ELANTAS
Electrical Insulation

Product Information

Electronic Protection System

Polyurethane Potting/Encapsulation Resin

Bectron® PU 4534

Hardener Bectron® PH 4913

Provisional

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Product description

Bectron® PU 4534 polyurethane is a two-component liquid polyurethane system.
After curing with the Hardener Bectron® PH 4913 it produces a soft moulding compound which meets UL 94 V0 standard of flame resistance.

Areas of application

Bectron® PU 4534 is suitable for potting and sealing many types of electronic components such as assembled PCBs.

Bectron® PU 4534 is flame-retardant to meet the standard UL 94 V0.

The physical properties and relatively high thermal resistance make it very suitable also for electronics subject to shock and vibration (e.g. impact drills and automotive electronics) and for sensor technology.

Bectron® PU 4534 satisfies the requirements of the ROHS directive.

Properties

A resilient elastic potting compound for mechanically sensitive electric/electronic components and assembled PCBs

Flame Retardant to UL94 V0

Room Temperature Cured

Soft elastic cured compound

Favourable processing viscosity

ROHS compliant

Good thermal conductivity

Storage

Containers filled with Bectron® PU 4534 should be 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 or effective stirring.

Opened containers of Hardener Bectron® PH 4913 should be used up as soon as possible because moisture in air reduces reactivity.
The Hardener Bectron® PH 4913 might produce crystals at temperatures below 0 °C. Heating the entire contents of the drum for a short time up to 70 °C will recover the complete liquid state.

Processing

Pretreatment: The components to be potted should be clean dry and free from grease. Compatibility between the resin and all materials on a PCB should be checked prior to use.

Preparation: Bectron® PU 4534 contains filler materials which tend to settle, depending on storage temperatures. Therefore, thorough stirring is necessary prior to the mixing with the Hardener.

Mixing Bectron® PU 4534 and the Hardeners Bectron® PH 4913 require the specified mixing ratio. After intensive mixing, the compound is ready for use immediately. During the mixing process make sure stirring introduces as little air as possible.

Application: The processing time is about 40 minutes. Within this time, viscosity will increase; therefore, the prepared volume should be just enough to permit processing in this time. The compound is best processed by potting using two-component metering equipment but manual potting is possible.

Curing: Recommended curing conditions are:

- Room Temperature 16 to 32 hours

Table 1 - Properties of materials as supplied

Property	PU 4534	PH 4913	Units
Colour	Grey	Brown transparent	
Viscosity 25°C DIN 53019	5000 ± 1000	27.5 ± 12.5	mPa.s
Spec. gravity 20°C DIN EN ISO 2811-1	1.58± 0.05	1.21± 0.05	g/cm^3
Shelf Life	6	6	months

Table 2 - Properties of mixture

Mixing Ratio Bectron® PU 4534 : Hardener Bectron® PH 4913 Bectron® PU 4534 : Hardener Bectron® PH 4913	 weight parts volume @20°C	 100:6 12.76 :1	 Parts Parts
Viscosity DIN 53019	25°C	4000 ± 1000	mPa.s
Process time	25°C	40	Min

Table 3 – Thermal Properties of cured compound

Property	Condition	Value	Units
Flammability		UL 94 V0	
Glass transition temperature		-46	°C
Linear coefficient of expansion	above tg	130 x 10^{-6}	K^{-1}
Thermal Range		-40 to +130	°C
Thermal Conductivity DIN 52613		0.70	W/m.K

Table 4 - Mechanical properties of cured compound

Property	Condition	Value	Units
Specific Gravity DIN 16945	20°C	1.57 ± 0.05	g/cm^3
Hardness DIN 53505		56 ± 10	Shore A
Tensile Modulus DIN EN ISO 527-1	23 °C	8	MPa
Tensile Strength DIN EN ISO 527-1	23 °C	0,84	MPa
Tensile Stress at break DIN EN ISO 527-1	23 °C	0,84	MPa
Elongation at break DIN EN ISO 527-1	23 °C	22	%

Table 5 – Dielectric properties of cured compound

Property	Condition	Value	Units
Volume resistivity DIN 60093	23 °C	1.3 x 10^{11}	Ω • cm
Surface Resistivity DIN 60093	20°C		Ω
Dielectric Constant ε_r DIN 53483	20 °C/50 Hz	8,0	
Dielectric loss factor tan-δ	23°C, 50 Hz	0.301	
Dielectric Strength DIN 53481	23 °C	15	kV/mm
Tracking resistance IEC 60112		> 600 B	CTI

Table 6 - Chemical properties of cured compound

Property	Condition	Value	Units
Water absorption DIN 53472	24 hours, 25°C	1,7	%

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