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Product Information

Elan-tech®

EC 152/W 152.1 HR 100:30

EC 152/W 152 XLR 100:30

Wet lay-up two-components epoxy system

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PRELIMINARY PRODUCT INFORMATION

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Resin	Hardeners	Mixing ratio by weight
EC 152	**W 152.1 HR**	**100:30**
	W 152 XLR	**100:30**

Application: High performance composite parts. Manufacturing of structural parts of boats, model aircrafts, racing vehicles, sport components.

Processing: Wet lay-up at atmospheric pressure of glass tissue, carbon tissue or kevlar fiber. Room temperature curing. The hardeners can be blended in all proportions to adjust the reactivity of the system to the specific needs.
W 152.1 HR: high reactivity for small components or as accelerator for other hardeners.
W 152 XLR: low reactivity for large size components.

Description: High modulus un-filled epoxy system. Curing at room temperature plus the post-curing at a moderate temperature (50-60°C) allows to obtain high performances. Further stabilization at higher temperatures improves the thermal resistance of the components. 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.

TYPICAL SYSTEM CHARACTERISTICS

Resin

Resin Colour			Pale/yellow
Viscosity resin 25°C	IO-10-50 (ISO3219)	mPas	1.200 1.800
Density resin 25°C	IO-10-51 (ASTM D 1475)	g/ml	1,13 1,17

Hardeners

			W 152.1 HR	W 152 XLR
Hardener Colour			Pale/yellow	Various colours
Viscosity at: 25°C	IO-10-50 (ISO3219)	mPas	30 80	10 30
Density 25°C	IO-10-51 (ASTM D 1475)	g/ml	1,02 1,06	0,90 0,95

Processing Data

Mixing ratio by weight		for 100 g resin	g	100:30	100:30
Mixing ratio by volume		for 100 ml resin	ml	100:33	100:37
Pot life 25°C	(50mm;200ml)	IO-10-53 (*)	min	10 14	110 130
Exothermic peak	(50mm;200ml)	IO-10-53 (*)	°C	230 250	160 180
Initial mixture viscosity at:	15°C	IO-10-50 (ISO3219)	mPas	1.600 2.600	800 1.100
	25°C		mPas	600 900	300 400
	35°C		mPas	300 400	100 200
Gelation time	15°C tack start (1mm)	IO-10-73 (*)	h	4,0 5,0	10,0 11,0
	15°C tack end (1mm)		h	6,0 7,0	12,0 13,0
	25°C tack start (1mm)		h	1,5 2,5	6,0 7,0
	25°C tack end (1mm)		h	2,5 3,5	8,0 9,0
Suggested curing cycles		(**)		24hrs at r.T. + 16hrs at 50°C	24 hrs at r.T. + 16hrs at 50°C

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TYPICAL CURED SYSTEM PROPERTIES

Properties determined on specimens cured: 24hrs at r.T. + 16hrs at 50°C

				W 152.1 HR		W 152 XLR	
Density 25°C		IO-10-54 (ASTM D 792)	g/ml	1,14	1,18	1,13	1,17
Hardness 25°C		IO-10-58 (ASTM D 2240)	Shore D/15	84	88	84	88
Glass transition (Tg)	16 hrs at 50°C	IO-10-69 (ASTM D 3418)	°C	76	82	76	82
	16 hrs at 80°C	IO-10-69 (ASTM D 3418)	°C	89	95	85	91
Maximum Tg	16hrs at 90°C	IO-10-69 (ASTM D 3418)	°C	90	96	90	96
Water absorption (24h RT)		IO-10-70 (ASTM D 570)	%	0,1	0,2	0,1	0,2
Water absorption (2h 100°C)		IO-10-70 (ASTM D 570)	%	0,3	0,4	0,3	0,4
Flexural strength		IO-10-66 (ASTM D 790)	MN/m²	112	126	110	120
Maximum strain		IO-10-66 (ASTM D 790)	%	4,5	6,5	4,0	6,0
Strain at break		IO-10-66 (ASTM D 790)	%	8	11	7,0	11,0
Flexural elastic modulus		IO-10-66 (ASTM D 790)	MN/m²	3.100	3.500	3.000	3.400
Tensile strength		IO-10-63 (ASTM D 638)	MN/m²	78	88	66	74
Elongation at break		IO-10-63 (ASTM D 638)	%	5,5	8,5	4,5	7,5
Compressive strength		IO-10-72 (ASTM D 695)	MN/m²	84	94	80	90

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

Curing/Post-curing: Post curing is always advisable for RT curing systems in order to stabilize the component and to reach the best mechanical properties. Post cure the tool increasing gradually 10°C/hour. 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. In case of thin layer applications and composites, post cure on the jig.

Storage: Epoxy resins and their hardeners can be stored for two years in the original sealed containers stored in a cool, dry place. The hardeners are moisture sensitive therefore it is good practice to close the container immediately after each use.

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

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