ELPEGUARD®
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TR TECHNICAL REPORT

Dam and cure gels of the series EH 13.401 FLZ-UV

The dam and cure gels of the series **EH13.401 FLZ-UV** are thixotropic or highly/extra thixotropic 1-pack 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).

The slight flow of **EH 13.401 FLZ-UV** after application ensures that component leads are surrounded while underfilling is largely avoided.

EH 13.401 FLZ-UV-HT and **EH 13.401 FLZ-UV-XT** do not flow and may 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 **EH 13.401 FLZ-UV-HT** or **EH 13.401 FLZ-UV-XT.** In practical applications, **EH 13.401 FLZ-UV-HT** has proven to be suitable for most applications and is easier to process; the use of **EH 13.401 FLZ-UV-XT** is only recommended if the thixotropy of **EH 13.401 FLZ-UV-HT** is not sufficient.

- Base: acrylate resins (AR)
- conformal coating can be applied directly after UV curing
- when applying the thick film coatings of the series **ELPEGUARD Twin-Cure® DSL 1600 E-FLZ,** intermediate curing can be dispensed with
- elastic
- UL Recognized Component acc. to UL 94 for **EH 13.401 FLZ-UV-HT:** Non-flammability class HB – Horizontal Burning (UL file no. E80315)

Characteristics

	EH 13.401 FLZ-UV	**EH 13.401 FLZ-UV-HT**	**EH 13.401 FLZ-UV-XT**
Colour/appearance	colourless, fluorescent		
Solids content	100 %	100 %	100 %
Viscosity* at 20 °C [68 °F] DIN EN ISO 3219	3 500 ± 500 mPas	3 500 ± 500 mPas	4 800 ± 600 mPas
Density at 20 °C [68 °F] DIN EN ISO 2811-1	1.01 ± 0.02 g/cm³	1.01 ± 0.02 g/cm³	1.01 ± 0.02 g/cm³

* measured with Haake RS 600, C 20/1°, D = 100 s^{-1}
viscosity measuring unit supplied by Thermo Fisher Scientific, www.thermofisher.com

Indices: EH = electro auxiliary product, FLZ = fluorescent, UV = UV curing, HT = highly thixotropic, XT = extra thixotropic

LP 212604 E-4 / 301046e_002

Physical and mechanical properties

Property	Test method	EH 13.401 FLZ-UV	EH 13.401 FLZ-UV-HT	EH 13.401 FLZ-UV-XT
Flexibility	IPC-CC-830C, 3.5.5	passed	passed	passed
Glass transition temperature Tg	TMA	≈ -50 °C	≈ -50 °C	≈ -50 °C
Coefficient of thermal expansion (CTE)	TMA	≈ 200 ppm/°C > Tg	≈ 175 ppm/°C > Tg	≈ 175 ppm/°C > Tg
Thermal cycling test	100 cycles, –40 °C to +125 °C [-40 °F to 257 °], holding time 30 min, temp. change every 15 s	passed	passed	passed

Electrical properties

Properties	Test method	EH 13.401 FLZ-UV	EH 13.401 FLZ-UV-HT	EH 13.401 FLZ- UV-XT
Dielectric strength	IPC-TM-650, 2.5.6.1 DIN EN 60243-1	≥ 80 kV/mm	≥ 50 kV/mm	≥ 50 kV/mm
	IPC-CC-830C, 3.6.1	passed	passed	passed
Specific volume resistivity	VDE 0303, part 30/ DIN IEC 60093 IPC-TM-650, 2.5.17.1	> 10^{12} Ohm x cm	> 10^{12} Ohm x cm	> 10^{12} Ohm x cm
Surface resistance	VDE 0303, part 30/ DIN IEC 60093 IPC-TM-650, 2.5.17.1	> 10^{13} Ohm	> 10^{13} Ohm	> 10^{13} Ohm
Comparative tracking index (CTI, tracking resistance)	DIN EN 60112 on FR4 base material with CTI of 275	CTI > 600	CTI > 600	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 1/2 ”Processing instructions for the ELPEGUARD® thick film coatings of the series Twin-Cure®“
TI	Technical information TI 15/3 “Protective measures when using chemicals including lacquers, casting compounds, thinners, cleaning agents“

The dam and cure gels of the series **EH 13.401 FLZ-UV** are applied by means of a dispenser.

➔ Apply the dam and cure gels of the series **EH 13.401 FLZ-UV** without generating bubbles and **avoid** to apply them under components where they will not cure completely.

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

Protect from UV light

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 recommendation

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

Auxiliary products recommended

- 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

UV curing can be effected in all common UV curing systems. The dam and cure gels of the series **EH 13.401 FLZ-UV** do not cure in shadow areas.

➔ Cure the dam and cure gels of the series **EH 13.401 FLZ-UV** by applying a UV radiation energy of approx. 4000 mJ/cm² (referring to a pure mercury lamp).

Exceeding the recommended radiation energy (over-radiation) is uncritical and will not cause any loss of elasticity or tension in the ink film.

When combined with **ELPEGUARD**® thick film coatings of the series **Twin-Cure**® **DSL 1600 E-FLZ,** both ink systems may be cured simultaneously. In this case, curing should be effected based on the parameters of the **Twin-Cure**® product.

➔ Upon completion ensure that the dam and cure gels of the series **EH 13.401 FLZ-UV** have completely cured.

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 9 months

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

Protect from UV light

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.

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