ELANTAS
Electrical Insulation

Product Information

Electronic Protection System

Thick Film Coating, thermal cure

Bectron® PK 4364 B

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Product description

Bectron® PK 4364 B is a blue one-component resin system which cures to a strong polyurethane duroplastic with some flexibility. It comprises a liquid polyol system with a dispersed solid encapsulated polyisocyanate and a pigment combination selected to provide controlled rheology. Heating the resin releases the encapsulated polyisocyanate resulting in a polyaddition reaction to give a resistant duroplastic cured material.

In contrast to the usual 2 component resin systems Bectron® PK 4364 B is a ready to use product, distinguished by excellent properties and especially good environmental compatibility.

Areas of application

Bectron® PK 4364 B is used as coating and casting resin for SMT-circuit boards and ceramic substrates, e.g. sensors.

Properties of the cured material

The application of Bectron® PK 4364 B guarantees an even and homogeneous coating of edges and pins. This coating protects the components against mechanical damage and offers very good dielectric properties. The cured material has elasticity and high strength resulting in very good temperature cycling behaviour within the range of -50°C to +125°C.The result is minimal crazing even on thick layered applications
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Bectron® PK 4364 B has excellent chemical resistance to a wide range of aggressive liquids common in automotive applications

Bectron® PK 4364 B also displays very good adhesion to most materials used in electronics. Even after several temperature cycles there is no loss of adhesion mechanical and electrical properties.
Satisfies ROHS Directive

Storage

Containers filled with Bectron® PK 4364 B should be stored at a temperature ≤ 25°C and kept closed to protect the resin against humidity.

During longer storage periods of the containers, some settling of the fillers is likely and it is advisable to homogenise the resin by rotation of the containers prior to filling storage or service tanks.

Processing suggestions

Prior to processing the resin in a storage tank should again be stirred well, e.g. 10 minutes at 20 rpm. Vacuum is not needed, but a nitrogen atmosphere is advisable to protect from humidity.

Bectron® PK 4364 B is best processed with a dispenser or similar equipment under normal pressure. During dispensing, the shear applied to the resin, governed by the diameter, length and applied pressure on the dispensing needle, reduces the viscosity to some degree allowing fast processing and blister-free casting.

Recommended curing temperatures are:

- 60 minutes at 80°C or
- 30 minutes at 90°C

For volume production the application of infrared (IR) radiation leads to a considerable reduction of curing times, e.g. values of <10 minutes are attainable.

To ensure satisfactory adhesion on the PCB surface the following should be checked:

- Use of residue-free flux
- ensure dry surfaces
- Check compatibility of the coating resin with the solder resist and solder paste.

Table 1 - Properties of component as supplied

Property	Condition	Value	Unit
Viscosity, DIN 53019	D=15 s^{-1}, 23°C	5.000 ± 1,000	mPa.s
Density, DIN 51757	23°C	1.40 ± 0.03	g/cm³
Shelf life	23°C	7	months

Table 2 - Gel-time, curing conditions

Property	Value	Value	Unit
Temperature	80	90	°C
Gel-time	5 ± 2		min
Curing	65 ± 5	30 ± 5	min

Table 3 - Thermal properties of cured compound

Property	Condition	Value	Unit
Coefficient of thermal expansion, Beck Test M 56	-20°C to + 90°C	160 x10^{-6}	K^{-1}
Thermal conductivity, DIN 52616	23°C	0,20	W/mK

Table 4 - Mechanical properties of cured compound

Property	Condition	Value	Unit
Glass transition temperature, IEC 61006	-	-50	°C
Shore hardness, ISO 868	23°C	40 ± 10	Shore D

Table 5 - Dielectric properties of cured compound

Property	Condition	Value	Unit
Volume resistivity, IEC 60455 Part 2 After water immersion	Initial value 7d	10^{14} 10^{11}	Ω • cm Ω • cm
Dielectric strength, IEC 60455 Part 2	23°C	22	kV/mm
Tracking, IEC 60112	Solution B	CTI>600 M	

Table 6 - Chemical properties of cured compound

Property	Condition	Value	Unit
Water absorption, ISO 62, Method 1	24h / 23°C	96	mg

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