

Main resins for composites (base raw materials for formulators)

Product designation	Tg (DMA) (°C)	Relative Thermal Stability	Comments
Bifunctional epoxy resins			
Based on Bisphenol F Araldite® PY 306	170*	•	Extremely low viscosity and high purity resin
Based on Bisphenol A Araldite® LY 556 Tactix® 123	185*	•	Standard resin for aerospace use High purity resin
Multifunctional epoxy resins			
Based on Phenol / Cresol Novolac Araldite® EPN 1138 Araldite® ECN 1299, ECN 1280, ECN 1273 Araldite® ECN 9511	200*	•	Used as an up-grader in epoxy formulations to improve all properties (thermal, mechanical and chemical resistance)
Based on Dicyclopentadiene Tactix® 556	235*	•	High moisture resistant resin
Based on Diaminodiphenylmethane Araldite® MY 720 Araldite® MY 721 Araldite® MY 9512 Araldite® MY 9634 Araldite® MY 9655 Araldite® MY 9663	250*	•	High performance multifunctional resins, with a wide choice of viscosity specifications. Lowest viscosity available with MY 721. Suitable for continuous use in moist environment up to 120 °C
Based on Aminophenol Araldite® MY 0500 Araldite® MY 0510 Araldite® MY 0600	250*	•	High Tg and low viscosity resins can be used for viscosity adjustments of multifunctional resin formulations, or to help the blending of tougheners. Also are frequently used in adhesive formulations to upgrade thermal performance of liquid epoxy resins
Based on Trisphenol Tactix® 742	325*	•	Highest thermal stability epoxy (recommended for long-term thermal aging > 120°C). Resin stable storage at room temperature
Benzoxazines			
XU 3560** XU 8282-1**	165	••	Very high modulus, extremely low shrinkage and low moisture pick-up thermoset resin, having great synergy with epoxy resin (Tg increase to 200°C). Thermal stability between multifunctional epoxy and bismaleimides
Bismaleimides			
Matrimid® 5292 A Matrimid® 5292 B	295	••	Widely used curable thermoset resin system with excellent long-term thermal stability. Continuous use in moist environment up to 180°C
Cyanate Esters			
AroCy® L10 AroCy® XU 371 AroCy® XU 71787.02L AroCy® XU 71787.07L	260-295	••	Very low moisture absorption and low products, associated with excellent dielectric properties and thermal performance. Large range of resins available (aspects, Tg, final properties like toughness)
Polyamide-imides			
Rhodefal® 200 Rhodefal® 311	280	•••	Exceptional chemical resistance and thermal stability combined with a strong adhesion to metals and a good dielectric rigidity. Suitable for continuous use up to 220°C. Used for the preparation of enamel varnishes, protection varnishes, and high temperature impregnation varnishes. Products are supplied in solvent

*when cured with Aradur® 976-1 (4,4'-DDS),**EINECS registration pending

Special tougheners for composites (base raw materials for formulators)

Matrimid® 5218 Matrimid® 9725	300	•••	Soluble thermoplastic polyimide, fully imidized, designed for extreme temperature applications (continuous use > 230°C). Also used as high temperature toughener in epoxy and for the preparation of gas separation membranes. Micronized powder available
Flexibilizer DY 965	-	•••	Recommended for the preparation of high impact resistant epoxy resin systems

High performance hardeners (base raw materials for formulators)

Product designation	ASSAY (%)	Melting Point (°C)	Mean particle size (µm)	Comments
Aradur® 976-1	> 99	175	-	4.4' DDS
Aradur® 9664-1	> 98	175	< 70	Micropulverised 4.4' DDS
Aradur® 9719-1	> 98	170	< 60	Micropulverised 3.3' DDS

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Aerospace Parts Manufacturing and Repair Selector guide



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As the aerospace industry gains an increasing awareness of the benefits of composites materials, Huntsman Advanced Materials products are at the forefront of technology, offering a range of resin systems for fiber reinforcement, adhesives and syntactics. Many products are included as approved repair materials in manufacturers' structural repair manuals and service bulletins.

Syntactics

Product designation	Selected specifications	Work Life	Curing Class	Typ. Service Temperature	Compressive Strength	Density	Key characteristics
Conditions Unit							

Ultra-low density

One-component syntactic

Epocast® 1610-A1	BMS 5-28, Type 10	30 days	120	90	16 ¹⁾	0.50	Temperature resistance
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Two-component syntactics

Araldite® 1641-A/B	MSRR 1076	180	100	90	13 ¹⁾	0.50	Vibration damping
Epocast® 1628-A/B	BMS 5-28, Type 28	60	RT	70	21 ¹⁾	0.50	Non sag consistency Self-extinguishing
Araldite® 1644 A/B	AIMS 10-03-001	30	RT or 80	80	30 ²⁾	0.55	High compression strength

Low density

One-component frozen syntactic

Epocast® 1614-A1	BMS 5-28, Type 14, Class 1	8 hr	120	180	100 ¹⁾	0.75	High compression strength Self-extinguishing
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Two-component syntactics

Araldite® 252-A/B	ASNA 4072, issA	60	RT	70	35 ¹⁾	0.65	Good lap shear strength Self-extinguishing
Epocast® 1626 products	BMS 5-28, Type 26	5-60	RT	70	17 ¹⁾	0.65	Toughened foam
Epocast® 169-A/9615	SS-9587, Type 1	90	RT	70	14 ¹⁾	0.68	Long work life Wood-like
Epocast® 1638-A/B	FAR 25.853	12-25	RT	80	50 ¹⁾	0.70	Compression strength Self-extinguishing
Epocast® 1618-D/B	BMS 5-28, Type 18, Class 1	15	RT	90	34 ¹⁾	0.70	Pumpable Self-extinguishing
Epocast® 1633 products	BMS 5-28, Type 18, Class 2, AIMS 08-08-001-04	2-5	RT	70	45 ¹⁾	0.73	In 4 colours Self-extinguishing

Medium density

Two-component syntactics

Epocast® 1656-A/B	GM 4006, Type 1, Class B	50-90	RT	120	55 ¹⁾	0.80	Long work life
Epocast® 1652A/B	GM 4006, Type 1, Class B, SS-9587, Type 2	30-60	RT	180	55 ¹⁾	0.80	Temperature resistance
Epocast® 89537-A/B	BMS 5-28, Type 7, Class 2	70	RT	180	59 ¹⁾	0.90	No sagging up to 12.5 mm Self-extinguishing
CG 1305-R/H	BMS 5-28, Type 7, Class 1	> 60	RT	180	60 ¹⁾	0.90	Low CTE Self-extinguishing

High density

One component frozen syntactic

Epocast® 1627	BMS 5-28, Type 27	24 hr	180	180	207 ¹⁾	1.80	High compression strength Low CTE
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Two-component syntactics

Epocast® 1511-A/B	BMS 5-28, Type 3	40-60	RT	90	69 ¹⁾	1.25	Fast cure Non flow
Epocast® 1636-A/B	BMS 5-28, Type 6	120	RT	180	103 ¹⁾	1.72	Long work life Self-extinguishing

¹⁾ ASTM D-695 • ²⁾ ISO 604 • RT : Room Temperature = 23±2°C

Adhesives

Product designation	Selected specifications	Mixed Viscosity	Work Life	Curing Class	Typ. Service Temperature	Lap Shear Strength (al/al)*		Key characteristics
Conditions Unit						RT (mPa.s)	RT (min)	

Epoxy adhesives

Araldite® 204	ABR2-0048	3 500 000	N/A	120	90	12	10	Foaming
Araldite® 1570 A/B	AIMS 10-04-006	300 000	60	RT	60	17	5	Self-extinguishing FAR 25.856 Polyolefins bonding
Araldite® 2013	ABP 5-1158 Issue 2	Paste	65	RT	60	21	5	No sagging up to 5 mm Multipurpose
Araldite® 2011	ABR2-1079 DAN 1284-01	Non-sag paste	100	RT	60	25	8	Multipurpose Tough
Epibond® 1217-A/B	HMS 16-1068, CL 8B	Paste	4-8	RT	65	17	3	Translucent Fast cure
Araldite® 420-A/B	ASNA 4125, issB	Semi-paste	120-200	RT	70	35	4	High lap shear strength Tough
Epibond® 8543-C/B	BMS 5-123 Type 1, Class 3	Non-sag paste	3	RT	80	14	3	Fast cure at low temperature
Araldite® 2015	ABR2-1081	Non-sag paste	35	RT	80	20	12	No sagging up to 10 mm Tough
Epibond® 1210 A/B	LAC 40-4093 Class B	Soft paste	50-75	RT	90	17	2	Flexible bond line
Epibond® 1544 products	BMS 5-126, Type 4	Semi-paste	10-20	RT	90	18	-	Self-extinguishing FAR 25.853
Epibond® 156-A/B	-	Soft paste	20-50	RT	120	14	13.5	Electrical properties
Epibond® 1590 FST A/B	DAN 1199-01, DAN 1187-01	120 000	60	RT	120	22	11	Self-extinguishing For metals & thermoplastics
Epibond® 1590-3mm A/B	AIMS 10-07-002	2 000 000	50	70	120	32	20	Liquid shim High compression strength
Epibond® 1210-A/9861	LAC 30-4639-0200	Semi-paste	35-60	RT	150	19	17	Good temperature resistance
Epibond® 1590-A/B	AIMS 10-09-001	70 000	30	60	150	38	23	Structural adhesive
Araldite® XD 4510 / Araldite® XD 451	-	100 000	90	130	180	17	17	High temperature resistance

Polyurethane adhesives

Uralane® 5774-A/C	AIMS 10-04-001 BMS 5-105, Type 5, LES 1359	Semi-paste	15-20	RT	80	15	9	High peel strength
Uralane® 5777-A/B	GD 0-73668, Type 3	Semi-paste	10-12	RT	80	15	7	Automatic dispensing

Methacrylic adhesives

Araldite® 2021	-	40 000	2-3	RT	100	23	17	High elongation at break
Agomet® F330	-	18 000	10	RT	130	33	-	Temperature and mechanical resistance

* ASTM D-1002 • RT : Room Temperature = 23±2°C

Laminating systems

Product designation	Selected specifications	Mixed Viscosity	Work Life	Curing Class	Typ. Service Temperature	Key characteristics
Conditions Unit						
Epocast® 50-A1 products	BMS 8-201, Type 3/4	2 400	20-65	RT or 80	80	Long or short work life. Self extinguishing FAR 25.853A
Epocast® 54 A/B	AIMS 04-27-000-01	8 000	15-25	RT or 70 or 90	80	Self extinguishing FAR 25.853A
Araldite® LY 5052 / Aradur® 5052	-	800	130	RT or 50 or 100	100	Transparent, low viscosity
Araldite® 501-A/B	ASNA 4047, Issue B	3 500	90	RT or 45 or 70	120	Long work life
Epocast® 52-A/B	AIMS 08-01-002-01 AIMS 08-02-002-01 BMS 8-301	5 500	4.5-5.5 hr	70 or 90	150	Temperature resistance
Araldite® LY 5210 / Aradur® 5212	-	2 000	12 hr	120-200	200	High temperature resistance

RT : Room Temperature = 23±2°C

Infusion systems

Product designation	Mixed Viscosity	Pot Life	Gel Time Hot Plate	Curing Class	Glass Transition Temperature	Key characteristics
Conditions Unit	40°C (mPa.s)	RT / 100 ml (min)	(°C)	(°C)	DSC (10K/min) (°C)	
Araldite® LY 5052 / Aradur® 5052	200	50 @ 40°C	460 min @ RT	RT or 50 or 100	100-130	Cold curing
Araldite® LY 564 / Aradur® 22962	150	130	3-6 min @ 120	120	120-130	Fast cure
Araldite® LY 564 / Aradur® 2954	250	150 @ 40°C	40 min @ 80	80 + 140	130-150	Good chemical resistance
Araldite® LY 556 / Hardener XB 3473	800	35 hr	68-78 min @ 120	120 + 180	185-195	High temperature resistance

RT : Room Temperature = 23±2°C

Mould release agents

Product designation	Supplied form	Key characteristics
QZ 5101	Blue liquid	Poly Vinyl Alcohol based suitable as sealer for porous substrate
QV 5110	White paste	Wax based Polishable to lustre
QZ 5111	White liquid	Wax based Hard layer
QZ 13	Colourless liquid	Silicone based



Products which are also suitable for Maintenance and Repair.

