

EN

Preliminary Technical Data Sheet

ELAN-tim®

CU 16 DV 0072/CU 16 DV 0083

100:8

Polyurethane - Two Components Filled
High Thermal Conductivity - Flexible

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Product description

ELAN-tim® CU 16 DV 0072/CU 16 DV 0083 polyurethane is a two-component liquid polyurethane system. After curing with the Hardener ELAN-tim® CU 16 DV 0083 it produces an encapsulating compound which meets UL 94 V-0 standard of flame resistance. The material is thermally conductive and supports the heat management of devices by effectively dissipating heat and ensuring safe and reliable function.

Areas of application

ELAN-tim® CU 16 DV 0072/CU 16 DV 0083 is suitable for encapsulating of parts with the need of thermal conductivity. ELAN-tim® CU 16 DV 0072/CU 16 DV 0083 can be used for consumer electronics, automotive applications especially power electronics for electric vehicles, industrial applications, telecommunication and lighting assemblies.

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

Polyol and isocyanate based hardener can be stored for one year in the original sealed containers stored in a cool, dry place. Resin and hardener are chemically stable. Avoid storage outside. Hardener may increase its viscosity over storage time without changing final cured system properties. Store between 5 °C and 35 °C. Long storage may cause filler settling. Mix each component before using. Both components are moisture sensitive therefore it is good practice to close the vessels 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 temperature. To restore the original conditions, material can be heated at 70-80 °C avoiding local overheating. Product must be homogenized and cooled down at room temperature before using.

Handling precautions

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

Typical product properties

CU 16 DV 0072

Properties	Conditions	Test Method	Value	M/U
Colour		--	Grey	
Viscosity	25 °C	IO-10-50 (ISO 3219)	130000 ÷ 160000	mPa·s
	40 °C		65000 ÷ 75000	mPa·s
	60 °C		28000 ÷ 38000	mPa·s
Density	25 °C	IO-10-51 (ASTM D 1475)	2,10 ÷ 2,16	g/ml

CU 16 DV 0083

Properties	Conditions	Test Method	Value	M/U
Colour		--	Amber	
Viscosity	25 °C	IO-10-50 (ISO 3219)	15 ÷ 30	mPa·s
Density	25 °C	IO-10-51 (ASTM D 1475)	1,14 ÷ 1,18	g/ml

Typical system properties

Properties	Conditions	Test Method	Value	M/U
Mix Ratio by weight		--	100 : 8	g
Mix Ratio by volume		--	100 : 15	ml
Initial mixture viscosity	25 °C	IO-10-50 (ISO 3219)	8500 ÷ 9500	mPa·s
	40 °C		4000 ÷ 5000	mPa·s
	60 °C		2000 ÷ 3000	mPa·s
Pot life	25 °C - 10000 mPa·s	IO-10-50 (ISO 3219)	10 ÷ 20	min
	40 °C - 10000 mPa·s		14 ÷ 24	min
	60 °C - 10000 mPa·s		10 ÷ 18	min
Gel time	25 °C - 100 ml	IO-10-52a	80 ÷ 100	min
Gel time	40 °C - 100 ml	IO-10-52b	55 ÷ 70	min
	60 °C - 100 ml		35 ÷ 45	min
Gel time (manual test)	25 °C - 30 ml - 6 mm	IO-10-73 (*)	4 ÷ 5	hrs
Post-curing	60 °C	(**)	15	hrs
Suggested curing cycles		(**)	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)	2,00 ÷ 2,06	g/ml
Hardness	25 °C	IO-10-58 (ASTM D 2240)	85 ÷ 95	Shore A/15
Hardness	25 °C	IO-10-58 (ASTM D 2240)	30 ÷ 40	Shore D/15
Glass Transition (Tg)		IO-10-69 (ASTM D 3418)	-55 ÷ -45	°C
Water absorption (24 h RT)		IO-10-70 (ASTM D 570)	0,20 ÷ 0,30	%
Water absorption (2 h 100 °C)		IO-10-70 (ASTM D 570)	0,70 ÷ 0,80	%
Linear thermal exp. (Tg +10 °C)		IO-10-71 (ASTM E 831)	100 ÷ 130	ppm/°C
Flammability		IO-10-68 (V-0)	4,0	mm
Thermal conductivity	25 °C	IO-10-87 (ASTM C 518)	1,60 ÷ 1,70	W/(m·K)
Thermal shock (n° 10 cycles passed)		IO-10-67 (Olyphant washer)	nd	°C
Max recommended operating temperature		IEC 60085 (***)	130	°C

Typical mechanical properties in cured condition

Properties	Conditions	Test Method	Value	M/U
Tensile strength	25 °C	IO-10-63 (ASTM D 638)	2,0 ÷ 2,4	MN/m²
Nominal strain at break	25 °C	IO-10-63 (ASTM D 638)	5 ÷ 10	%

Typical dielectric properties in cured condition

Properties	Conditions	Test Method	Value	M/U
Tracking Index		IEC 60112	>600	CTI
Dielectric constant	25 °C	IO-10-59 (ASTM D 150)	7,5 ÷ 8,5	
Loss factor	25 °C	IO-10-59 (ASTM D 150)	35 ÷ 45	x10 ⁻³
Volume resistivity	25 °C	IO-10-60 (ASTM D 257)	5x10 ¹² ÷ 5x10 ¹³	Ω·cm
Dielectric strength	25 °C - 2 mm	IO-10-61 (ASTM D 149)	19 ÷ 21	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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