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Product Information

Elan-tech®
AS 90 /AW 90 FAST 100:45

Kit in cartucce ADH 90.90
Resilient structural adhesive

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	Resin	Hardener	Mixing ratio by weight
Structural adhesive	**AS 90**	**AW 90 FAST**	**100:45**
			Mixing ratio by volume
Cartridges kit		**ADH 90.90**	**100:50**

Application: Structural resilient bonding. Structural adhesive for nautical application. Assembly of composite materials, metals and sport components.

Processing: Spatula application with mixing/dispensing devices. Room temperature or hot curing. To obtain the maximum performance of the bonding, the adhesive must be applied and the joint assembled in the shortest possible time. Available also in cartridges.

Description: Two components, modified and thixotropic epoxy system. Easy mixing ratio 2:1 by volume. Solvent free. The product can be applied on a vertical thickness up to 10 mm. Good thermal resistance. High toughness. The system cured also at lower temperature than 20°C. 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-10-95 (ISO3219)	mPas	350.000	450.000
Hardener					
Viscosity at:	25°C	IO-10-95 (ISO3219)	mPas	90.000	140.000
Pot life	25°C	IO-10-53 (*)	min	9	13

TYPICAL SYSTEM CHARACTERISTICS

Processing Data				
Colour resin				Milky
Colour hardener				Neutral/Black
Mixing ratio by weight	for 100 g resin		g	100:45
Mixing ratio by volume	for 100 ml resin		ml	100:50
Density 25°C Resin	IO-10-51 (ASTM D 1475)		g/ml	1,16 1,20
Density 25°C Hardener	IO-10-51 (ASTM D 1475)		g/ml	0,96 1,00
Exothermic peak 25°C (40mm;100ml)	IO-10-53 (*)		°C	150 170
Initial mixture viscosity at: 25°C	IO-10-50 (ISO3219)		mPas	75.000 115.000
Gelation time 25°C (1mm)	IO-10-88 (ASTM D5895-03)		h	1 2
Setting time 25°C 0,1 mm	(*)		h	2 3
Suggested curing cycles	(**)			5 h 70°C

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TYPICAL CURED SYSTEM PROPERTIES

Properties determined on specimens cured: 5 h 70°C (unless otherwise specified)

Colour				Pale yellow	
Density 25°C		IO-10-54 (ASTM D 792)	g/ml	1,08	1,12
Hardness 25°C		IO-10-58 (ASTM D 2240)	Shore D/15	73	77
Glass transition (Tg)	15h 15°C	IO-10-69 (ASTM D 3418)	°C	27	33
	24h RT		°C	39	45
	7days RT		°C	49	55
	5h 70°C		°C	65	75
Max recommended operating temperature		(***)	°C	60 - 70	
Shear strength by tension:					
- Inox steel AISI 316 cured 5h RT (tested RT)		IO-10-80 (ASTM D 1002)	MPa	3,0	4,0
- Inox steel AISI 316 cured 15h 15°C (tested RT)			MPa	13,5	16,5
- Inox steel AISI 316 cured 24h RT (tested RT)			MPa	17,0	21,0
- Inox steel AISI 316 cured 7 days RT (tested RT)			MPa	21,5	26,0
- Inox steel AISI 316 cured 5h 70°C (tested RT)			MPa	25,5	31,0
- Inox steel AISI 316 cured 5h 70°C (tested 60°C)			MPa	7,0	9,0
- Inox steel AISI 316 cured 5h 70°C (tested 80°C)			MPa	3,5	4,0
- Aluminium cured 5h 70°C (tested RT)			MPa	23	28
- Aluminium cured 5h 70°C (tested -40°C)			MPa	19	23
Flexural strength		IO-10-66 (ASTM D 790)	MN/m²	60	70
Strain at break		IO-10-66 (ASTM D 790)	%	4,5	7,5
Flexural elastic modulus		IO-10-66 (ASTM D 790)	MN/m²	1.900	2.300
Tensile strength		IO-10-63 (ASTM D 638)	MN/m²	30	40
Elongation at break		IO-10-63 (ASTM D 638)	%	2,5	4,0
Peeling strength:					
- Aluminium 5h at 70°C		ASTM D 1876	N/cm	16	24

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: Prepare the surfaces to be bonded by removing moisture, dust, dirt and loose parts. For metals is normally enough a mechanical abrasion or sand blasting followed by degreasing with acetone. When gluing composite parts it is not required any specific surface treating other cleaning with acetone. In case of plastic substrate it is important to check its solvent resistance before cleaning. Generally is suggested a light sanding followed by cleaning with alcohol. Plasma or corona treatment will improve adhesion and consequently bonding strength: it's recommended in case of specific needs. Add the appropriate amount of hardener into the resin and mix carefully using a slow speed stirrer or by hand with a spatula. Apply the adhesive in a homogeneous thickness maintaining a uniform contact pressure on the joint. Before setting, the adhesive is moisture and carbon dioxide: once applied cover the joined parts as soon as possible or, better, hot cure if possible. Further general information are available in the brochure "Elantech Adhesive & Sealants".

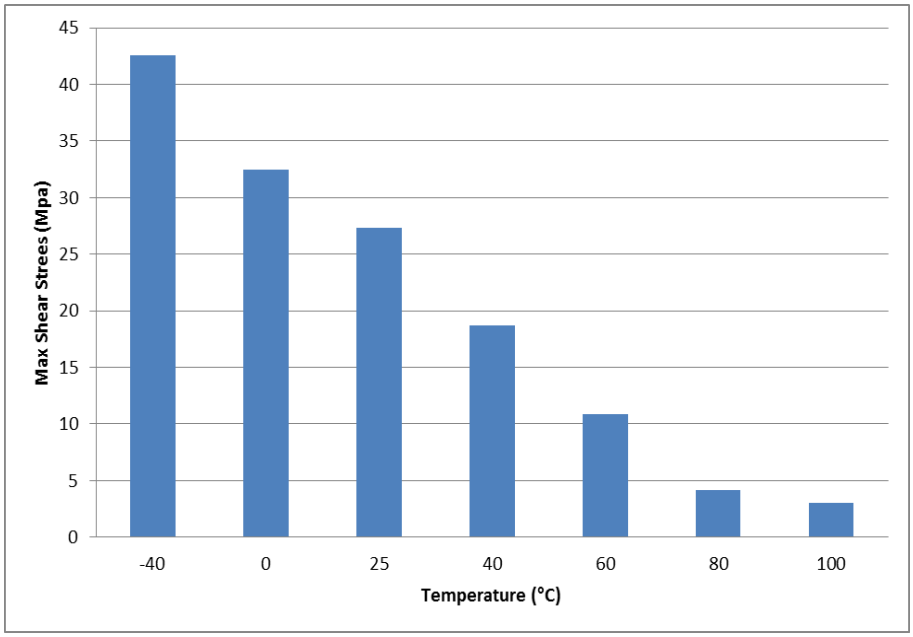
Curing/Post-curing: Post curing is always advisable for RT curing systems in order to stabilize the component and to reach the best properties. It is necessary when the component works at a high temperature.

Storage: Epoxy resins and their hardeners can be stored for three 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.

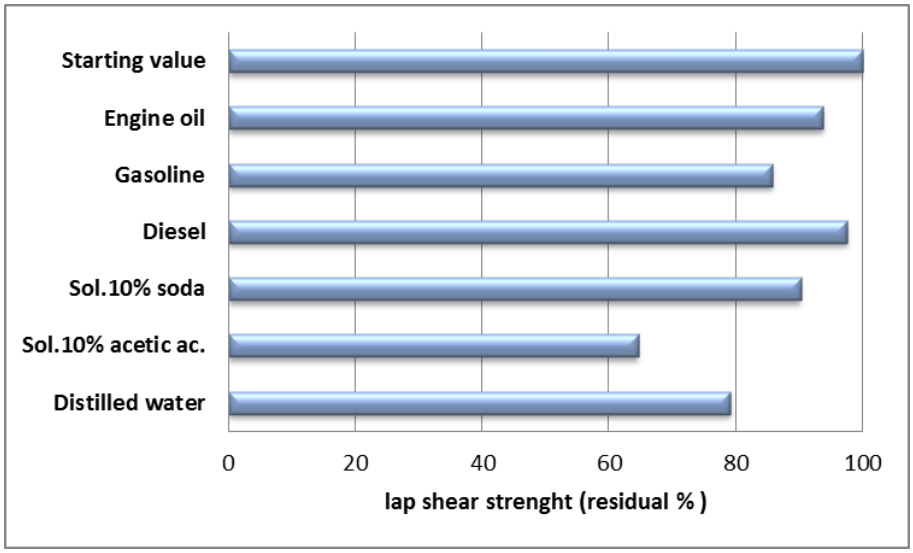
emission date:	March	2013
revision n° 01	March	2016

Dependence from temperature of the lap shear strength (ASTM D1002)



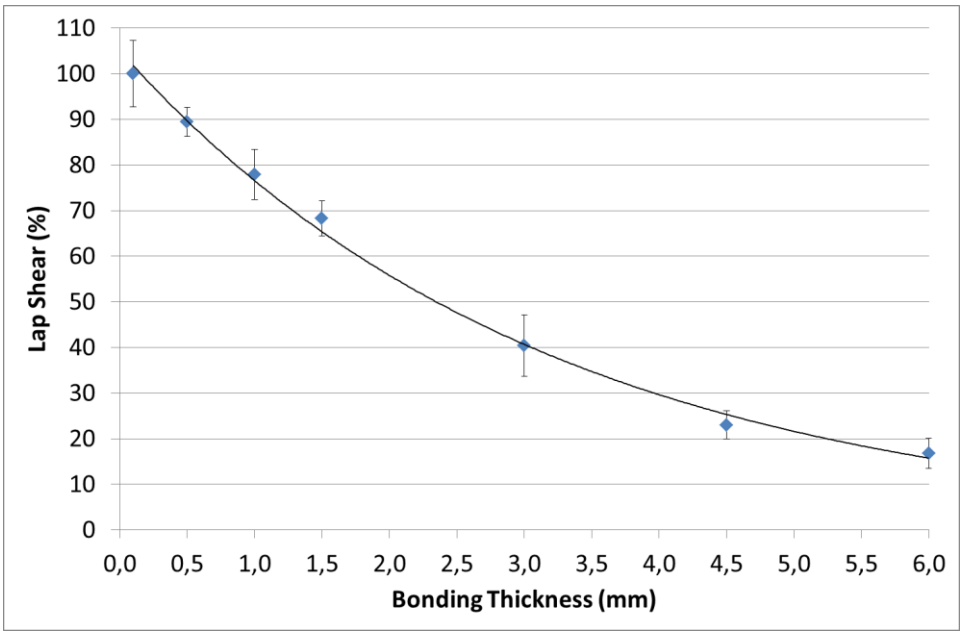
Support: stainless steel
Curing cycle: 5hrs at 70°C

Lap shear strength after immersion in different media (ASTM D1002)



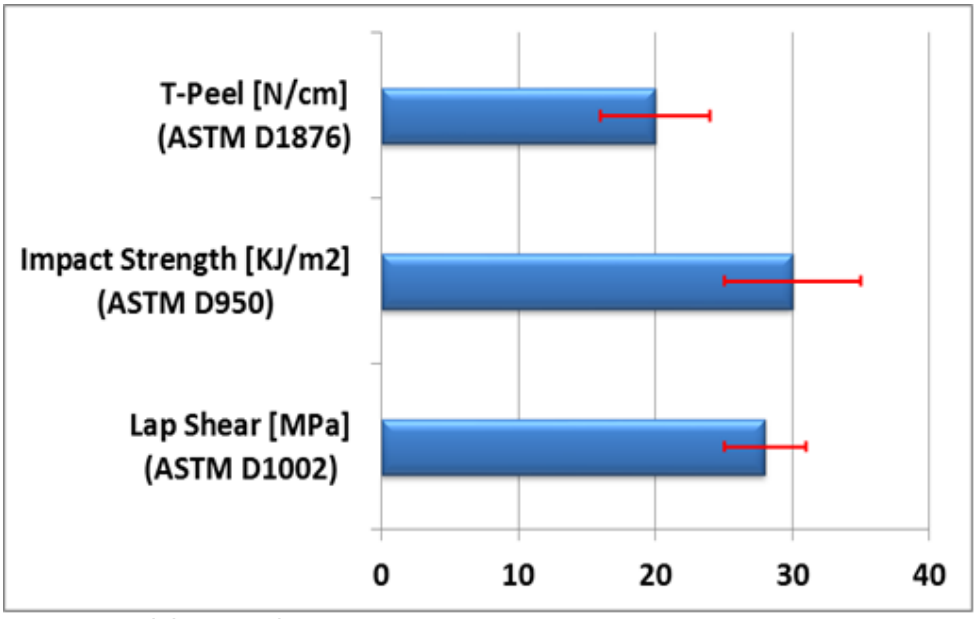
Support: stainless steel
Curing cycle: 5hrs at 70°C
The lap shear strength was determined after immersion for 30 days at 23±2 °C.

Influence of the bonding thickness on the adhesion shear (ASTM D1002)



Support: stainless steel
Curing cycle: 5hrs at 70°C

Adhesion properties of the system



Support: stainless steel
Curing cycle: 5hrs at 70°C