EN

Technical Data Sheet

Bectron®

PU 4526/PH 4912

100:16.6

UL 94 V-0 listed

Polyurethane - Two Components Filled

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Product description

Bectron® PU 4526 is a two component liquid polyurethane system. After curing with the Hardener Bectron® PH 4912 it produces a medium hard molding compound which meets UL 94 V0 standard of flame resistance (File E116643). Bectron® PU 4526 polyurethane meets thermal class B (130 °C).

Areas of application

Bectron® PU 4526 is suitable for potting and sealing many types of electronic components such as assembled PCBs. 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 4526 satisfies the requirements of the ROHS directive.

Processing methods

- Manual and/or automatic casting/potting
- Under vacuum casting/potting
- Room temperature curing

In pre-filled products, before each use, always check for presence of possible sediment. In case, re-homogenize thoroughly. Add the appropriate quantity of hardener to the resin and mix carefully. Avoid excessive air trapping when mixing components. It can be useful to pre-heat components and remove entrapped air from the mixture with a vacuum step before casting.

Curing/Post-curing

For a room temperature curing system, post-curing allows fast stabilization of the material and attainment of the best electrical and mechanical properties. During curing process it is advisable to avoid thermal variations higher than 10°C/hour.

Storage and stability

Refer to the safety data sheet regarding conditions for safe storage. Polyol and the isocyanate based hardener must be stored in the original sealed containers stored in a cool, dry place. The resin and hardener are chemically stable. Avoid storage outside. The hardener may increase its viscosity over storage time without changing final cured system properties. Long storage may cause filler settling. Mix each component before use. Both components are moisture sensitive therefore it is good practice to close the containers immediately after each use. Moisture absorption may cause the expansion of the product during application and/or may cause the hardener to form solid residues. Hardener can crystallize if exposed at low temperatures. To restore the original conditions, heat the material at 70-80°C avoiding local overheating. Before use, the product must be homogenized and cooled down at room temperature.

Handling precautions

Refer to the safety data sheet and comply with regulations relating to industrial health and waste disposal.

Sales specifications

PU 4526

Properties	Conditions	Test Method	Value	M/U
Viscosity	25 °C	IO-10-50 (ISO 3219)	10000 ÷ 18000	mPa·s
Density	25 °C	IO-10-51 (ASTM D 1475)	1,52 ÷ 1,58	g/ml
Gel time	60 °C - 100 ml	IO-10-52b	16 ÷ 26	min

PH 4912

Properties	Conditions	Test Method	Value	M/U
Viscosity	25 °C	IO-10-50 (ISO 3219)	90 ÷ 140	mPa·s

Typical product properties

PU 4526

Properties	Conditions	Test Method	Value	M/U
Colour		--	Black/Neutral	

PH 4912

Properties	Conditions	Test Method	Value	M/U
Colour		--	Amber	
Density	25 °C	IO-10-51 (ASTM D 1475)	1,22 ÷ 1,26	g/ml

Typical system properties

Properties	Conditions	Test Method	Value	M/U
Mix Ratio by weight		--	100 : 16,6	g
Mix Ratio by volume		--	100 : 21,5	ml
Initial mixture viscosity	25 °C	IO-10-50 (ISO 3219)	3000 ÷ 4000	mPa·s
	40 °C		1600 ÷ 2000	mPa·s
Pot life (doubled initial viscosity)	25 °C	IO-10-50 (ISO 3219) (*)	12 ÷ 22	min
	40 °C		10 ÷ 18	min
Gel time	25 °C - 100 ml	IO-10-52a	40 ÷ 60	min
Gel time (manual test)	25 °C - 15 ml - 6 mm	IO-10-73 (*)	2,5 ÷ 4	hrs
Demoulding time	25 °C - 15 ml - 6 mm	(*)	7 ÷ 10	hrs
Post-curing	40 - 60 °C	(**)	10 ÷ 15	hrs
Suggested curing cycle		(**)	24 h RT + 15 h 60 °C	

Typical cured system properties

Properties	Conditions	Test Method	Value	M/U
Density (solid)	25 °C	IO-10-54 (ASTM D 792)	1,47 ÷ 1,53	g/ml
Hardness	25 °C	IO-10-58 (ASTM D 2240)	35 ÷ 45	Shore D/15
Glass Transition (Tg)		IO-10-69 (ASTM D 3418)	5 ÷ 15	°C
Water absorption (24 h RT)		IO-10-70 (ASTM D 570)	0,10 ÷ 0,20	%
Linear thermal exp. (Tg -10 °C)		IO-10-71 (ASTM E 831)	70 ÷ 80	ppm/°C
Linear thermal exp. (Tg +10 °C)		IO-10-71 (ASTM E 831)	140 ÷ 160	ppm/°C
Flammability		IO-10-68 (UL 94 V-0)	5,5	mm
Thermal conductivity	25 °C	IO-10-87 (ASTM C 518)	0,55 ÷ 0,70	W/(m·K)
Operating Temperature Range		--	-30/130 °C	°C

Typical mechanical properties in cured condition

Properties	Conditions	Test Method	Value	M/U
Tensile strength	25 °C	IO-10-63 (ASTM D 638)	4,0 ÷ 5,0	MN/m²
Tensile elastic modulus	25 °C	IO-10-63 (ASTM D 638)	20 ÷ 40	MN/m²
Elongation at break	25 °C	IO-10-63 (ASTM D 638)	50 ÷ 70	%

Typical dielectric properties in cured condition

Properties	Conditions	Test Method	Value	M/U
Dielectric constant	25 °C	IO-10-59 (ASTM D 150)	5,5 ÷ 6,0	
Loss factor	25 °C	IO-10-59 (ASTM D 150)	100 ÷ 130	$x10^{-3}$
Volume resistivity	25 °C	IO-10-60 (ASTM D 257)	$1,0\ x10^{13}$ ÷ $1,0\ x10^{14}$	Ω·cm
Dielectric strength	25 °C - 2 mm	IO-10-61 (ASTM D 149)	22 ÷ 26	kV/mm

Specimens curing cycle = 24 h RT + 15 h 60 °C

IO-00-00 = Elantas Europe internal test method. The correspondent international method is indicated whenever possible; nd = not determined; na = not applicable; RT = TA = laboratory room temperature (23±2°C); conversion units: 1 mPas = 1 cPs 1MN/m2 = 10 kg/cm2 = 1 MPa

(*) for larger quantities pot life is shorter and exothermic peak increases; (**) the brackets mean optionality; (***) the maximum operating temperature is given on the basis of laboratory information available being it function of the curing conditions used and of the type of coupled materials. For further possible information see post-curing paragraph.

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