ELANTAS
Electrical Insulation

Product Information

Electronic Protection System

Polyurethane Potting/Encapsulation Resin

Bectron® PU 4533

Hardener Bectron PH 4901

Provisional

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Product description

Bectron® PU 4533 with hardener Bectron® PH 4901 is a 2 part system which is cured to form a resilient but flexible transparent polyurethane. It is a solvent free system with which is non-yellowing in daylight.

It has low viscosity to facilitate many potting and encapsulation applications.

Areas of application

Potting and coating in situations where visibility of the potted material is required, such as optoelectronics and sensor technology. It can also be used as a clear resin for automotive displays.

- Bonded Circuits
- Sensors
- Reed relays
- LED
- Optoelectronics

Properties

Colourless and transparent

Non-yellowing

UV and salt resistant

Resilient flexible potting material

Low viscosity

Good dielectric properties

High surface gloss

ROHS Compliant

Good tear resistance

Good temperature cycling behaviour

Storage

The components of this casting resin system have good storage stability over the shelf life of 4 months, but containers should be kept closed to protect the components against humidity.
Opened containers of the Hardener Bectron® PH 4901 should be used up as soon as possible because moisture in air reduces reactivity.

Processing

Pre-treatment: 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: The polyurethane potting compound contains no filler materials and stirring before use is not generally necessary. Any agitation or transfer to the machine storage tank must be carefully carried out to avoid introduction of air bubbles.

Mixing: Bectron® PU 4533 and the Hardener Bectron® PH 4901 require the specified mixing ratio to be accurate. Excess hardener may lead to bubbles in the cured resin and possible out-gassing after curing. Excess resin will be incompletely cured. Mixing can be by static or dynamic mixers. During the mixing process make sure stirring introduces as little air as possible. Moderate vacuum may be required to remove air bubbles.

Application: The processing time is about 45 minutes. Within this time, viscosity will increase; therefore, the prepared volume for batch production should be just enough to permit processing in this time. The compound is best processed by casting using two-component metering equipment.

Curing: Recommended curing conditions are:

- at RT 24-48 hours
- at 90°C 3-4 hours

When curing at room temperature, moisture must be excluded. Curing does not require pressure assistance. PU compounds cured at Room temperature should not be subjected to mechanical or electrical loads for 5-6 days.

Table 1 - Properties of materials as supplied

Property	**PU 4533**	**PH 4901**	Unit
Colour	Colourless	Colourless	---
Viscosity, 25°C, DIN 53019	800 ± 100	250 ± 150	mPa.s
Density, 20°C, DIN 51757	1.02 ± 0.03	1.09 ± 0.01	g/cm³
Shelf life	4	4	months

Table 2 - Properties of mixture

Property	Condition	Value	Unit
Mixing ratio PU 4533 : PH 4901	-	100 : 13	Parts per weight
Process Time (200g Mixture)	23°C	45 ± 15	Min
Density, DIN 51757	23°C	1,04	g/cm³
Viscosity, DIN 53019	23°C	450 ± 100	mPa.s

Table 3 - Thermal properties of cured compound*

Property	Condition	Value	Unit
Glass transition temperature Beck M 55		-56	°C
Coefficient of thermal expansion Beck M 56	> Tg		K^{-1}
Coefficient of thermal expansion Beck M 56	< Tg		K^{-1}
Temperature Index IEC 60216	3% mass loss	112	°C

Table 4 - mechanical properties of cured compound*

Property	Condition	Value	Unit
Density ISO 2811/2	23°C		g/cm³
Hardness ISO 868	23°C	35 ± 5	Shore A

Table 5- Dielectric properties of cured compound*

Property	Condition	Value	Unit
Volume resistivity IEC 60464-3-2	23°C		Ω • cm
Dielectric Constant IEC 60250	23°C, 300 kHz		---
Dielectric dissipation factor IEC 60250	23°C, 300 kHz		

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