ELANTAS
Electrical Insulation

Product Information

Casting Compound

Bectron®

PU 4537 / PH 4913 100:20

tough-elastic polyurethane, thermal class F (155 °C), recognised acc. to UL 94

Product Description

Bectron® PU 4537 with hardener Bectron® PH 4913 produces hard polyurethane casting compound with higher temperature stability than usual polyurethanes and very good electrical insulation properties.

The system meets the requirement of ROHS.

Areas of Application

Bectron® PU 4537 is suitable for potting devices where high mechanical strength and thermal resistance up to 155°C are required (e.g. temperature probes for control systems, for automotive use and for high power resistors.) Bectron® PU 4537 has a high thermal conductivity and is recognised acc. to UL 94 class V0.

Properties of the Insulating Material

- Hard casting compound
- Recognised acc. UL 94 V0
- High thermal conductivity
- Low shrinkage
- Good dielectric properties
- Good chemical, oil and hydrolysis resistance
- Thermal class F (155 °C)

Processing Methods

Preparation of components: The components to be potted should be clean dry and free from grease. Compatibility between the resin and all materials of the component should be checked prior to use.

Preparation of Material: Bectron® PU 4537 contains filler materials which tend to settle and must be stirred in the original container to restore the original homogenous composition before processing.

Mixing: Bectron® PU 4537 with the Hardener Bectron® PH 4913 should be mixed in the prescribed ratio. During mixing, care should be taken to avoid including air in the mixture.

Application: Bectron® PU 4537 can be processed manually as well as with suitable automatic mixing and dosing equipment.

Curing conditions:

- at Room Temperature 16-24 h
- at 80 °C: 3-4 h

Bectron® PU 4537 cured at room temperature should not be subjected to mechanical or electrical loads or tests for 10-14 days to allow full development of cured properties. To reduce this time, post-curing at 80°C for 12-16 hours is possible.

Storage:

Bectron® PU 4537 and Bectron® PH 4913 can be kept in closed original containers to protect the resin against humidity for at least 6 months. The shelf life is indicated on the label of the containers supplied. Opened containers of the Hardener Bectron® PH 4913 should be used up as soon as possible because moisture in air reduces reactivity.

The hardener Bectron® PH 4913 might form crystals at temperatures below 5 °C. Heating the entire contents of the drum for a short time to 70 °C will recover the complete liquid state.

Preliminary System Specifications

Property	Condition	Resin	Hardener	Units
Viscosity DIN 53019	25°C	9.000 ± 2.000	27.5 ± 12.5	mPa*s
Density DIN EN ISO 2811-2	20°C	1.77 ± 0.05	1.21 ± 0.05	g/cm^3
Shelf Life	23°C	6	6	months

Typical System Characteristics

Property	Condition	Value	Units
Color resin		black	
Color hardener		brown transparent	
Mix Ratio by weight (resin : hardener)		100:20	Parts by weight
Mix Viscosity DIN 53019	23°C	1600	mPa*s
Gel time (200 g mixture)	23°C	appr. 30	min
Solidification time (200 g mixture)	23°C	appr. 80	min

Typical Cured System Characteristic (Post cure before measurement 24h/23°C + 16h/80°C)

Property	Condition	Value	Units
Thermal Conductivity DIN 52613		0,74	W/m*K
Glass transition temperature IEC 61006		30	°C
Thermal index IEC 60216 (tensile strength)	acc. to ISO 527-2 (5A)	179	°C
Linear coefficient of expansion Beck Test M 56	below tg	$1 \cdot 10^{-4}$	K^{-1}
Specific Gravity DIN 16945	20°C	appr. 1,64	g/cm^3
Hardness ISO 868		64	Shore D
Tensile Strength DIN EN ISO 527-1	23 °C	10,4	MPa
Tensile Modulus DIN EN ISO 527-1	23 °C	83,8	MPa
Tensile Stress at break DIN EN ISO 527-1	23 °C	10,3	MPa
Elongation at break DIN EN ISO 527-1	23 °C	12	%
Volume resistivity IEC 60455 Part 2	23°C 53°C	$5{,}9 \times 10^{14}$ $7{,}8 \times 10^{10}$	Ω*cm Ω*cm
Dielectric Constant ε_r IEC 60250	23°C / 50 Hz 23°C / 1K Hz	5,2 4,8	
Dielectric Strength IEC 60250	23°C 50% rh	ca. 30 -	kV/mm
Dissipation factor tan-δ IEC 60250	50Hz, 23°C, 50% rh 1 KHz 23°C, 50% rh 1MHz,23°C, 50% rh	0,0533 0,0341 0,0285	
Tracking resistance IEC 60112		>600 M	CTI
Self-extinguishing properties UL 94	3 mm	class V0	
Water absorption ISO 62	24h RT	0,15	%

Sales office North :

ELANTAS Beck GmbH
Manchester sales office
Keate House
1 Scholar Green Road
Cobra Court
Manchester M32 0TR
United Kingdom
Tel +44 161 848 8411
Fax +44 161 848 0966
sales.elantas.uk@altana.com
www.elantas.com

Sales office Central :

ELANTAS Beck GmbH
Grossmannstr. 105
20539 Hamburg
Germany
Tel +49 40 78946 0
Fax +49 40 78946 349
info.elantas.beck@altana.com
www.elantas.com

Sales office South :

ELANTAS Italia S.r.l.
Strada Antolini n°1 loc. Lemignano
43044 Collecchio (PR)
Italy
Tel +39 0736 3081
Fax +39 0736 402746
info.elantas.italia@altana.com
www.elantas.com

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Producer: ELANTAS Beck GmbH, Großmannstraße 105, D-20539 Hamburg
www.elantas.com