

Advanced Materials

Araldite[®] LY 8615* / Aradur[®] 8615* / Hardener XB 5173*

HIGH TEMPERATURE EPOXY SYSTEM

Araldite[®] LY 8615 (epoxy resin) Aradur[®] 8615 (amine hardener) Hardener XB 5173 (amine hardener)

APPLICATIONS	Industrial composites			
PROPERTIES	Araldite [®] LY 8615 / Aradur [®] 8615 or Hardener XB 5173 epoxy system is a two- component, low-viscosity material developed for production of advanced composite parts and moulds using vacuum-assisted resin transfer molding. Composites produced with Araldite [®] LY 8615 / Aradur [®] 8615 / XB 5173 epoxy system can achieve a glass transition temperature of over 180 °C following appropriate postcure and provide a long pot life.			
PROCESSING	Resin Transfer Moulding (RTM, SCRIMP, VARTM)			
KEY DATA	Araldite [®] LY 8615			
	Aspect (visual)	Liquid, brown		
	Viscosity at 25 ℃ (ASTM D-792)	1300 - 1800	[mPa s	
	Density at 25 ℃ (ASTM D-2393)	1.19 - 1.25	[g/cm ³]	
	Flash point (DIN 51758)	> 100	[°C]	
	Aradur [®] 8615			
	Aspect (visual)	clear liquidLiquid		
	Viscosity at 25 ℃ (ISO 12058-1)	70 - 120	[mPa s	
	Density at 25 ℃ (ISO 1675)	0,93 - 0,95	[g/cm ³]	
	Flash point (DIN 51758)	139-142 [°		
	Amine value (ISO 9702)	8.30 - 8.50**	[Eq/kg]	
	Hardener XB 5173			
	Aspect (visual) clear liquid, pale yello		w	
STORAGE	Viscosity at 25 ℃ (ISO 12058-1B)	10 - 40	[mPa s	
	Density at 25 °C (ISO 1675)	0,91 - 1,93	[g/cm ³]	
	Flash point (DIN 51758)	108-112	[°C]	
	Amine value (ISO 9702)	10.70 - 11.0**	[Eq/kg]	
	Provided that Araldite [®] LY 8615 / Aradur [®] 8615 or Hardener XB 5173 are stored in dry place in their original, properly closed containers at the above mentioned storag temperatures they will have the shelf lives indicated on the labels.			
	Partly emptied containers should be close	ed immediately after use.		

** Specified data are on a regular basis analysed. Data which is described in this document as 'typical' is not analysed on a regular basis and is given for information purposes only. Data values are not guaranteed or warranted unless if specifically mentioned.

In addition to the brand name product denomination may show different appendices, which allows us to differentiate between our production sites: e.g, BD = Germany, US = United States, IN = India, CI = China, etc.. These appendices are in use on packaging, transport and invoicing documents. Generally the same specifications apply for all versions. Please address any additional need for clarification to the appropriate Huntsman contact.

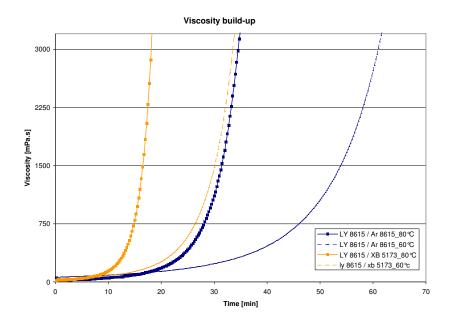
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TYPICAL SYSTEM DATA

PROCESSING DATA				
MIX RATIO	<i>Components</i> Araldite [®] LY 8615 Aradur [®] 8615		Parts by weight 100 50	Parts by volume 100 65
	Araldite [®] LY 8615 Hardener XB 5173		100 38	100 50
	We recommend that the compo prevent mixing inaccuracies which components should be mixed thou the side and the bottom of the vess When processing large quantitie exothermic reaction. It is advisa containers.	can affect the oughly to en sel are incorport sof mixture	he properties of the n hsure homogeneity. I porated into the mixir re the pot life will	natrix system. The It is important that ng process. decrease due to
INITIAL MIX		[°C]		[mPa s]
VISCOSITY (HOEPPLER,	Araldite [®] LY 8615 / Aradur [®] 8615 Araldite [®] LY 8615 / XB 5173	at 25 at 25		480 - 580 270 - 370
ISO 9371B)	Araldite [®] LY 8615 / Aradur [®] 8615 Araldite [®] LY 8615 / XB 5173	at 40 at 40		80 - 160 60 - 140
	Araldite [®] LY 8615 / Aradur [®] 8615 Araldite [®] LY 8615 / XB 5173	at 60 at 60		30 - 70 20 - 60
POT LIFE		[°C]		[min]
(TECAM, 23℃, <u>65 % RH)</u>	Araldite [®] LY 8615 / Aradur [®] 8615 Araldite [®] LY 8615 / XB 5173	at 23 at 23		850 - 980 300 - 400
GEL TIME (HOT PLATE)	Araldite [®] LY 8615 / Aradur [®] 8615	<i>(℃)</i> at 80 at 100		<i>[min]</i> 34 - 38 16 - 20
		at 120 at 140		7 -11 3 - 5
	Araldite [®] LY 8615 / XB 5173	at 80 at 100 at 120 at 140		24 - 28 8 - 12 2 - 6 1 - 3
VISCOSITY		[°C]	[mPa s]	[min]
BUILD-UP	Araldite [®] LY 8615 / Aradur [®] 8615	at 60	to 1500	45 - 65
(HOEPPLER,	Araldite [®] LY 8615 / XB 5173	at 60	to 1500	20 - 40
ISO 9371B)	Araldite [®] LY 8615 / Aradur [®] 8615 Araldite [®] LY 8615 / XB 5173	at 60 at 60	to 3000 to 3000	55 - 75 25 – 45
	Araldite [®] LY 8615 / Aradur [®] 8615 Araldite [®] LY 8615 / XB 5173	at 80 at 80	to 1500 to 1500	21 – 41 8 – 24
	Araldite [®] LY 8615 / Aradur [®] 8615 Araldite [®] LY 8615 / XB 5173	at 80 at 80	to 3000 to 3000	25 – 45 10 - 26

The values shown are for small amounts of pure resin/hardener mix. In composite structures the gel time can differ significantly from the given values depending on the fibre content and the laminate thickness.





PROPERTIES OF THE CURED, NEAT FORMULATION				
GLASS TRANSITION TEMPERATURE	Cure:	T _G	Araldite [®] LY 8615 Aradur [®] 8615	Araldite [®] LY 8615 XB 5173
(IEC 1006, DSC, 10 K/MIN)	90 min. 80 ℃ 90 min. 80 ℃ + 1h 150 ℃ 90 min. 80 ℃ + 1h 150 ℃+ 1h 180 ℃ 90 min. 80 ℃ + 1h 150 ℃+ 3h 180 ℃	[℃] [℃] [℃] [℃]	64 - 71 184 - 191 206 - 217 210 - 220	80 - 87 174 - 181 200 - 207 203 - 210
GLASS TRANSITION TEMPERATURE	Cure:		Araldite [®] LY 8615 Aradur [®] 8615	Araldite [®] LY 8615 XB 5173
(ISO 6721,	90 min. 80 ℃ + 1h 150 ℃	[℃]	184 - 190	207 - 215
DMA,2K/MIN.)	90 min. 80 ℃ + 1h 150 ℃+ 1h 180 ℃	[℃]	214 - 221	210 - 217
TENSILE TEST	<i>Cure:</i>		Araldite [®] LY 8615	Araldite [®] LY 8615
(ISO 527)	90 min. 80℃ + 1h 150℃		Aradur [®] 8615	XB 5173
	Tensile strength	[MPa]	40 - 45	33 - 38
	Ultimate elongation	[%]	1.5 - 2.3	1.0 - 2.0
	Tensile modulus	[MPa]	2650 - 2850	2880 - 3080
TENSILE TEST	<i>Cure:</i>		Araldite [®] LY 8615	Araldite [®] LY 8615
(ISO 527)	90 min. 80℃ + 1h 150℃+ 1h 180℃		Aradur [®] 8615	XB 5173
	Tensile strength	[MPa]	39 - 43	41 - 45
	Ultimate elongation	[%]	1.2 - 2.2	1.2 - 2.2
	Tensile modulus	[MPa]	2780 - 2980	3000 - 3200

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ISO 17(8) So min. Bo C min. Bo C Flexural modulus [MPa] 92-97 115-125 Flexural modulus [MPa] 2250 - 2850 2850 - 3250 Flexural modulus [MPa] 2250 - 2850 2850 - 3250 Sto 178 90 min. 80°C + 1h 150°C Arabiti® / 19815 Arabiti® / 19815 Arabiti® / 19815 Flexural modulus [MPa] 22-7.3.7 Ait = 5.1 Ait = 5.1 Flexural modulus [MPa] 27-7.3.7 Ait = 5.1 XB 5173 Sto 0780 90 min. 80°C + 1h 150°C Arabiti® / 19815 Arabiti® / 19815 XB 5173 Sto 0700 FT Est 90 min. 80°C + 1h 150°C Arabiti® / 19815 Arabiti® / 19815 XB 5173 PM 255.0/900 Fracture toughness K ₁₀ [MPa] 100°C Arabiti® / 19815 XB 5173 Sto 0710 Fracture toughness K ₁₀ [MPa] 100°C Arabiti® / 19815 Arabiti® / 19815 XB 5173 Sto 021 10 days H ₂ O 23°C [%] 0.59 - 0.74 0.54 - 0.70 0.54 - 0.70 Sto 021 10 days H ₂ O 23°C [%]	FLEXURAL TEST			Araldite [®] LY 8615	
Ultimate elongation Flexural modulus Impaint for the second	(ISO 178)	90 min. 80℃ + 1h 150℃		Aradur [®] 8615	XB 51/3
Ultimate elongation Flexural modulus Impaint of the second s					
Flexural modulus Image: Marking and Ma					
LEXURAL TEST (SO 178) Cure: 90 min. 80 °C + 1h 150 °C + 1h 180 °C Araidle ² LY 8615 Aradu ² 8615 Araidle ² LY 8615 Araidu ² 8615 Flexural strength Ultimate elongation [MPa] (%] 2,7 - 3,7 2,7 - 3,7 4,1 - 5,1 4,1 - 5,1 FRACTURE PROPERTIES 0 min. 80 °C + 1h 150 °C Araidite ² LY 8615 Araidu ² 8615 Araidite ² LY 8615 Araidu ² 815 Araidite ² LY 8615 Araidu ² 815 FRACTURE PROPERTIES 0 min. 80 °C + 1h 150 °C Araidite ² LY 8615 Araidu ² 8015 Araidite ² LY 8615 Araidu ² 815 Araidite ² LY 8615 Araidu ² 815 FRACTURE PM 258-0/90) Fracture toughness K ₁₀ Fracture energy G ₁₀ [MPa'm] [Jm ²] 0.57 - 0.72 130 - 165 0.60 - 0.84 Araidu ² 815 VATER BSON NOTCH TEST PM 258-0/90) Fracture toughness K ₁₀ Fracture energy G ₁₀ [MPa'm] 130 - 165 0.59 - 0.74 Araidu ² 8615 0.55 - 0.65 VATER BSORBTION SIO 62) 10 days H ₂ O 23 °C 10 days H ₂ O 23 °C [%] 0.55 - 0.65 0.55 - 0.65 PROPERTIES OF THE CURED, REINFORCED FORMULATION SISO 62) Short beam: Laminate comprising 12 layers Carbon fabric G1157 (290 g/m ³) Laminate thickness t = 3.0 mm Fibre volume content: 63 - 65 % Araidite ² LY 8615 Araidu ² 8615 Araidite ² LY 8615 Araidu ² 8615 Araidite ² LY 8615 Araidu ² 8615 NTERLAMINAR Shear tEST SISO 178)					
ISO 178) 90 min. 80°C + 1h 150°C + 1h 180°C Aradu [®] 8615 XB 5173 ISO 178) 90 min. 80°C + 1h 150°C + 1h 180°C Aradu [®] 8615 XB 5173 Flexural modulus [MPa] 82 - 86 113 - 117 Illimate elongation [%1] 2.7 - 3.7 4.1 - 5.1 PROPERTIES 90 min. 80°C + 1h 150°C Aradu [®] 8615 XB 5173 PROPERTIES 90 min. 80°C + 1h 150°C Aradu [®] 8615 XB 5173 PM 258-0/90) Fracture toughness K ₁₀ [MPa\m] 0.57 - 0.72 0.60 - 0.84 PM 258-0/90) Fracture toughness K ₁₀ [MPa\m] 140 - 170 147 - 179 PM 258-0/90) Fracture toughness K ₁₀ [MPa\m] 0.59 - 0.74 0.54 - 0.70 Seconstrice Gure: Aradu [®] 8615 Aradu [®] 8615 XB 5173 ISO 62) 10 days H ₂ O 23°C [%1] 0.50 - 0.60 0.53 - 0.63 NATER Cure: Aradu [®] 21 2 8015 Aradu [®] 21 8615 XB 5173 ISO 62) 10 days H ₂ O 23°C [%1] 0.55 - 0.65 0.55 - 0.65 0.55 - 0.65 <			[MPa]		
$ \begin{array}{c} \text{SO 1760} \\ \text{ISO 1760} \\ \text{ISO 1760} \\ \text{ISO 1776} \\ \text{ISO 17776} \\ ISO 1777777777777777777777777777777777777$	FLEXURAL TEST				
Utimate elongation [1%] 2.7 - 3.7 4.1 - 5.1 FRACTURE Cure: 90 min. 80 °C + 1h 150 °C Araditie ⁶ LY 8615 Araditie ⁶ LY 8615 XB 5173 SEND NOTCH TEST Fracture toughness K _{1C} [MPa\mm] 0.57 - 0.72 0.60 - 0.84 PM 258-0/90) Fracture energy G _{1C} [MPa\mm] 140 - 170 147 - 179 RACTURE Cure: min. 80 °C + 1h 150 °C + 1h 180 °C Araditie ⁶ LY 8615 Araditie ⁶ LY 8615 PM 258-0/90) Fracture energy G _{1C} [J/m ²] 130 - 165 130 - 165 PM 258-0/90) Fracture energy G _{1C} [J/m ²] 130 - 165 130 - 165 NATER Cure: Aradite ⁶ LY 8615 Aradite ⁶ LY 8615 Aradite ⁶ LY 8615 NATER Cure: Cure: Aradite ⁶ LY 8615 Aradite ⁶ LY 8615 Aradite ⁶ LY 8615 NATER Cure: Ot days H ₂ O 23 °C [%] 0.55 - 0.65 0.55 - 0.65 SO 62) 10 days H ₂ O 23 °C [%] 0.55 - 0.65 0.55 - 0.65 0.55 - 0.65 PROPERTIES O min. 80 °C + 1h 150 °C + 1h 180 °C	(ISO 178)	90 min. 80 ℃ + 1h 150 ℃+ 1h 180 ℃		Aradur 8615	XB 5173
Ultimate elongation $[1\%]_{1\%}$ $2.7 - 3.7$ $4.1 - 5.1$ FRACTURE Cure: 90 min. 80 °C + 1h 150 °C Araldite ⁶ LY 8615 Araldite ⁶ LY 8615 XB 5173 SEND NOTCH TEST Fracture toughness K _{1C} [MPa\] $0.57 - 0.72$ $0.60 - 0.84$ PM 258-0/90) Fracture energy G _{1C} [MPa\] $140 - 170$ $147 - 179$ RACTURE Cure: omin. 80 °C + 1h 150 °C + 1h 180 °C Araldite ⁶ LY 8615 Araldite ⁶ LY 8615 PM 258-0/90) Fracture energy G _{1C} [J/m ²] $130 - 165$ $130 - 165$ PM 258-0/90) Fracture energy G _{1C} [J/m ²] $130 - 165$ $130 - 165$ NATER Cure: Araldite ⁶ LY 8615 Araldite ⁶ LY 8615 Araldite ⁶ LY 8615 NATER Cure: Araldite ⁶ LY 8615 Araldite ⁶ LY 8615 Araldite ⁶ LY 8615 NATER Cure: Araldite ⁶ LY 8615 Araldite ⁶ LY 8615 Araldite ⁶ LY 8615 Sto 62) 10 days H ₂ O 23 °C [%] 0.55 - 0.65 0.55 - 0.65 PROPERTIES 90 min. 80 °C + 1h 150 °C + 1h 180 °C Araldite ⁶		Elevural strength		00 00	110 117
Flexural modulus [MPa] 2740 - 2240 3080 - 3280 RACTURE Cure: Aradufe 8615 Aradufe 815					
RACTURE PROPERTIES Cure: 90 min. 80°C + 1h 150°C Araldite [®] LY 8615 Araldite [®] LY 8					
PROPERTIES 90 min. 80° C + 1h 150 °C Aradul* ⁸ 8615 XB 5173 PM 258-0/90) Fracture toughness K _{1C} [J/m ²] $140 - 170$ $147 - 179$ PM 258-0/90) Fracture energy G _{1C} [J/m ²] $140 - 170$ $147 - 179$ PROPERTIES 90 min. 80° C + 1h 150 °C + 1h 180 °C Aradul* ⁸ 8615 Aradul*e ⁶ LY			[IMPa]		
SEND NOTCH TEST PM 258-0/90) Fracture toughness K ₁ C Fracture energy G _{1C} [MPa\m] [J/m ²] 0.57 - 0.72 140 - 170 0.60 - 0.84 147 - 179 FRACTURE PROPERTIES Cure: 90 min. 80 °C + 1h 150 °C + 1h 180 °C Aradule [®] LY 8615 Aradur [®] 8615 Aradile [®] LY 8615 Aradur [®] 8615 Aradile [®] LY 8615 Aradur [®] 8615 WATER BSSORBTION BSSORBTION ISO 62) Cure: 10 days H ₂ O 23 °C 10 days H ₂ O 23 °C [%] 0.50 - 0.60 Aradur [®] 8615 Aradile [®] LY 8615 Aradur [®] 8615 Aradile [®] LY 8615 XB 5173 NATER BSSORBTION ISO 62) Cure: 90 min. 80 °C + 1h 150 °C + 1h 180 °C Aradule [®] LY 8615 Aradur [®] 8615 Aradule [®] LY 8615 XB 5173 NATER ABSORBTION ISO 62) Cure: 90 min. 80 °C + 1h 150 °C + 1h 180 °C Aradule [®] LY 8615 Aradur [®] 8615 Aradule [®] LY 8615 XB 5173 Short beam: Laminate comprising 12 layers Carbon fabric G1157 (290 g/m ²) Laminate thickness t = 3.0 mm Fibre volume content: 63 - 65 % Aradule [®] LY 8615 Aradur [®] 8615 Aradule [®] LY 8615 XB 5173 Short beam: Laminate comprising 12 layers Carbon fabric G1157 (290 g/m ²) Laminate thickness t = 3.0 mm Fibre volume content: 63 - 65 % Aradule [®] LY 8615 Aradur [®] 8615 Aradule [®] LY 8615 XB 5173 Short beam: Laminate comprising 12 layers Carbon fabric G1157 (290 g/m ²) Laminate thickness t = 4.0 mm Fibre volume content: 63 - 65 % Aradule [®] LY 8615 Aradur [®] 8615 Aradule [®] LY 8615 XB 5173					
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$ \begin{array}{c c c c c c c c c c c c c c c c c c c $			/	0 57 - 0 72	0.60 - 0.84
FRACTURE Cure: (J/m²) Araldite [®] LY 8615	(PM 258-0/90)				
PROPERTIES 90 min. 80 °C + 1h 150 °C + 1h 180 °C Aradu [®] 8615 XB 5173 PM 258-0/90) Fracture toughness K _{1C} [MPa\m] 0.59 - 0.74 0.54 - 0.70 PM 258-0/90) Fracture energy G _{1C} [J/m ²] 130 - 165 130 - 165 NATER Cure: Aradu [®] 8615 XB 5173 NATER Cure: Aradu [®] 8615 XB 5173 ISO 62) 10 days H ₂ O 23 °C [%] 0.50 - 0.60 0.53 - 0.63 NATER Cure: Aradu [®] 8615 XB 5173 ISO 62) 10 days H ₂ O 23 °C [%] 0.55 - 0.65 0.55 - 0.65 ISO 62) 10 days H ₂ O 23 °C [%] 0.55 - 0.65 0.55 - 0.65 PROPERTIES OF THE CURED, REINFORCED FORMULATION Short beam: Laminate comprising 12 layers Carbon fabric G1157 (290 g/m ²) Aradu [®] 8615 Aradu [®] 8615 XB 5173 NTERLAMINAR Cure: Omin. 80 °C + 1h 150 °C + 1h 180 °C Aradu [®] 8615 XB 5173 Short beam: Laminate comprising 12 layers Carbon fabric G1157 (290 g/m ²) Aradu [®] 8615 XB 5173 Short beam: Beam strength [MPa] 72 - 77			[J/m ⁻]		
SEND NOTCH TEST Fracture toughness K_{1C} [MPa\m] $0.59 - 0.74$ $0.54 - 0.70$ MATER Cure: [J/m ²] 130 - 165 130 - 165 130 - 165 NATER Cure: Araldite [®] LV 8615 Araldite [®] LV 8615 Araldite [®] LV 8615 Araldite [®] LV 8615 XB 5173 ISO 62) 10 days H ₂ O 23 °C [%] 0.50 - 0.60 0.53 - 0.63 NATER Cure: Araldite [®] LV 8615 Araldite [®] LV 8615 XB 5173 ISO 62) 10 days H ₂ O 23 °C [%] 0.55 - 0.65 0.55 - 0.65 90 min. 80 °C + 1h 150 °C + 1h 180 °C Araldite [®] LV 8615 XB 5173 XB 5173 ISO 62) 10 days H ₂ O 23 °C [%] 0.55 - 0.65 0.55 - 0.65 PROPERTIES OF THE CURED, REINFORCED FORMULATION Short beam: Laminate comprising 12 layers Carbon fabric G1157 (290 g/m ²) Laminate thickness t = 3.0 mm Fibre volume content: 63 - 65 % Cure: Araldite [®] LY 8615 Araldite [®] LY					
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NATER Cure: Aradite Living Aradite Ly 8615 Aradite LY 8615 XB 5173 ISO 62) 10 days H ₂ O 23 °C [%] 0.50 - 0.60 0.53 - 0.63 NATER Cure: Aradite Aradite LY 8615 Aradite LY 8615 XB 5173 ISO 62) 10 days H ₂ O 23 °C [%] 0.50 - 0.60 0.53 - 0.63 Aradite LY 8615 Aradite LY 8615 XB 5173 ISO 62) 10 days H ₂ O 23 °C [%] 0.55 - 0.65 0.55 - 0.65 0.55 - 0.65 PROPERTIES OF THE CURED, REINFORCED FORMULATION Short beam: Laminate comprising 12 layers Care: Aradur Aradur Aradur KB 5173 NTERLAMINAR Cure: 0 min. 80 °C + 1h 150 °C + 1h 180 °C Aradur Aradur Aradur KB 5173 ASTM D 2344) Shear strength [MPa] 72 - 77 76 - 81 FLEXURAL TEST Son 78 90 min. 80 °C + 1h 150 °C + 1h 180 °C Aradur Aradur 1080 - 1280 ISO 178) Flexural strength [MPa] 1260	(PM 258-0/90)				
ABSORBTION 90 min. 80 °C + 1h 150 °C Aradu [®] 8615 XB 5173 ISO 62) 10 days H ₂ O 23 °C [%] 0.50 - 0.60 0.53 - 0.63 NATER Cure: Araldite [®] LY 8615 Araldite [®] LY 8615 Araldite [®] LY 8615 Assorbation 90 min. 80 °C + 1h 150 °C + 1h 180 °C Aradu [®] 8615 XB 5173 ISO 62) 10 days H ₂ O 23 °C [%] 0.55 - 0.65 0.55 - 0.65 PROPERTIES OF THE CURED, REINFORCED FORMULATION Short beam: Laminate comprising 12 layers Carbon fabric G1157 (290 g/m ²) Aradu [®] 8615 Araldite [®] LY 8615 Araldite [®] LY 8615 PROPERTIES OF THE CURED, REINFORCED FORMULATION Short beam: Laminate comprising 12 layers Carbon fabric G1157 (290 g/m ²) Aradu [®] 8615 Araldite [®] LY 8615 Araldite [®] LY 8615 Araldite [®] LY 8615 Araldite [®] LY 8615 XB 5173 ASTM D 2344) Cure: O'''' Aradu [®] 8615 Araldite [®] LY 8615 Araldite [®] LY 8615 XB 5173 ASTM D 2344) Shear strength [MPa] 72 - 77 76 - 81 FLEXURAL TEST Shear strength [MPa] 11260 - 1460 1170 - 1470 Ultimate longation			[J/m]		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $					
10 days H ₂ O 23°C [%] 0.50 - 0.60 $0.53 - 0.63$ WATER ABSORBTION Cure: 90 min. 80°C + 1h 150°C + 1h 180°C Araldite [®] LY 8615 Aradur [®] 8615 Araldite [®] LY 8615 XB 5173 ISO 62) 10 days H ₂ O 23°C [%] 0.55 - 0.65 0.55 - 0.65 PROPERTIES OF THE CURED, REINFORCED FORMULATION Short beam: Laminate comprising 12 layers Carbon fabric G1157 (290 g/m ²) Laminate thickness t = 3.0 mm Fibre volume content: 63 - 65 % Araldite [®] LY 8615 Araldite [®] LY 8615 Araldite [®] LY 8615 NTERLAMINAR SHEAR TEST Ourie: Araldite [®] LY 8615 Araldite [®] LY 8615 Araldite [®] LY 8615 Shear strength [MPa] 72 - 77 76 - 81 Cure: Araldite [®] LY 8615 Araldite [®] LY 8615 Araldite [®] LY 8615 Shear strength [MPa] 72 - 77 76 - 81 FLEXURAL TEST Subset strength [MPa] 11300 113000 113000 Flexural strength [MPa] 11300 - 13400 11400 1300 - 13400 Ultimate strength [MPa] 1300 - 1530 1450 - 1850 ISO 527) Tensile strength [MPa] 1300 - 1500		90 min. 80°C + 1n 150°C		Alauur 0015	XB 3173
NATER BSORBTION Cure: 90 min. 80 °C + 1h 150 °C + 1h 180 °C Araldite [®] LY 8615 XE 5173 MEAR TEST 90 min. 80 °C + 1h 150 °C + 1h 180 °C Araldite [®] LY 8615 Araldite [®] LY 8615 XE 5173 ISO 178) 90 min. 80 °C + 1h 150 °C + 1h 180 °C Araldite [®] LY 8615 Araldite [®] LY 8615 XE 5173 ISO 527) Flexural strength [MPa] 11300 - 133000 114000 - 134000 ISO 527)	(ISO 62)	10 days H.O 23 °C	[0/_]	0 50 - 0 60	0.53 - 0.63
ABSORBTION 90 min. $80^{\circ}C + 1h 150^{\circ}C + 1h 180^{\circ}C$ Aradur [®] 8615 XB 5173 ISO 62) 10 days H ₂ O 23 °C [%] $0.55 - 0.65$ $0.55 - 0.65$ PROPERTIES OF THE CURED, REINFORCED FORMULATION Short beam: Laminate comprising 12 layers Carbon fabric G1157 (290 g/m ²) Laminate thickness t = 3.0 mm Fibre volume content: $63 - 65 %$ Araldite [®] LY 8615 Araldite [®] LY 8615 Araldite [®] LY 8615 NTERLAMINAR SHEAR TEST 90 min. $80^{\circ}C + 1h 150^{\circ}C + 1h 180^{\circ}C$ Araldite [®] LY 8615 Araldite [®] LY 8615 Araldite [®] LY 8615 XB 5173 ASTM D 2344) Shear strength [MPa] 72 - 77 76 - 81 FLEXURAL TEST ISO 178) So min. 80°C + 1h 150°C + 1h 180°C Araldite [®] LY 8615 Araldite [®] LY 8615 Flexural strength [MPa] 1260 - 1460 1170 - 1470 Ultimate strength [MPa] 11350 - 13300 1080 - 1280 ISO 527) 90 min. 80°C + 1h 150°C + 1h 180°C Araldite [®] LY 8615 Araldite [®] LY 8615 ISO 527) Tensile strength [MPa] 113500 - 133000 114000 - 134000 Tensile strength [MPa] 1360 - 1560 1520 - 1720 XB 5173			[/0]		
$\begin{array}{c} \text{ISO 62} \\ \hline \text{IO days } H_2 \text{O} 23 ^{\circ}\text{C} & [\%] & 0.55 - 0.65 & 0.55 - 0.65 \\ \hline \text{PROPERTIES OF THE CURED, REINFORCED FORMULATION} \\ \hline \text{Short beam: Laminate comprising 12 layers} \\ Carbon fabric G1157 (290 g/m^2) \\ Laminate thickness t = 3.0 \text{mm} \\ \hline \text{Fibre volume content: 63 - 65 \%} \\ \hline \text{NTERLAMINAR} \\ \text{SHEAR TEST} & 90 \text{min. 80 }^{\circ}\text{C} + 1h 150 ^{\circ}\text{C} + 1h 180 ^{\circ}\text{C} \\ \hline \text{Araldite}^{\oplus} LY 8615 & \text{Araldite}^{\oplus} LY 8615 \\ \text{Aradur}^{\oplus} 8615 & \text{XB 5173} \\ \hline \text{Araldite}^{\oplus} LY 8615 & \text{Araldite}^{\oplus} LY 8615 \\ \text{Araldite}^{\oplus} LY 8615 & \text{XB 5173} \\ \hline \text{ASTM D 2344} \\ \hline \text{Shear strength} & [\text{MPa]} & 72 - 77 & 76 - 81 \\ \hline \text{Cure:} & \text{Araldite}^{\oplus} LY 8615 & \text{Araldite}^{\oplus} LY 8615 \\ \text{ISO 178} \\ \hline \text{Plexural strength} & [\text{MPa]} & 1260 - 1460 & 1170 - 1470 \\ \text{Ultimate strength} & [\text{MPa]} & 1150 - 1350 & 1080 - 1280 \\ \text{Ultimate elongation} & [\%] & 1.00 - 1.20 & 0.90 - 1.10 \\ \hline \text{Flexural modulus} & [\text{MPa]} & 113500 - 133000 & 114000 - 134000 \\ \hline \text{TENSILE TEST} \\ \text{ISO 527} \\ \hline \begin{array}{c} \text{Tensile strength} & [\text{MPa]} & 1360 - 1560 & 1520 - 1720 \\ \text{Ultimate strength} & [\text{MPa]} & 1330 - 1530 & 1450 - 1650 \\ \text{Ultimate elongation} & [\%] & 0.89 - 1.09 & 0.84 - 1.04 \\ \hline \text{Ultimate elongation} & [\%] & 1300 - 1500 & 1520 - 1720 \\ \text{Ultimate elongation} & [\%] & 1300 - 1500 & 1520 - 1720 \\ \hline \text{Ultimate elongation} & [\%] & 1300 - 1500 & 1520 - 1720 \\ \hline \text{Ultimate elongation} & [\%] & 1300 - 1500 & 1520 - 1720 \\ \hline \text{Ultimate elongation} & [\%] & 1300 - 1500 & 1520 - 1720 \\ \hline \text{Ultimate elongation} & [\%] & 1300 - 1500 & 1520 - 1720 \\ \hline \text{Ultimate elongation} & [\%] & 1300 - 1500 & 1520 - 1720 \\ \hline \text{Ultimate elongation} & [\%] & 10000 & 140000 & 140000 \\ \hline \text{Ultimate elongation} & [\%] & 10000 & 140000 & 140000 & 140000 \\ \hline \text{Ultimate elongation} & [\%] & 10000 & 140000 & 140000 & 140000 \\ \hline \text{Ultimate elongation} & [\%] & 10000 & 140000 & 140000 & 140000 \\ \hline \text{Ultimate elongation} & [\%] & 10000 & 140000 & 140000 & 140000 \\ \hline \text{Ultimate elongation} & [\%] & 10000 & 140000 & 140000 &$					
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PROPERTIES OF THE CURED, REINFORCED FORMULATION Short beam: Laminate comprising 12 layers Carbon fabric G1157 (290 g/m ²) Laminate thickness t = 3.0 mm Fibre volume content: 63 - 65 % NTERLAMINAR SHEAR TEST Cure: 90 min. 80 °C+ 1h 150 °C+ 1h 180 °C Araldite [®] LY 8615 Aradur [®] 8615 Araldite [®] LY 8615 XB 5173 Shear strength [MPa] 72 - 77 76 - 81 FLEXURAL TEST Cure: 90 min. 80 °C+ 1h 150 °C+ 1h 180 °C Araldite [®] LY 8615 Aradur [®] 8615 Araldite [®] LY 8615 XB 5173 ISO 178) Shear strength [MPa] 72 - 77 76 - 81 Flexural trest Cure: 90 min. 80 °C+ 1h 150 °C+ 1h 180 °C Aradult [®] LY 8615 Aradur [®] 8615 Araldite [®] LY 8615 XB 5173 ISO 178) Flexural strength [MPa] 1260 - 1460 1170 - 1470 Ultimate strength [MPa] 11350 - 13300 1080 - 1280 Ultimate strength [MPa] 113500 - 133000 114000 - 134000 FIENSILE TEST Cure: 90 min. 80 °C+ 1h 150 °C+ 1h 180 °C Aradult [®] LY 8615 Aradur [®] 8615 Aradult [®] LY 8615 XB 5173 Tensile strength [MPa] 1360 - 1560 1520 - 1720 Ultimate strength [MPa] 1330 - 1530 <th< td=""><td>(ISO 62)</td><td>10 days H₀O 23 ℃</td><td>[%]</td><td>0.55 – 0.65</td><td>0.55 – 0.65</td></th<>	(ISO 62)	10 days H₀O 23 ℃	[%]	0.55 – 0.65	0.55 – 0.65
Short beam: Laminate comprising 12 layers Carbon fabric G1157 (290 g/m ²) Laminate thickness t = 3.0 mm Fibre volume content: 63 - 65 % NTERLAMINAR SHEAR TEST Cure: 90 min. 80 °C + 1h 150 °C + 1h 180 °C Araldite [®] LY 8615 Aradur [®] 8615 Araldite [®] LY 8615 Aradur [®] 8615 Araldite [®] LY 8615 XB 5173 ASTM D 2344) Shear strength [MPa] 72 - 77 76 - 81 FLEXURAL TEST Shear strength [MPa] 72 - 77 76 - 81 ISO 178) 90 min. 80 °C + 1h 150 °C + 1h 180 °C Aradut [®] 8615 Araldite [®] LY 8615 XB 5173 FLEXURAL TEST 90 min. 80 °C + 1h 150 °C + 1h 180 °C Aradut [®] 8615 Araldite [®] LY 8615 XB 5173 ISO 178) Flexural strength [MPa] 1260 - 1460 1170 - 1470 Ultimate elongation [%] 1.00 - 1.20 0.90 - 1.10 Flexural modulus [MPa] 113500 - 133000 114000 - 134000 TENSILE TEST Gure: Araldite [®] LY 8615 Araldite [®] LY 8615 XB 5173 ISO 527) Tensile strength [MPa] 1360 - 1560 1520 - 1720 Ultimate elongation [%] 0.88 - 1.09 0.84 - 1.04 Ultimate			[,•]		
Carbon fabric G1157 (290 g/m ²) Laminate thickness t = 3.0 mm Fibre volume content: 63 - 65 % NTERLAMINAR SHEAR TEST $Cure:$ 90 min. 80 °C+ 1h 150 °C+ 1h 180 °C $Araldite® LY 8615$ Aradur® 8615 $Araldite® LY 8615Aradur® 8615$ $Araldite® LY 8615Aradur® 8615$ $Araldite® LY 8615Aradur® 8615$ ASTM D 2344) Shear strength [MPa] $72 - 77$ $76 - 81$ FLEXURAL TEST ISO 178) Shear strength [MPa] $72 - 77$ $76 - 81$ FLEXURAL TEST ISO 178) 90 min. 80 °C+ 1h 150 °C+ 1h 180 °C $Araldite® LY 8615$ $Araldite® LY 8615$ $Araldite® LY 8615$ Flexural strength Ultimate elongation Flexural modulus [MPa] 11260 - 1460 1170 - 1470 ISO 527) 90 min. 80 °C+ 1h 150 °C+ 1h 180 °C $Araldite® LY 8615$ $Araldite® LY 8615$ Tensile strength Ultimate strength Ultimate strength Ultimate strength Ultimate strength Ultimate strength Ultimate strength Ultimate elongation [MPa] 1360 - 1560 1520 - 1720 No MPa $1330 - 1530$ 1450 - 1650 1450 - 1650 1450 - 1650	PROPERTIES OF THE	CURED, REINFORCED FORMULATI	ON		
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Fibre volume content: $63 - 65 \%$ Cure: Araldite [®] LY 8615 Araldite [®] LY 8615 Araldite [®] LY 8615 Araldite [®] LY 8615 XB 5173 ASTM D 2344) Shear strength [MPa] 72 - 77 76 - 81 FLEXURAL TEST Solution 80 °C+ 1h 150 °C+ 1h 180 °C Araldite [®] LY 8615 A		Carbon fabric G1157 (290 g/m ²)	-		
NTERLAMINAR SHEAR TEST Cure: 90 min. $80 ^{\circ}\text{C}+ 1h 150 ^{\circ}\text{C}+ 1h 180 ^{\circ}\text{C}$ Araldite [®] LY 8615 Aradur [®] 8615 Araldite [®] LY 8615 XB 5173 ASTM D 2344) Shear strength [MPa] 72 - 77 76 - 81 FLEXURAL TEST Shear strength [MPa] 72 - 77 76 - 81 ISO 178) 90 min. $80 ^{\circ}\text{C}+ 1h 150 ^{\circ}\text{C}+ 1h 180 ^{\circ}\text{C}$ Araldite [®] LY 8615 Aradur [®] 8615 Araldite [®] LY 8615 XB 5173 ISO 178) Flexural strength [MPa] 1260 - 1460 1170 - 1470 Ultimate strength [MPa] 1150 - 1350 1080 - 1280 Ultimate elongation [%] 1.00 - 1.20 0.90 - 1.10 Flexural modulus [MPa] 113500 - 133000 114000 - 134000 TENSILE TEST Cure: Araldite [®] LY 8615 Araldite [®] LY 8615 1SO 527) Tensile strength [MPa] 1360 - 1560 1520 - 1720 Ultimate elongation [%] 0.89 - 1.09 0.84 - 1.04 Ultimate elongation [%] 0.89 - 1.09 0.84 - 1.04					
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IDENTIFY OF CONSTRUME $[M]$					
Filexural modulus $[MPa]$ 113500 - 133000 114000 - 134000 FIENSILE TEST Cure: Araldite [®] LY 8615 Araldite [®] LY 8615 Araldite [®] LY 8615 ISO 527) 90 min. 80 °C+ 1h 150 °C+ 1h 180 °C Image: Cure to the total t					
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Ultimate strength [MPa] 1330 - 1530 1450 - 1650 Ultimate elongation [%] 0.89 - 1.09 0.84 - 1.04	(150 527)	55 mm. 55 0+ m 150 0+ m 180 0			
Ultimate strength [MPa] 1330 - 1530 1450 - 1650 Ultimate elongation [%] 0.89 - 1.09 0.84 - 1.04		Tensile strength	[MPa]	1360 - 1560	1520 - 1720
Ultimate elongation [%] 0.89 – 1.09 0.84 – 1.04					
				120500 - 140000	129000 - 149000
			[MPa]	120000 140000	120000 140000

HUNTSMAN Enriching lives through innovation

HANDLING PRECAUTIONS

PRECAUTIONS	Personal hygiene				
	Safety precautions				
	protective clothing	yes			
	gloves	essential			
	arm protectors	recommended when skin contact likely			
	goggles/safety gla	-			
	Skin protection				
	before starting wor	k Apply barrier cream to exposed skin			
	after washing	Apply barrier or nourishing cream			
	Cleansing of conta	minated skin			
	-	Dab off with absorbent paper, wash with warm water and alkali-free soap, then dry with disposable towels. Do not use solvents			
	Disposal of spillag	2			
		Soak up with sawdust or cotton waste and deposit in plastic-lined bin			
	Ventilation				
	of workshop	Renew air 3 to 5 times an hour			
	of workplaces	Exhaust fans. Operatives should avoid inhaling vapours			
	area then washed	or splashed on the <i>skin</i> should be dabbed off, and the contaminated and treated with a cleansing cream (see above). A doctor should be vent of severe irritation or burns. Contaminated clothing should be elv.			
	•	Anyone taken ill after <i>inhaling</i> vapours should be moved out of doors immediately.			
	In all cases of doubt call for medical assistance.				
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