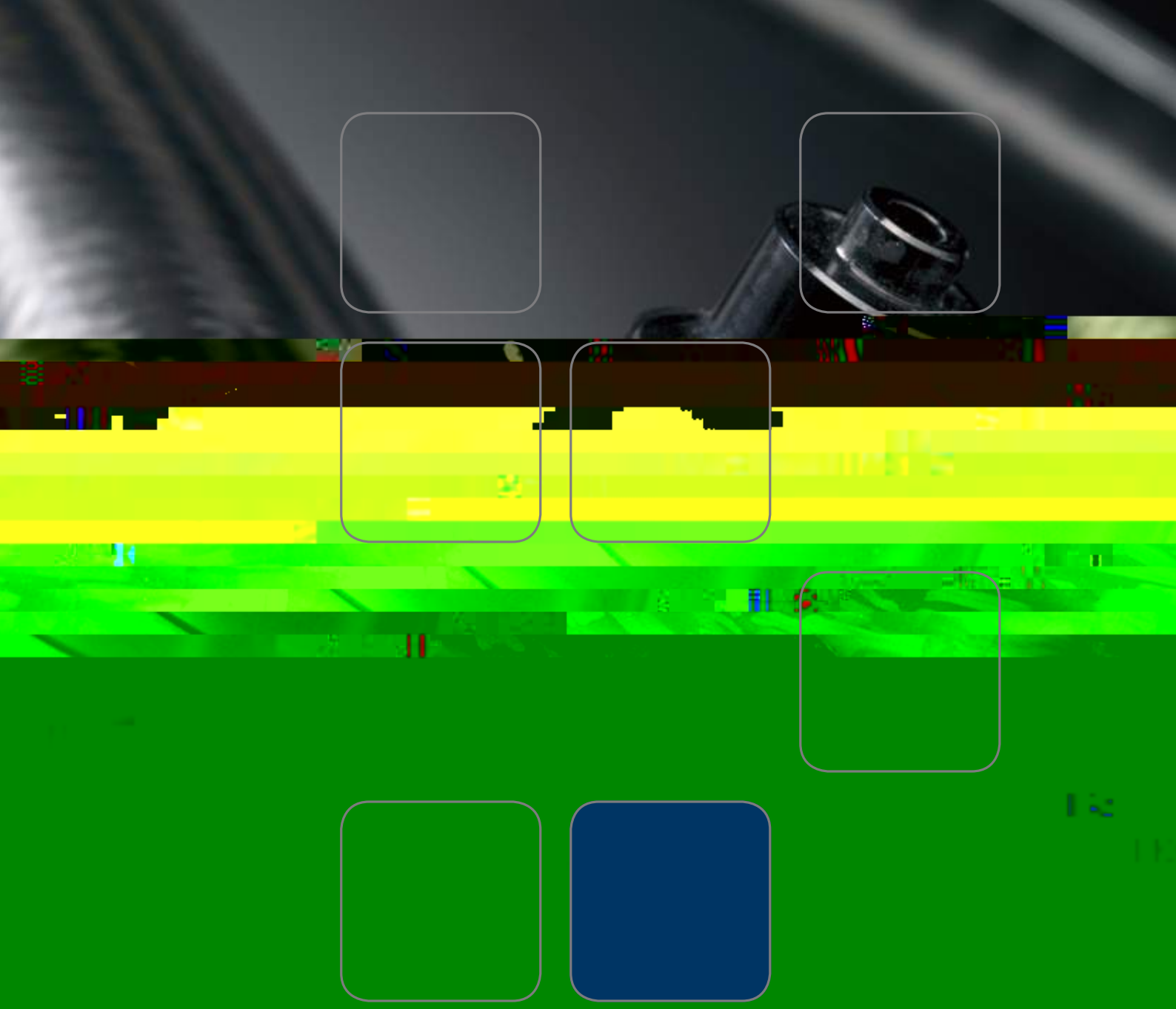

Rely on us with confidence

Formulated systems for direct liquid processes

Product designation	Wet lay-up	Compression molding	RTM	Infusion	Filament winding	Pultrusion	Pot life	Gel time	Mix viscosity	
Conditions							RT, 100ml	80°C	25°C	
Norm										
Unit							min	min	mPa.s	
Araldite® LY 1564 / Hardener XB 3403	•••			•••	••		870 - 1050	40 - 50	150 - 230	
Araldite® LY 1564 / Aradur® 3405		•••	•••				47 - 57	6 - 9	420 - 520	
Araldite® LY 3508 / Hardener XB 3403	•••		••				600 - 720	30 - 36	650 - 800	
Araldite® LY 1568 / Aradur® 3489	••		••	•••	••	••	850 - 950	43 - 46	200 - 300	
Araldite® LY 1568 / Aradur® 3492	••	••	••	•••			300 - 350	23 - 25	250 - 350	
Araldite® LY 3505 / Hardener XB 3404-1	•••						80 - 100	11 - 18	550 - 800	
Araldite® LY 3505 / Hardener XB 3403	•••						600 - 720	36 - 48	300 - 400	
Araldite® LY 3505 / Aradur® 3405	•••						26 - 36	5 - 11	1 000 - 1 200	
Araldite® LY 1564 / Aradur® 3486	••		••	•••	••	••	560 - 620	33 - 43	200 - 300	
Araldite® LY 1583 / Aradur® 3495			••	•••	••	••	610 - 660	38 - 42	250 - 300	
Araldite® LY 3598 / Aradur® 3498		•••	•••	•••			40 - 70	7 - 10	400 - 900	
Araldite® LY 3297 / Aradur® 3298	•••	•••	•••	••			120 - 135	18 - 26	850 - 950	
Araldite® LY 3508 / Aradur® 3486	•••	•••	•••	••	••	••	380 - 480	9 - 14 at 100°C	720 - 860	
Araldite® LY 3508 / Aradur® 3475 [2]	••	•••	••• HP [3]			•••	25 - 35	1-2 min at 115°C	1 100 - 1 300	
Araldite® LY 3585 / Aradur® 3475 [2]	••	•••	••• HP [3]			•••	25 - 35	1 - 2 at 115°C	900 - 1 100	
Araldite® LY 3031 / Aradur® 3032 [2]	••	•••					-	<15 sec at 140°C	1 700 - 1 900	
Araldite® LY 1564 / Aradur® 5003-1	••	•••	•••				42 - 52	6 - 8	200 - 260 at 40°C	
Araldite® LY 1564 / Aradur® 3474	••	•••	•••	••	•••	••	260 - 280	25 - 35	350 - 450	
Araldite® LY 5052 / Aradur® 5052	•••	••	••	••			110 - 160	14 - 17	500 - 700	

Continued on next page

[1] Adjustable reactivity with DY 070 and Accelerator 960-1 ratio

[2] Measured with internal release agent (1-2 phr)

[3] High Pressure RTM

••• Highly recommended

•• Recommended

	Applied cure schedule	Tg	Flexural strength	Ultimate flexural elongation	Fracture properties K_{1C} G_{1C}	Key features
		DSC, 10 K/min				
		ISO 11357-2	ISO 178		ISO 13586	
		°C	MPa	%	MPa√m J/m²	
	8h at 80°C	68 - 72	104 - 115	10.5 - 11.5	1.0 - 1.1 360 - 380	Hardener XB 3403 and Aradur® 3405 can be mixed to adjust reactivity at constant resin / hardener mix ratio. High toughness.
	8h at 80°C	68 - 72	116 - 130	9.0 - 10.0	1.1 - 1.3 460 - 480	
	4h at 60°C + 6h at 80°C	70 - 75	100 - 125	9.0 - 11.0	2.1 - 2.3 1 250 - 1 400	Latent, very high toughness.
	8h at 80°C	78 - 80	120 - 130	9.0 - 10.0	0.7 - 0.8 170 - 210	Aradur® 3489 and Aradur® 3492 can be mixed to adjust reactivity at constant resin / hardener mix ratio. Aradur® 3489 based system provides low exothermic behavior.
	8h at 80°C	80 - 85	125 - 135	7.0 - 7.5	0.7 - 0.8 210 - 230	
	4h at 60°C + 6h at 80°C	76 - 81	125 - 145	6.5 - 9.5	0.8 - 1.0 160 - 200	Hardener XB 3404-1, XB 3403 and Aradur® 3405 can be mixed to adjust reactivity at constant resin / hardener mix ratio.
	4h at 60°C + 6h at 80°C	78 - 83	110 - 130	10.5 - 13.0	0.9 - 1.1 250 - 280	
	4h at 60°C + 6h at 80°C	87 - 92	135 - 155	7.0 - 9.0	0.8 - 0.9 150 - 190	
	8h at 80°C	80 - 84	118 - 130	10.5 - 12.5	0.9 - 1.1 260 - 310	Latent, low viscosity.
	8h at 80°C	88 - 89	110 - 115	11.0 - 12.5	0.7 - 0.8 210 - 230	Improved latency and Tg build-up compared to Araldite® LY 1564 / Aradur® 3486.
	30 min at 100°C	87 - 93	100 - 110	7.0 - 8.5	1.7 - 1.9 900 - 1 100	Laminating system containing nano-technology, offering outstanding toughness.
	8h at 80°C	92 - 98	125 - 130	7.0 - 8.0	0.8 - 1.0 215 - 245	Good mechanical properties after 23°C curing.
	5h at 100°C	95 - 102	110 - 125	10.0 - 12.5	2.2 - 2.4 1 500 - 1 700	Very high toughness.
	2 min at 115°C	105 - 115 CFRP DMA Tg	65 - 75 in tensile	9.0 - 10.5 in tensile	1.4 - 1.55 850 - 950	Latent, fast cure and high toughness system for composite mass production.
	2 min at 115°C	105 - 115 CFRP DMA Tg	75 - 80 in tensile	8.0 - 10.0 in tensile	0.8 - 0.9 220 - 300	Latent, fast cure system for composite mass production.
	30 sec at 140°C	95 - 105 CFRP DMA Tg	70 - 80 in tensile	5.0 - 7.0 in tensile	0.9 - 1.1 320 - 380	Very fast cure system for compression molding mass production.
	30 min at 80°C + 2h at 120°C	108 - 115	108 - 118	7.0 - 9.0	0.9 - 1.0 230 - 290	Very fast.
	1h at 80°C + 4h at 120°C	115 - 120	120 - 130	8.0 - 9.0	0.7 - 0.9 200 - 240	Excellent flexibility and high reactivity.
	8h at 80°C	114 - 122 (max 120 - 134)	116 - 122	8.5 - 13.5	0.7 - 0.9 192 - 212	Very good mechanical properties after 23°C curing. Aerospace qualified.

Continued

Product designation	Wet lay-up	Compression molding	RTM	Infusion	Filament winding	Pultrusion	Pot life	Gel time	Mix viscosity	
Conditions							RT, 100ml	80°C	25°C	
Norm										
Unit							min	min	mPa.s	
Araldite® LY 3585 / Aradur® 5003-1	•••	••	••				40 - 48	6 - 8	440 - 500 at 40°C	
Araldite® LY 1564 / Aradur® 917-1 / Accelerator 960-1 [1]				••	•••	•••	80 - 90h	30 - 40	450 - 700	
Resin XB 6469 / Aradur® 2954	••	•••	•••	•••	••	••	740 - 810	38 - 42	220 - 240	
Resin XB 3518 / Aradur® 22962	••	•••	•••	••			210 - 290	15 - 20	400 - 500	
Araldite® LY 1564 / Aradur® 22962	••	•••	•••	•••			110 - 150	20 - 30	400 - 600	

	Applied cure schedule	Tg	Flexural strength	Ultimate flexural elongation	Fracture properties K_{1C} G_{1C}	Key features
		DSC, 10 K/min				
		ISO 11357-2	ISO 178		ISO 13586	
		°C	MPa	%	MPa√m J/m²	
	30 min at 80°C + 2h at 120°C	120 - 130	115 - 125	6.0 - 9.0	0.8 - 0.9 180 - 230	Medium Tg, very fast.
	4h at 80°C + 4h at 120°C	122 - 130	140 - 150	6.0 - 7.0	0.6 - 0.7 100 - 125	Low temperature cure anhydride curing system.
	90 min at 80°C + 1h at 150°C	125 - 135	100 - 110	6.5 - 7.5	0.95 - 1.0 350 - 390	Low viscosity, long pot life. Alternative to anhydride for filament winding and pultrusion when hot/wet performance is key.
	1h at 100°C + 2h at 140°C	128 - 138	120 - 135	8.5 - 10.0	0.6 - 0.8 160 - 180	Medium Tg, high elongation at break.
	15 min at 120°C + 2h at 150°C	130 - 140	124 - 132	9.0 - 11.0	0.8 - 1.0 200 - 260	Medium Tg, high elongation at break.
	4h at 80° + 4-8h at 140°C	132 - 138	150 - 162	6.5 - 8.0	0.57 - 0.65 90 - 115	Medium Tg, very latent anhydride curing system.
	2 - 3 min at 150°C - 160°C	135 - 145	-	-	-	Expandable EP system. High Tg, low density.
	2h at 80°C + 2h at 120°C + 4h at 150°C	140 - 150	130 - 140	6.0 - 7.0	0.6 - 0.65 140 - 150	Good chemical resistance. Ren® HY 5212: faster version of Ren® HY 5211.
	1h at 80°C + 8h at 140°C	143 - 148	120 - 124	6.5 - 7.5	0.7 - 0.8 150 - 180	Medium Tg, alternative to anhydride for filament winding and pultrusion when hot/wet performance is key.
	1h at 80°C + 2h at 150°C	144 - 154	120 - 135	8.0 - 10.0	0.9 - 1.2 340 - 380	Medium Tg, toughened.
	30 min at 130°C + 12h at 160°C	145 - 155	120 - 130	7.0 - 8.0	0.6 - 0.7 120 - 130	Good chemical resistance. Ren® HY 5211: faster version of XB 3473.
	4h at 80°C + 8h at 140°C	148 - 153	125 - 135	6.0 - 8.5	0.5 - 0.6 85 - 95	Medium Tg, very latent anhydride curing system.
	1h at 80°C + 8h at 160°C	150 - 158	125 - 135	7.0 - 8.0	0.8 - 1.0 250 - 290	High Tg, toughened.
	15 min at 120°C + 2h at 150°C	150 - 160	130 - 140	7.5 - 9.0	0.65 - 0.75 130 - 160	Good balance between Tg and elongation at break.
	30 min at 130°C + 12h at 160°C	165 - 175	100 - 110	5.5 - 6.5	0.7 - 0.8 170 - 190	Good chemical resistance.
	2h at 120°C + 8h at 160°C	165 - 175	100 - 140	4.0 - 7.0	0.6 - 0.8 100 - 125	High Tg, very latent anhydride curing system.
	2h at 120°C + 4h at 180°C	185 - 194	110 - 120	5.5 - 6.5	0.7 - 0.9 190 - 220	High chemical resistance.
	2h at 100°C + 1h at 140°C + 1h at 180°C + 2h at 200°C	195 - 203	98 - 108	4.0 - 4.5	0.5 - 0.6 70 - 75	Very high Tg, high chemical resistance.
	1h at 100°C + 6h at 180°C	200 - 205	75 - 95	2.0 - 3.5	0.4 - 0.5 65 - 75	Very high Tg, very latent anhydride curing system.
	90 min at 80°C + 1h at 150°C + 1h at 180°C	200 - 207	113 - 117	4.0 - 5.0	0.5 - 0.7 130 - 165	Suitable for tooling application: free stand post-cure after 40°C pre-cure conditions.

Continued

Product designation	Wet lay-up	Compression molding	RTM	Infusion	Filament winding	Pultrusion	Pot life	Gel time	Mix viscosity	
Conditions							RT, 100ml	80°C	25°C	
Norm										
Unit							min	min	mPa.s	
Araldite® LY 8615 / Aradur® 8615	••	••	••	•••	••	••	14 - 16h	34 - 38	480 - 580	
Araldite® LY 8615 / Ren® HY 5212			••		••	•••	460 - 480	58 - 62	2 000 - 2 100	
Resin XB 9721 / Aradur® 917-1 / Accelerator DY 070 [1]					••	•••	110 - 130h	6 - 9 at 120°C	550 - 750	
Resin XB 9721 / Hardener XB 3473		••	••		••	••	80 - 95h	80 - 100 at 120°C	14 000 - 17 000	
Araldite® FST 40002 / FST 40003		••	•••	•••		•••	> 24 h	see data sheet	600 - 800	
Araldite® FST 40004 / FST 40005		••	•••	•••		•••	> 24 h	see data sheet	400 - 500	

[1] Adjustable reactivity with DY 070 and Accelerator 960-1 ratio

[2] Measured with internal release agent (1-2 phr)

••• Highly recommended

•• Recommended

Formulated systems for Prepregs: Chemical B-stage and Hot-melt p

(Prepreg systems for solvent based process also available on demand)

Product designation	Mix viscosity	B-Staging	Shelf-life	Gel time [1]	Applied cure schedule	
Conditions	25°C	23°C	23°C	120°C		
Norm						
Unit	mPa.s	h		min		

Chemical B-stage process

Araldite® LY 1556 / Aradur® 1571 / Accelerator 1573 / Hardener XB 3403	4 000 - 6 000	24 - 48	> 6 weeks	6 - 11	2h at 120°C	
Araldite® LY 3508 / Aradur® 1571 / Accelerator 1573 / Hardener XB 3403	6 650 - 7 450	24 - 48	> 4 weeks	4 - 12	4h at 120°C	

Hot-melt process

Araldite® LY 3514 / Aradur® 1571 / Accelerator 1573	14 000 - 15 000 at 70°C	n.a.	> 5 weeks	17 - 21	30 min at 90°C + 2h at 120°C	
Resin XB 3515 / Aradur® 1571 / Accelerator 1573	24 000 - 28 000 at 55°C	n.a.	> 5 weeks	10 - 13	1h at 120°C + 2h at 140°C	

[1] Adjustable reactivity with Accelerator 1573 ratio

n.a.: not applicable / n.m.: not measured

DNV·GL Germanischer Lloyd (GL) certified

	Applied cure schedule	Tg	Flexural strength	Ultimate flexural elongation	Fracture properties K_{1C} G_{1C}	Key features
		DSC, 10 K/min				
		ISO 11357-2	ISO 178		ISO 13586	
		°C	MPa	%	MPa√m J/m²	
	90 min at 80°C + 1h at 150°C + 1h at 180°C	200 - 210	82 - 86	2.5 - 4.0	0.6 - 0.8 130 - 165	Suitable for tooling application: free stand post-cure after 40°C pre-cure conditions.
	90 min at 80°C + 1h at 150°C	205 - 215	135 - 140	5.5 - 6.0	0.6 - 0.65 125 - 135	Very high Tg, good chemical resistance. Ren® HY 5212: faster version of Ren® HY 5211.
	2h at 120°C + 2h at 160°C + 2h at 200°C + 4h at 220°C	205 - 215	85 - 100	2.5 - 3.0	0.4 - 0.5 45 - 60	Very high Tg, very latent anhydride curing system.
	2h at 120°C + 2h at 160°C + 2h at 200°C + 4h at 220°C	232 - 238	105 - 125	3.0 - 4.5	0.6 - 0.7 95 - 100	High chemical resistance.
	1h at 100°C + 1h at 120°C + 2h at 180°C	250 - 260	90 - 110 in tensile	4.0 - 6.0 in tensile	0.85 - 0.95 250 - 300	FST (Fire, Smoke & Toxicity) unfilled inherently flame retardant. High mechanical performance. Meets FST according to FAR 25.853.
	1h at 100°C + 1h at 120°C + 2h at 180°C	260 - 270	40 - 50 in tensile	1.0 - 2.0 in tensile	0.55 - 0.65 100 - 150	FST (Fire, Smoke & Toxicity) unfilled inherently flame retardant. Meets HL1 / HL2 according to EN 45545-2 R1/R7.

rocess

	Tg	Flexural strength	Ultimate flexural elongation	Fracture properties K_{1C} G_{1C}
	DSC, 10 K/min			
	ISO 11357-2	ISO 178		ISO 13586
	°C	MPa	%	MPa√m J/m²
	105 - 115	125 - 140	7.0 - 10.0	0.7 - 0.9 130 - 250
	115 - 125	110 - 120	5.5 - 8.0	1.4 - 1.7 850 - 1 000
	120 - 130	135 -150	6.0 - 9.0	0.8 - 0.9 280 - 320
	140 - 145	120 - 140	4.5 - 6.5	1.2 - 1.3 400 - 440

Preforming epoxy binders for RTM process

Product designation	Softening point	Tg	Typical preforming cycle
Conditions		DSC, 10 K/min	
Norm	DIN 51920	ISO 11357-2	
Unit	°C	°C	
Araldite® LT 3366	ca. 150	75 - 85	20 ± 10 sec at 180 ± 20°C + cold stamping.

Structural adhesives (epoxy)

Product designation	Mixing ratio	Pot life	Recommended cure schedule	LSS [1]	Tg	Gap filling	Key features
Conditions		23°C, 100g					
Unit		min		MPa	°C	mm	
Araldite® 2029-1 [2]	1 : 1	35 - 45	RT or at elevated temperature	24	25 - 35	5	High elongation at break, high strength.
Araldite® 2015-1	1 : 1	45 - 60	RT or at elevated temperature	17	60	10	Toughened, GL approved, resistant to weathering.
Araldite® 2031-1	1 : 1	60 - 70	RT or at elevated temperature	20	60	10	Toughened, resistant to weathering.
Araldite® AV 4858 / Hardener HW 4858	2 : 1	150	RT or at elevated temperature	38	60	10	High peel strength, high toughness.
Araldite® 2014-2	2 : 1	110	RT or at elevated temperature	18	75 - 85	5	Resistant to temperature, KIWA approved (contact with drinking water).
Araldite® AV 4859 / Hardener HW 4859	2 : 1	100	RT or at elevated temperature	33	50 - 120	10	Resistant to high temperature after post cure, high toughness.
Araldite® AW 4510 / Hardener HV 4511-1	2 : 1	80 - 90	2h at 110°C or 1h at 130°C	16	120 - 135	10	Resistant to high temperature, resistant to chemicals.

[1] On epoxy composites - LSS = Lap Shear Strength

[2] Polyurethane chemistry

Note: All adhesives are available in different pack sizes including cartridges for easy use in the field

Shell bonding adhesive, gap filling

Product designation	Pot life	Typical cure schedule	LSS [1]	Tg	Gap filling	Key features
Conditions	23°C, 500g					
Unit	min		MPa	°C	mm	
Araldite® AW 4856 / Hardener HW 4856	240 - 280	5h at 70°C	25 - 30 on 0.5 mm 13 - 16 on 3.0 mm	80 - 85	up to 40	Assembly adhesive for large structures, particularly where thick bond lines may occur.

[1] On acid etched aluminium - LSS = Lap Shear Strength

Fast assembly and repair

Product designation	Chemistry	Pot life	Fixture time	LSS [1]	Tg	Gap filling	Key features
Conditions		23°C, 100g	23°C				
Unit		min	min	MPa	°C	mm	
Araldite® 2012	EP system	6	20	18	40 - 50	self leveling	Short gel time, multipurpose.
Araldite® AW 2101 / Hardener HW 2951	EP system	6	60	20	40 - 45	5	Rigid, low shrinkage.
Araldite® 2021-1	MMA system	3 - 5	9	25	65 - 80	3 - 5	Very fast setting, tough adhesive for rapid fixing and filling of small voids.
Araldite® 2022-1	MMA system	10	15	25	65 - 80	5	No sagging, toughened.
Araldite® 2048-1	MMA system	10	35	24	65 - 75	8	Flexible, gap filling.

[1] On acid etched aluminium - LSS = Lap Shear Strength

Note: All adhesives are available in different pack sizes including cartridges for easy use in the field

EP: Epoxy

MMA: Methacrylate

We value your challenge