ELANTAS
Electrical Insulation

Product Information

Electronic Protection System

Thin Film Coating - Water based

Bectron® PL 6100

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Product

Bectron® PL 6100 is a water based system which produces a transparent coating varnish based on modified alkyd chemistry.
The development of Bectron® PL 6100 meets the latest requirements of electronics and is fast curing at low temperature.

Bectron® PL 6100 is lead-free and satisfies the requirements of ROHS.

The varnish features superior performance in thermal and dielectric properties even under environmental stress.

Application

Coating of electronics:

- PCB's of all description
- PCBs for automotive and marine navigation
- hybrids
- SMD devices
- discrete components

Main Properties of Bectron PL 6100

- Superior Dielectric properties
- High volume resistivity including humid conditions
- Resistant to water
- Chemically resistant to solvent acids alkalis and other chemicals
- Excellent adhesion to most surfaces
- Room temperature & heat curing
- ROHS Compliant
- Suitable for Inspection of coated areas under UV light

Resistance to Harsh Conditions

Components varnished with Bectron® PL 6100 provide maximum protection against contaminants such as moisture and dust and many chemicals. It is resistant to corrosive gas atmosphere, weak acid fuels, oils, glycols and many other fluids used in automotive and shipping industry.

Bectron® PL 6100 can survive temperature shock and temperature cycling resistance such as -40 to +130°C according IPC-CC830 or IEC 61086.

The cured coating retains good adhesion but remains flexible to withstand distortion of the PCB (Mandrel bend test)

Processing

The coating varnish Bectron® PL 6100 can be applied by dipping, bushing or spraying; either automated robot or manual equipment can be used. The Thinner (pure water) can be added to adjust to the optimal viscosity if necessary.

A single coating ensures good dielectric insulation and complete protection against humidity.

The surface of any dip tank should be as small as possible. If the tank is not in use it should be kept closed to prevent oxidation 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 applied solder resist, paste and flux.

Should an exchange of components in assembled printed circuits boards be necessary the use of Cleaning Agent AC 93 is recommended. This product is especially suited for the partial removal of coating varnishes as well as the cleaning of cured equipment parts.

Curing

Full curing at room temperature (23°C) for 24h

Accelerated curing at 90°C requires 2 hour

Table 1: Typical properties of coating varnish

Property	Conditions	Value	Units
Appearance		Milky, rose colour	
Non volatile content, ISO 3251 (Solids Content)	1,5 g, 2 h, 130°C	40 ± 1	%
Viscosity - Flow Time -, DIN/EN/ISO 2431 cup	4 mm-Cup, 23 °C	53 ± 5 (70)	Seconds (mPa.S)
Density, DIN EN ISO 2811-2	23°C	1.02 ± 0.02	g/cm³
Minimum shelf life	23 °C	6	months
Curing Time Room Temperature	23 °C, dust dry	40 ± 10	min
	23 °C, touch dry	2.5 ± 0.5	hours
	23 °C, cured	24	hours
Curing time (Batch Oven)	90°C, dust dry	15 ± 5	min
	90°C, touch dry	1.1± 0.2	hours
	90°C, cured	2.0 ± 0.5	hours

Table 2 – Thermal Properties of cured coating

Property	Condition	Value	Units

Table 3 - Mechanical properties of cured coating

Property	Condition	Value	Units
Mandrel Bend Test, IEC 60464-31	3 mm, 23°C	180	°

Table 4 – Dielectric properties of cured coating

Property	Condition	Value	Units
Permittivity, IEC 60250	23°C 10 KHz	3.5	
Dielectric Dissipation Factor	23°C 10 KHz		
Dielectric Strength, IEC 60464 part 2	23°C	>130	KV/mm
- After 23 hours water immersion		>110	KV/mm
Volume Resistivity, IEC 60464 part 2	23°C	1×10^{16}	Ω • cm
after water immersion	7 days	1×10^{15}	Ω • cm
Tracking resistance, IEC 60112			

Table 5 - Chemical properties of cured coating

Property	Condition	Value	Units
Water absorption, ISO 62	23°, 24 hours	3.8	%
	100°C, 0.5 hour	2.6	%