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Product Information

Elan-tech®
EC 180/W 340 100:36

2-components high thermal resistance epoxy system

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Resin	Hardener	Mixing ratio by weight
EC 180	**W 340**	**100:36**

Application: Moulds for pre-pregs. Medium and large size heat resistant moulds up to 180°C. Composite parts thermal resistant.

Processing: Impregnation manual by roll, hand lay-up application with vacuum bag for glass, carbon or kevlar fibers. The post-curing in temperature is necessary to obtain the thermal resistance indicated. The system cured at RT remain brittle and is necessary the first curing of 16 hrs at 40°C before demoulding the model.

Description: Un-filled epoxy system. High thermal resistance. The system is RoHS compliant (European directive 2002/95/EC) and the new RoHS Directive 2011/65/EU (RoHS 2) entered into force on 21 July 2011 and requires Member States to transpose the provisions into their respective national laws by 2 January 2013.

SYSTEM SPECIFICATIONS

Resin					
Viscosity at:	25°C	IO-10-50 (ISO3219)	mPas	3.000	4.500
FTIR spectrum (correlation factor)		IO-10-75		0,990	1,000
Hardener					
Viscosity at:	25°C	IO-10-50 (ISO3219)	mPas	45	55

TYPICAL SYSTEM CHARACTERISTICS

Processing Data					
Colour resin				Amber	
Colour hardener				Pale/yellow	
Mixing ratio by weight		for 100 g resin	g	100:36	
Mixing ratio by volume		for 100 ml resin	ml	100:46	
Viscosity at: 25°C Hardener		IO-10-50 (ISO3219)	mPas	45	55
Density 25°C Resin		IO-10-51 (ASTM D 1475)	g/ml	1,17	1,21
Density 25°C Hardener		IO-10-51 (ASTM D 1475)	g/ml	0,92	0,94
Pot life	25°C (40mm;100ml)	IO-10-53 (*)	min	220	260
Exothermic peak	25°C (40mm;100ml)	IO-10-53 (*)	°C	130	140
Initial mixture viscosity at:	25°C	IO-10-50 (ISO3219)	mPas	800	1.100
	40°C		mPas	200	300
Gelation time	25°C (1mm)	IO-10-73 (*)	h	7	9
	40°C (1mm)		h	4	6
Demoulding time	40°C (1mm)	(*)	h	14	18
Suggested curing cycles		(**)	16 h at 40°C + 10°C/h ramp + 2 h at 160°C		

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TYPICAL CURED SYSTEM PROPERTIES

Properties determined on specimens cured: 16 h at 40°C + 10°C/h ramp + 2 h at 160°C

Density 25°C		IO-10-54 (ASTM D 792)	g/ml	1,14	1,18
Hardness 25°C		IO-10-58 (ASTM D 2240)	Shore D/15	91	95
Glass transition (Tg)	16 hrs at 40°C	IO-10-69 (ASTM D 3418)	°C	72	78
	16 hrs at 60°C			90	96
	16 hrs at 40°C + 3hrs at 160°C			182	188
Linear thermal expansion (Tg -10°C)		IO-10-71 (ASTM E 831)	10^-6/°C	50	58
Linear thermal expansion (Tg +10°C)		IO-10-71 (ASTM E 831)	10^-6/°C	130	150
Flexural strength		IO-10-66 (ASTM D 790)	MN/m²	106	120
Strain at break		IO-10-66 (ASTM D 790)	%	3,0	5,0
Flexural elastic modulus		IO-10-66 (ASTM D 790)	MN/m²	3.200	3.500
Tensile strength		IO-10-63 (ASTM D 638)	MN/m²	54	60
Elongation at break		IO-10-63 (ASTM D 638)	%	2,5	4,0

IO-00-00 = ELANTAS Europe's test method. The corresponding 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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Instructions: Verify and when necessary, homogenize the components before use. Add the appropriate quantity of hardener to the resin, mix carefully. Avoid air trapping. Apply. For the surface preparation (mould or model) refer to the release agents data sheet.

Curing/Post-curing: Prior to demould from the model cure the material at least for 16-12 hrs at 35-40°C. Post curing is always advisable for RT curing systems in order to stabilize the component and to reach the best properties. It is necessary when the component works at a high temperature. Post cure the tool as stated in the table, increasing gradually 10°C/hour. Cool it down slowly. The rate of heating and the indicated post-curing time are referred to standard specimen size. Users should evaluate the best conditions of curing or post-curing depending on the component size and shape. For big size components decrease the thermal gradient and increase the post-curing time.

Storage: Epoxy resins and their hardeners can be stored respectively for one year and two years in the original sealed containers stored in a cool, dry place. Resin storage must be done at 10-20°C. The hardeners are moisture sensitive therefore it is good practice to close the container immediately after each use. The hardeners may crystallize at low temperatures. To restore the original conditions, heat the material at 40-50°C avoiding local overheating. Before use the product must be cooled down at room temperature.

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

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Mixed viscosity of the system EC 180/W 340
at different temperatures