM-650, 2.5.17.1	> 1 x 10 <sup>14</sup> Ohm
Moisture and insulation resistance	IPC-CC-830B, 3.7.1 (65 °C/90 % R.H.)	passed
	85/85-Test (3 d, 85 °C, 85 % R.H.)	> 1.0 x 10 <sup>9</sup> Ohm
Thermal shock	IPC-CC-830B, 3.7.2 -65 to +125 °C	passed
Hydrolytic stability	IPC-CC-830B, 3.7.3	passed
Comparative tracking index (CTI, tracking resistance)	DIN EN 60112 on FR4 base material with CTI 275 CTI 600	CTI > 600 CTI > 600
Resistance to condensation	based on DIN EN ISO 6270-2 (BIAS 12 V, 40 °C [104 °F], 100% R.H.)	> 1,0 x 10 <sup>9</sup> Ohm
Salt spray test	BMW GS 95003-4	passed
Permittivity ε <sub>r</sub>	VDE 0303, part 4	50 Hz: ≈3.8 1 MHz: ≈3.2
Dielectric loss factor tan δ	VDE 0303, part 4	50 Hz: ≈0.052 1 MHz: ≈0.036
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 temperature range of **-65 up to at least +125 °C** [-85 up to at least 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 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.

## 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
<b>MSDS</b>	The corresponding material safety data sheet contains detailed information and characteristics on safety precautions, environmental protection, transport, storage, handling and waste disposal.
<b>AI</b>	<a href="#">Application information AI 1/1</a> "Processing instructions for ELPEGUARD® conformal coatings (thin film coatings)"
<b>TI</b>	<a href="#">Technical information TI 15/3</a> "Protective measures when using chemicals including lacquers, casting compounds, thinners, cleaning agents"

The conformal coating **ELPEGUARD® SL 1307 FLZ/203** has to be processed in the condition supplied. It can be applied by means of all common spraycoating methods.



Stir before use

Prior to conformal coating, the (highly) thixotropic conformal coatings **ELPEGUARD® SL 1307 FLZ-T** and **SL 1307 FLZ-HT** can be used to easily and precisely build dams around connectors, components and pads, to prevent the penetration and spreading of the subsequently applied conformal coating (dam and fill).

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) and those concerning the handling of flammable liquids or European directives.

### Auxiliary products recommended

- Thinner V 1307 FLZ/2  
for the removal of the coating within repair work
- [Cleaning agent R 5817](#)  
for the cleaning of work place and tools/equipment

## Double coating

The conformal coating **ELPEGUARD® SL 1307 FLZ/203** is suitable for double coating only to a limited extent since it is dissolved by the solvent contained in the ink.

## Drying/curing

Drying is finished after complete evaporation of the solvents. The drying parameters depend, amongst others, on the geometry of the assemblies, the population and layer thickness. In case of oven drying, it depends on the oven loading, etc. The following data serves as a guideline:

	At room temperature (approx. +23 °C [73.4 °F])	In circulating hot air units with exhaust air
Drying (tack-free) in acc. with DIN EN 60464 (IEC 60464)	20-30 min	—
Drying time prior to packaging	approx. 1-2 h	10-20 min at 80 °C [176 °F]

To ensure a bubble-free coating, it is recommended to dry at room temperature.

## 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.