TECHNICAL DATA SHEET

Resin	Hardener	Mixing ratio by weight
PL 501.01LR	**G 27**	**100:23**

Applications: Encapsulation of: transformers, igniters, submersible pumps, capacitors,

Processing. Manual casting. Undervacuum casting.

Description: Two components polyurethane system filled with no-abrasive fillers. Long pot-life. High impregnation properties. Moderate curing time. The system is available in other versions: MR (medium reactivity) HR (high reactivity). Good electrical and mechanical properties. The system is UL 94 V-0 listed (File E116643).

SYSTEM SPECIFICATIONS

Resin					
Viscosity at:	25°C	IO-10-50	mPas	7.500	11.000
Density at:	25°C	IO-10-51 (ASTM D 1475)	g/ml	1,52	1,56
Gelation time	25°C 100 ml	IO-10-52a (UNI 8701)	min	40	50
Hardener					
Viscosity at:	25°C	IO-10-50	mPas	25	40
NCO groups		IO-10-55	% peso	31,40	32,60

TYPICAL SYSTEM CHARACTERISTICS

Processing Data					
Mixing ratio by weight		each 100 g resin	g	100:23	
Mixing ratio by volume		each 100 ml resin	ml	100:30	
Resin Colour				Yellow	
Hardener Colour				Blue Brown	
Density at: 25°C Hardener		IO-10-51 (ASTM D 1475)	g/ml	1,20	1,22
Pot life at:	25°C (3.000 mPas)	IO-10-50 (*)	min	15	20
	40°C (3.000 mPas)		min	12	18
	25°C (10.000 mPas)		min	35	45
	40°C (10.000 mPas)		min	22	30
	60°C (10.000 mPas)		min	12	18
Initial mixture viscosity at:	25°C	IO-10-50	mPas	800	1.200
	40°C		mPas	500	800
	60°C		mPas	200	300
Gelation time	25°C (15ml;6mm)	IO-10-73 (*)	h	2,5	3,5
Demoulding time	25°C (15ml;6mm)	(*)	h	9	12
Post-curing	60°C	(**)	h	(15)	

Instructions: In pre-filled products it is a good practice to check and carefully rehomogenize the material if some settlement is present. Add the proper quantity of the hardener to the resin, mix carefully. Avoide air trapping. For some applications it can be useful pre-heat the components and/or carry on a dearation step under vacuum of the mixture before casting.

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

Storage: Polyurethane resins and the isocyanate based hardeners can be stored for six months in the original sealed containers kept in a cool and dry place. The hardeners may present an increase in viscosity that do not change the cured system properties. After that period, or if the material has been stocked in anomalous conditions, pre-filled resins can be settled down and their use is possible only if they are accurately re-homogenized with the help, if necessary, of a mechanical mixer. Both components are moisture sensitive therefore it is a good practice to close the vessels immediately after each use. Moisture absorption may cause the expansion of the product during application and/or the hardener may crystallize during storage. The isocyanates may crystallize at low temperatures. To restore the original conditions, heat the material at 70-80°C avoiding local overheating. Before use, the product must be rehomogenized and cooled down at room temperature.

Handling precautions: Refer to the data sheet and comply with regulations relating to industrial health and waste disposal.

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revision n° 03	April	2004/R&S

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TYPICAL CURED SYSTEM PROPERTIES

Properties determined on specimens cured: 24 h TA + 15 h 60°C

Surface				Bright	
Density 25°C		IO-10-54 (ASTM D 792)	g/ml	1,45	1,49
Hardness		IO-10-68 (ASTM D 2240)	Shore D/15	84	87
Glass transition (Tg)		IO-10-69 (ASTM D 3418)	°C	44	48
Water absorption (24h RT)		IO-10-70 (ASTM D 570)	%	0,15	0,25
Water absorption (2h 100°C)		IO-10-70 (ASTM D 570)	%	0,80	1,00
Thermal shock (n°10 cycles passed)		IO-10-67 (inserto metallico Olyphant)	°C	- 45	+ 165
Flammability		IO-10-68 (UL 94 V-0)	mm	6,4	
Max recommended operating temperature		IEC 60085 (***)	°C	130	
Thermal conductivity		IO-10-87 (ASTM C518)	W/(m°K)	0,55	0,65
Dielectric constant at:	25°C	IO-10-59 (ASTM D 150)		4,0	5,0
Loss factor at:	25°C	IO-10-59 (ASTM D 150)	x 10^-3	30	45
Volume resistivity at:	25°C	IO-10-60 (ASTM D 257)	Ohm x cm	1 x 10^15	3 x 10^15
Dielectric strength		IO-10-61 (ASTM D 149)	KV/mm	19	22
Tracking index		IEC 60112	CTI	> 600	
Flexural strength		IO-10-66 (ASTM D 790)	MN/m²	48	60
Strain at break		IO-10-66 (ASTM D 790)	%	2,5	4,5
Flexural elastic modulus		IO-10-66 (ASTM D 790)	MN/m²	3.000	4.000
Tensile strength		IO-10-63 (ASTM D 638)	MN/m²	28	35
Elongation at break		IO-10-63 (ASTM D 638)	%	1,5	2,5

IO-00-00 = Camattini's test method. The correspondent international method is indicated whenever possible.
nd = not determined na = not applicable RT = 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 recommended operating temperature is given on the basis of available laboratory information. Users should make their own assessments to verify the real component thermal class which is the result of the applied construction technology and used protective materials.

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