ELANTAS
Electrical Insulation

Product Information

Electronic Protection System

Thick Film Coating, thermal cure

Bectron® PK 4332

ELANTAS Beck 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 description

Bectron® PK 4332 is a one-component resin system which cures to form a very soft polyurethane duroplastic. It comprises a liquid polyol system with a dispersed solid encapsulated polyisocyanate and a pigment combination selected to provide controlled rheology including excellent thixotropic properties.

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 4332 is ready to use and distinguished by excellent properties and especially good environmental compatibility.

Areas of application

The cured Bectron® PK 4332 is a very soft duroplastic suitable for chemical, shock and vibration protection of delicate components.

Bectron® PK 4332 is therefore most suited for the partial or selective coating of SMD and other components groups on printed circuit boards and ceramic substrates. It is also widely used as a casting resin for electronic components and sensors, including ultrasonic types.

Properties of the cured material

The cured material displays high elasticity and strength producing excellent temperature cycling behaviour within the range of -60°C to +125°C as well as resistance to vibrations. This ensures minimal crazing even in thick layered applications.

Bectron® PK 4332 has excellent chemical resistance to a wide range of aggressive liquids common in automotive applications.

Bectron® PK 4332 has good adhesion on almost all materials used in the field of 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 4332 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 pigments can occur 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 4332 is normally applied with a dispenser or similar equipment. The lower viscosity of Bectron® PK 4332 allows coating of large areas of a PCB by with suitable nozzles and for potting of electronic components and sensors.

Recommended temperature for curing is:

- 80 minutes at 80°C or
- 60 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 <1 minute 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 past

Table 1 - Properties of component as supplied

Property	Condition	Value	Unit
Viscosity, DIN 53019	D=15 s^{-1}, 23°C	5.500 ± 1.000	mPas
Density, DIN EN ISO 2811-2	23°C	1,05 ± 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	12,5 ± 2,5		min
Curing	80 ± 10	60 ± 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	$200 \cdot 10^{-6}$	K^{-1}
Thermal conductivity, DIN 52616	23°C	0,18 ± 0,02	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	35 ± 10	Shore A

Table 5 - Dielectric properties of cured compound

Property	Condition	Value	Unit
Volume resistivity, IEC 60455 part 2 After water immersion	Initial value 7days	10^{13} 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 Beck test 9, Method 1	24h / 23°C	131	mg

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