ELANTAS
Electrical Insulation

Product Information

Electronic Protection System

Acrylic Thin Film Coating

Bectron® PL 1104

ELANTAS Europe GmbH
Grossmannstr. 105
20539 Hamburg
Germany
Tel +49 40 78946 0
Fax +49 40 78946 276
bectron.elantas.beck@altana.com
www.elantas.com

A member of ALTANA

Product

Bectron® PL 1104 is a transparent conformal coating based on acrylic chemistry. The development of Bectron® PL 1104 meets the latest requirements of electronics, low pin corrosion, excellent edge coverage and fast curing at low temperature. The varnish provides superior performance in dielectric properties and moisture protection under environmental stress.

Bectron® PL 1104 is lead free and satisfies requirements of the ROHS Directive.

Bectron® PL 1104 passes tests according to IPC CC-830-B, MIL I 46058 C and IEC 61086

Application

Coating of electronics:

- PCB's used in automotive and marine navigation
- hybrids
- SMD devices
- discrete components

Main Properties of Bectron PL 1104

Rapid curing at RT & heat accelerated

High volume resistivity including humid conditions

Good dielectric properties in thin films

Resistant to moisture and dust contamination

Withstands weak acids & alkalis

Good adhesion under thermal cycling

Temperature resistance 130°C

Easy rework for repair

Inspection of coated area is possible under UV light

Self-Extinguishing according to UL 94 V0

Processing

The coating varnish Bectron® PL 1104 was developed for automatic selective coating equipment. It can be applied by dipping, spraying (atomisation with air or cross cut nozzle) or brushing. The recommended viscosity for selective coating correlates to 40 seconds in 4-mm-cup (DIN/EN/ISO 2431) at ambient temperatures. Bectron® PL 1104 could be used at temperatures above room temperature in circulating Systems.
For dipping, thinner Bectron® 217 can be added to obtain the recommended viscosity.
A single coating ensures good dielectric insulation and complete protection against humidity.
The surface of the dip tank should be as small as possible. If the tank is not in use it should be kept closed to prevent evaporation of solvents of the varnish surface. In order to achieve satisfactory wetting and fault-free adhesion of the coating varnish it is important to ensure compatibility with the solder resist, paste and flux.

Curing

Air curing 23°C Cured 90 minutes
dust dry 25 minutes

Oven curing up to 80°C within approx. 15 minutes
Time depends on oven air flow & ventilation

Re-work

Should an exchange of components in the assembled printed circuits boards be necessary, the coating can be removed by thinner Bectron® 217 or similar solvents.
Thinner Bectron® 217 can be used as thinner, for cleaning and in the parking cup for robot systems.

Table 1: Typical properties of coating varnish

Property	Condition	Value	Units
Non volatile content , ISO 3251 (Solids Content)	1,5 g, 1 h, 110°C	20.5 ± 1	%
Viscosity - Flow Time , DIN/EN/ISO 2431 cup	4 mm-Cup, 23 °C	40 ± 15 (≈ 50)	Seconds (mPa.s)
Density, DIN 51757	23°C	0.90 ± 0,01	g/cm³
Shelf life	23 °C	12	months
Curing Time	23 °C, dust dry 23 °C, touch dry 23 °C, cured 80 °C, cured	0,42 1,00 2,00 0,25	h h h h

Table 2 - Mechanical properties of cured coating

Property	Condition	Value	Units
Mandrel Bend Test, IEC 60464-2/IPC TM650 2.4.5.1	3 mm, 0.06 mm film	>180	°
Cross Hatch Test, DIN 53151/IPC TM650 2.4.1.6		GT 0	
Thermal Shock, 50 cycles MIL-I-46058C	-65 to 125°C	pass	

Table 3 – Dielectric properties of cured coating

Property	Condition	Value	Units
Permittivity, IEC 60250	23°C 10 KHz	2.7	
Dielectric Dissipation Factor	23°C 10 KHz	0.013	
Dielectric Strength, IEC 60464 part 2/IPC TM 650 2.5.6.1B - After 23 hours water immersion	23°C	>156 >120	KV/mm KV/mm
Volume Resistivity, IEC 60464 part 2/ IPC TM 650 2.5.17 - After 23 hours water immersion	23°C	1×10^{16} 1×10^{16}	Ω • cm Ω • cm
Tracking resistance, IEC 60112		600	CTI

Table 4 - Chemical properties of cured coating

Property	Condition	Value	Units
Water absorption, ISO 62	23°, 24 hours	4.5	mg
Self-Extinguishing according to UL 94	On 1,5 mm FR4 substrate	V 0	

Our advice in application technology given verbally, in writing and by testing corresponds to the best of our knowledge and belief, but is intended as information given without obligo, also with respect to any protective rights held by third parties. It does not relieve you from your own responsibility to check the products for their suitability to the purposes and processes intended. The application, usage and processing of the products are beyond our reasonable control and will completely fall into your scope of responsibility. Should there nevertheless be a case of liability from our side, this will be limited to any damage to the value of the merchandise delivered by us. Naturally, we assume responsibility for the unobjectionable quality of our products, as defined in our General Terms and Conditions