

LOCTITE®
BONDERITE®

Adhesives and Surface Treatment

Solutions for Helicopter Applications



Henkel

LOCTITE

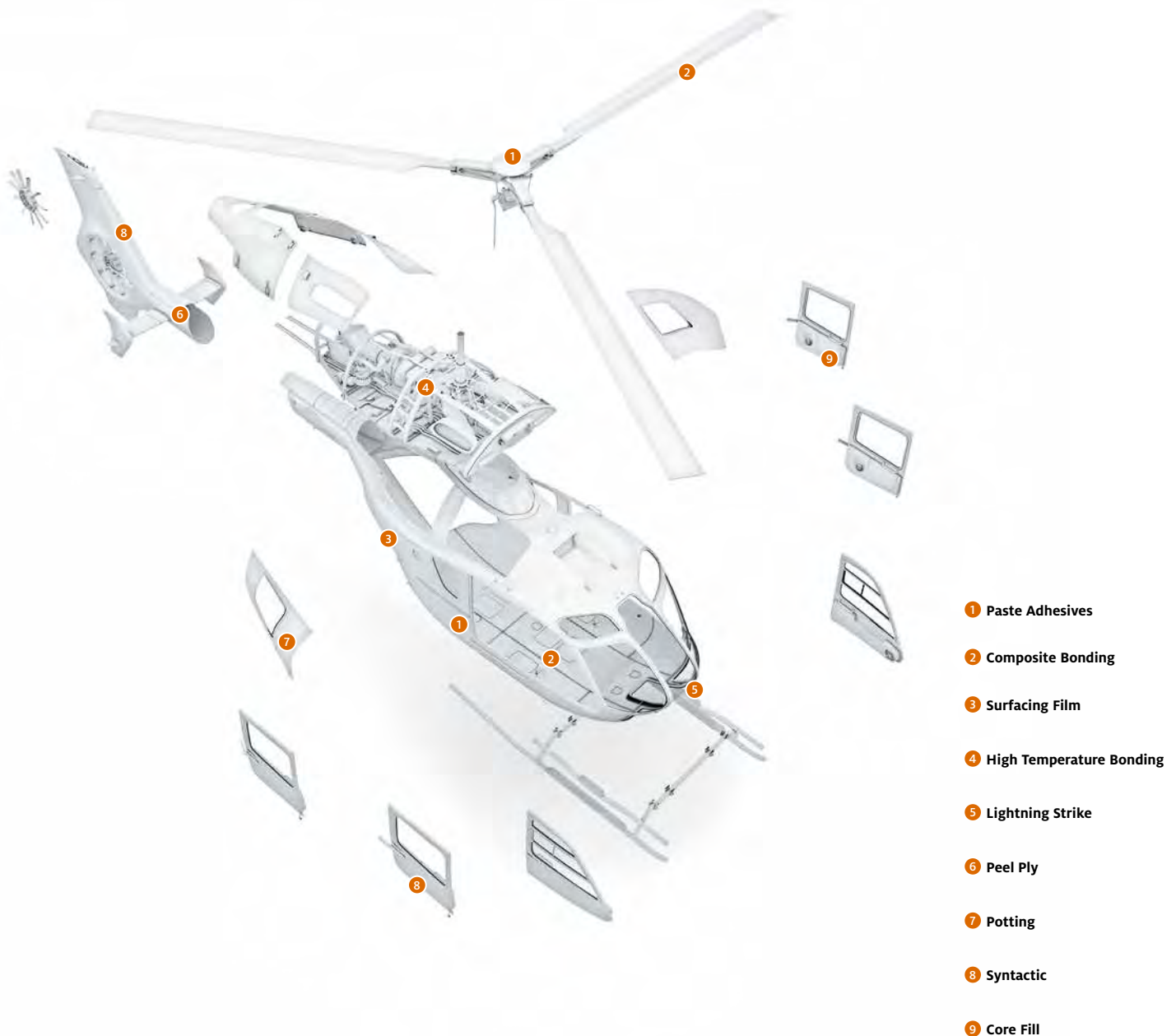
Film and paste adhesives for helicopter applications

With over four decades of experience: LOCTITE adhesives

As the leading solutions provider for helicopter industry, Henkel provides solutions to cover the entire helicopter assembly process including composite and metal bonding, surfacing, lightning strike protection, honeycomb core fill, syntactic structures, potting and composite surface preparation. Being a long-term partner for industry's manufacturers globally, Henkel provides sustainable solutions that enhance performance and safety of helicopters as well as the manufacturer's production efficiency.

Choose from our broad adhesives portfolio

Our broad portfolio of film and paste solutions brings advanced technologies that help you enhance the design flexibility, durability and quality of your equipment while reducing the weight of the structural assemblies.

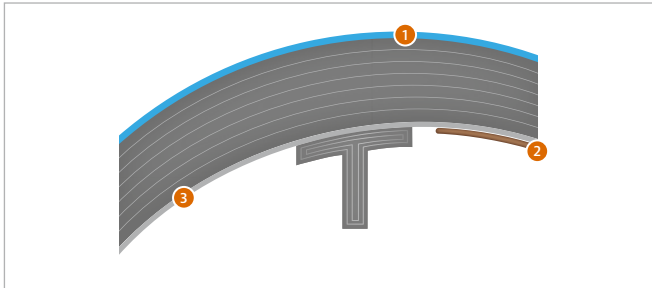


LOCTITE film and paste adhesives

Product Technology		Product		Application
250 °F / 121 °C Metal Bonding	Film	LOCTITE EA 9628 AERO LOCTITE EA 9628H AERO LOCTITE EA 9696 AERO	LOCTITE EA 9686 AERO LOCTITE EA 9690 AERO	Helicopter blades, control surfaces, access doors
	Paste	LOCTITE EA 9309.3 NA AERO LOCTITE EA 9309 NA AERO	LOCTITE EA 9320 NA AERO	
300 °F / 149 °C Composite Bonding	Film	LOCTITE EA 9695 AERO	LOCTITE EA 7000 AERO	Composite substrates, co-cure or pre-cure
	Paste	LOCTITE EA 9390 AERO LOCTITE EA 9396 AERO LOCTITE EA 9394.2 AERO	LOCTITE EA 960F AERO LOCTITE EA 9380 AERO LOCTITE EA 9360 AERO	
High Temperature Bonding	Film	LOCTITE EA 9658 AERO		Engine, Nacelle
	Paste	LOCTITE EA 9394 AERO LOCTITE EA 9395 AERO	LOCTITE EA 9394 / C-2 AERO LOCTITE EA 9396 AERO	Access doors, control surfaces
Surfacing Film and Lightning Strike Protection	Film	LOCTITE EA 9845 SF AERO	LOCTITE EA 9845 LC AERO	Exterior composite structures
Peel Ply	Film	LOCTITE EA 9895 WPP AERO	LOCTITE EA 9896 WPP AERO	Composite Substrates
Potting	Paste	LOCTITE EA 9820 AERO	LOCTITE EA 9825 AERO	Used in honeycomb composite parts requiring high compressive strength
Core splice	Film	LOCTITE EF 9899 AERO	LOCTITE EF 562	Honeycomb sandwich structures
Syntactic	Film	LOCTITE HC 9823.1 AERO	LOCTITE HC 9872.1 AERO	Structural sandwich panels

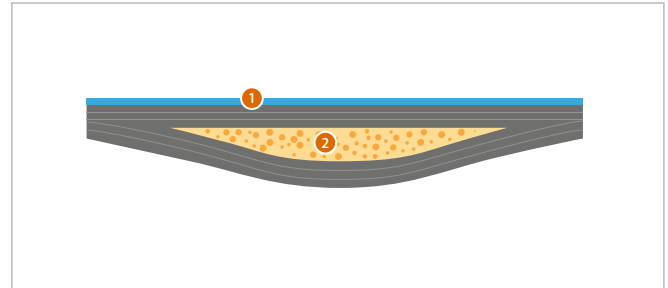
Applications overview

Primary Structure



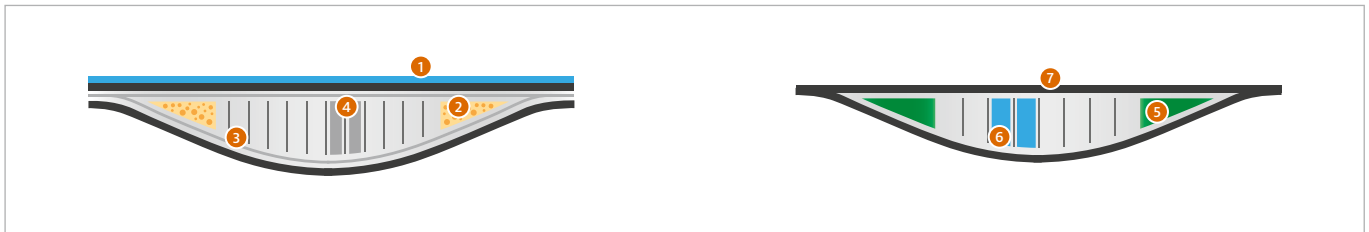
- 1 **Lightning strike /surfacing film**
LOCTITE EA 9845 SF Aero,
LOCTITE EA 9845 LC Aero
- 2 **Peel ply** – LOCTITE EA 9895 WPP
AERO, LOCTITE EA 9896 WPP
- 3 **Film adhesive** – LOCTITE EA 7000
Aero, LOCTITE EA 9695 Aero,
LOCTITE 9658 Aero

Secondary Structure



- 1 **Lightning strike /surfacing film**
LOCTITE EA 9845 SF Aero,
LOCTITE EA 9845 LC Aero
- 2 **Syntactic Core** – LOCTITE HC 9823.1
Aero, LOCTITE HC 9872.1 AERO

Sandwich Structures



- 1 **Lightning strike /surfacing film**
LOCTITE EA 9845 SF Aero
LOCTITE EA 9845 LC Aero
- 2 **Syntactic core** – LOCTITE HC 9872.1
Aero, LOCTITE HC 9875 AERO
- 3 **Film adhesive** – LOCTITE EA 9658
AERO
- 4 **High temperature potting
compound & paste adhesive** –
LOCTITE EA 9820 AERO,
LOCTITE EA 9825 Aero
- 5 **Expanding syntactic cores** –
LOCTITE EF 9899 AERO
- 6 **Expanding core splice** – LOCTITE EF
562 AERO, LOCTITE EF 9899 AERO
- 7 **Peel Ply** – LOCTITE EA 9895 AERO,
LOCTITE EA 9896 AERO

Film adhesives

Characteristics	250 °F / 121 °C Service	•	•		
	350 °F / 177 °C Service			•	
	Cure Temperature (°F / °C)	250 °F / 121 °C	250 °F / 121 °C	350 °F / 177 °C	
	Cure Time	90 Minutes	90 Minutes	60 Minutes	
	Storage Temperature (°F / °C)	0 °F / -18 °C	0 °F / -18 °C	0 °F / -18 °C	
	Out-time (Days @ 77 °F / 25 °C) – FILM	20 Days	20 Days	15 Days	
	Out-time (Days @ 90 °F / 32 °C) – FILM	10 Days	10 Days	10 Days	
Mechanical Properties	Bell Peel 77 °F (lb / in) / 25 °C (N / 25mm)	54 lbs / in 240 N / 25 mm	–	13 lb / in 58 N / 25 mm	
	T Peel 77 °F (lb / in) / 25 °C (N / 25mm)	37 lbs / in 165 N / 25 mm	35 lbs / in 156 N / 25 mm	–	
	TENSILE LAP SHEAR	-67 °F (psi) / -55 °C (MPa)	5,500 psi / 37.9 MPa	5,500 psi / 38.0 MPa	3,900 psi / 27.0 MPa
		77 °F (psi) / 25 °C (MPa)	6,000 psi / 41.3 MPa	5,850 psi / 40.3 MPa	4,800 psi / 33.1 MPa
		180 °F (psi) / 82 °C (MPa)	4,000 psi / 27.6 MPa	3,700 psi / 25.5 MPa	–
		Elevated Temperature (psi / MPa)	250 °F / 121 °C: 2,000 psi / 13.8 MPa	250 °F / 121 °C 1,300 psi / 9.0 MPa	350 °F / 177 °C: 2,800 psi / 19 MPa
	Honeycomb Climbing Drum Peel @ 77 °F (in-lb / in) / 25 °C (m-N / m)	60 in-lb / 3in 80 m-N / m	60 in-lb / 3in 89 m-N / m	12 in.lb / 3 in 50 m.N / m	
	Flatwise Tension @ 77 °F / 25 °C (psi / MPa)	1,400 psi / 9.6 MPa	1,100 psi / 7.6 MPa	1,000 psi / 6.9 MPa	
Bulk Properties	Tg Dry (°F / °C)	248 °F / 120 °C	240 °F / 116 °C	392 °F / 200 °C	
	Tg Wet (°F / °C)	210 °F / 99 °C	200 °F / 93 °C	300 °F / 150 °C	
	Tensile Strength (dogbone) @ 77 °F (psi) / 25 °C (MPa)	7,500 psi / 51.7 MPa	7,500 psi / 51.7 MPa	–	
	Tensile Modulus @ 77 °F (ksi) / 25 °C (MPa)	345 ksi / 2,377 MPa	346 ksi / 2,377 MPa	–	
	Elongation @ 77 °F / 25 °C (% at break)	7.5	7.5	–	
	Compressive Strength @ 77 °F (psi) / 25 °C (MPa)	11,500 psi / 79.3 MPa	11,500 psi / 79.3 MPa	–	
	Compressive Modulus @ 77 °F (ksi) / 25 °C (MPa)	310 ksi / 2,136 MPa	310 ksi / 2,136 MPa	–	
Product	New Product Name	LOCTITE EA 9628 AERO	LOCTITE EA 9628H AERO	LOCTITE EA 9658 AERO	
	Known As	Hysol® EA 9628™	Hysol® EA 9628H™	Hysol® EA 9658™	
Availability	Packaging	Roll	Roll	Roll	
Description	LOCTITE EA 9628 AERO	LOCTITE EA 9628H AERO	LOCTITE EA 9658 AERO		
	<ul style="list-style-type: none"> • Good Toughness • 250 °F / 121 °C Cure • Bonds Many Materials • Excellent Durability 	<ul style="list-style-type: none"> • Excellent Durability • 250 °F / 121 °C Cure • Applications Include Helicopter Blade Bonding • Good Toughness • Product is preferred for helicopter blade construction because of the product flow characteristics and its ability to be cured in an out of autoclave process 	<ul style="list-style-type: none"> • Increased toughness with high temperature performance • Designed for composite, metal or honeycomb • State of the art flow control to minimize hole blockage and excess flash/flow • Thermally stable • Offered with a companion low VOC water based corrosion inhibiting primer, LOCTITE EA 9258.1 AERO 		

	•	•	•
	250 °F / 121 °C or 350 °F / 177 °C	225 – 275 °F 107 – 129 °C	250 °F 121 °C
	60 – 90 Minutes	60 – 90 Minutes	60 Minutes
	0 °F / -18 °C	0 °F / -18 °C	0 °F / -18 °C
	90 Days	60 Days	14 Days
	45 Days	30 Days	10 Days

	66 lb / in 294 N / 25 mm	75 lbs / in 334 N / 25 mm	87 lbs / in 387 N / 25 mm
	-		
	5,000 psi / 40.0 MPa	7,000 psi / 48.3 MPa	6,350 psi / 43.8 MPa
	5,800 psi / 40.0 MPa	6,000 psi / 41.3 MPa	6,100 psi / 42.0 MPa
	4,480 psi / 30.9 MPa	4,507 psi / 31.1 MPa	3,900 psi / 26.9 MPa
	250 °F / 121 °C: 2,780 psi / 19.2 MPa	250 °F / 121 °C: 2,000 psi / 12.8 MPa	250 °F / 121 °C: 2,100 psi / 14.5 MPa
	17 in-lb / 3 in 76 m-n / m	78 lbs / in 116 m.N / m	18 in.lb / in 80 N.m / m
	1,000 psi 6.9 MPa	1298 lbs / in 9.0 m.N / m	925 psi 6.4 MPa

	271 °F / 133 °C	253 °F / 123 °C	240 °F / 115 °C
	190 °F / 88 °C	200 °F / 93 °C	200 °F / 95 °C
	8,100 psi / 56 MPa	6,839 psi / 47.3 MPa	-
	380 ksi / 2,620 MPa	277.3 ksi / 1,912 MPa	-
	6.0	1.6	-
	-	-	-
	-	-	-

	LOCTITE EA 9686 AERO	LOCTITE EA 9696 AERO	LOCTITE EA 9690 AERO
	Hysol® EA 9686™	Hysol® EA 9696™	Hysol® EA 9690™

	Roll	Roll	Roll
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<p>LOCTITE EA 9686 AERO</p> <ul style="list-style-type: none"> • Balanced high peel strength and high shear strength • Balanced flow, enabling use of one adhesive for honeycomb and metal to metal applications • Excellent environmental resistance • Optimized reticulation properties • Long out-time facilitates shop floor usage and repair applications • Wide cure and process tolerance 	<p>LOCTITE EA 9696 AERO</p> <ul style="list-style-type: none"> • Excellent Environmental Resistance • High Toughness Maintaining Service Temperature • Balanced Flow • Allows from 225 °F to 265 °F / 107 °C to 129 °C Cure • Long Out-time Facilitates Shop Floor Usage and Repair Applications • Reticulatable 	<p>LOCTITE EA 9690 AERO</p> <ul style="list-style-type: none"> • Low Flow • Exceptional Peel Strength • Available with Knit or Non-Woven Mat • Excellent Performance with Low Pressure Cures
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Film adhesives

Characteristics	250 °F / 121 °C Service					
	300 °F / 149 °C Service					
	350 °F / 177 °C Service					
	Cure Temperature (°F / °C)	250 °F / 121 °C 350 °F / 177 °C	250 °F / 121 °C 350 °F / 177 °C	250 °F / 121 °C		
	Cure Time	60 – 120 Minutes	60 – 120 Minutes	90 – 120 Minutes		
	Storage Temperature (°F / °C)	0 °F / -18 °C	0 °F / -18 °C	0 °F / -18 °C		
	Out-time (Days @ 77 °F / 25 °C) – FILM	30 Days	90 Days	14 Days		
	Out-time (Days @ 90 °F / 32 °C) – FILM	30 Days	45 Days	10 Days		
Mechanical Properties	Bell Peel 77 °F (lb / in) 25 °C (N / 25mm)	20 lbs / in 89 N / 25 mm	20 lbs / in 89.6 N / 25 mm	-		
	TENSILE LAP SHEAR	-67 °F (psi) / -55 °C (MPa)	3,600 psi / 26.2 MPa	4,400 psi / 30.3 MPa	-	
		77 °F (psi) / 25 °C (MPa)	4,500 psi / 31.0 MPa	5,000 psi / 34.5 MPa	-	
		180 °F (psi) / 82 °C (MPa)	-	4,500 psi / 31.0 MPa	-	
		Elevated Temperature (psi / MPa)	270 °F / 132 °C: 1,300 psi / 9.0 MPa	300 °F / 149 °C: 3,400 psi / 23.4 MPa	-	
	Honeycomb Climbing Drum Peel @ 77 °F (in-lb / in) / 25° (m-N / m)	27 in.lb / 3in 40 m.N / m	18 in.lb / 3 in 82 m.N / m	-		
	Flatwise Tension @ 77 °F / 25 °C (psi / MPa)	1,070 psi 7.4 MPa	1,200 psi 8.3 MPa	-		
Bulk Properties	Tg Dry (°F / °C)	293 °F / 145 °C	302 °F / 150 °C	270 °F / 132 °C		
	Tg Wet (°F / °C)	190 °F / 88 °C	203 °F / 95 °C	217 °F / 103 °C		
	Tensile Strength (dogbone) @ 77 °F (psi) / 25 °C (MPa)	-	11,000 psi / 76 MPa	-		
	Tensile Modulus @ 77 °F (ksi) / 25 °C (MPa)	-	450 ksi / 3,100 MPa	-		
	Elongation @ 77 °F / 25 °C (% at break)	-	3 – 4 %	-		
Product	New Product Name	LOCTITE EA 7000 AERO	LOCTITE EA 9695 AERO	LOCTITE EA 9896 WPP AERO		
	Known As	Hysol® PL 7000™	Hysol® EA 9695™	Hysol® EA 9896 WPP™ NEW!		
Availability	Packaging	Roll	Roll	Roll		
Description	LOCTITE EA 7000 AERO	LOCTITE EA 9695 AERO	LOCTITE EA 9896 WPP AERO			
	<ul style="list-style-type: none"> Dual temperature cure capabilities Epoxy film adhesive for composite bonding applications Excellent performance properties in composite bonding Excellent results on composite surfaces Excellent fracture toughness (G1c) 	<ul style="list-style-type: none"> X-ray Opaque Excellent Environmental Resistance Reticulatable Good Pre and Post Bond Moisture Resistance Low Flow Allows 250 °F / 121 °C or 350 °F / 177 °C Cure Co-Cure with Composites Long Out time Facilitates Shop Floor Usage and Repair Applications 	<ul style="list-style-type: none"> Provides a finer texture than EA 9895 WPP, ideal for peel and paint applications Durable bond Minimal residual nylon fibers left on substrate after removal Minimal risk of interfacial failure in bonded structures No sanding or solvent wiping required for bonding Minimal force required to remove peel ply layer 			

	•		
		•	
			•
	350 °F / 177 °C	252 °F / 121 °C or 350 °F / 177 °C	250 °F / 121 °C or 350 °F / 177 °C
	90 – 120 Minutes	60 – 120 Minutes	60 – 120 Minutes
	0 °F / -18 °C	0 °F / -18 °C	0 °F / -18 °C
	14 Days	45 Days	45 Days
	10 Days	10 Days	10 Days
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	228 °F / 109 °C	254 °F / 122 °C	252 °F / 122 °C
	-	223 °F / 105 °C	221 °F / 105 °C
	-	-	-
	-	-	-
	-	-	-
	LOCTITE EA 9895 WPP AERO	LOCTITE EA 9845 AERO	LOCTITE EA 9845LC AERO
	Hysol® EA 9895 WPP™	Hysol® EA 9845SF™	Hysol® EA 9845LSC™
	Roll	Roll	Roll
	LOCTITE EA 9895 WPP AERO <ul style="list-style-type: none"> Provides: More durable bond than dry peel ply fabrics Minimal residual polyester fibers left on substrate after removal Promotes cohesive failure mode Compatible with third generation composites No sanding or solvent wiping required for bonding Minimal force required to remove peel ply layer 	LOCTITE EA 9845 AERO is an epoxy-based composite surfacing film designed to improve the surface quality of honeycomb stiffened composite parts. The product is manufactured with a non-woven fabric for support.	LOCTITE EA 9845LC AERO is an epoxy-based composite surfacing film containing copper screen designed to lightning strike protection.



Paste

Characteristics	180 °F / 82 °C Service	•	•	•	
	300 °F / 149 °C Service				
	350 °F / 177 °C Service				
	Improved Hot / Wet Properties	•	•	•	
	Toughened	•	•	•	
	Consistency	Moderate Viscosity	Moderate Viscosity	Thixotropic	
	Form	2 Part	2 Part	2 Part	
	Peel Strength	High	High	High	
Mechanical Properties	Bell Peel @ 77 °F (lb / in) / 25 °C (N / 25 mm)	94 lbs / in 418 N / 25 mm	35 lbs / in 150 N / 25 mm	60 lbs / in 265 N / 25 mm	
	TENSILE LAP SHEAR	-67 °F (psi) / -55 °C (MPa)	5,500 psi / 38.0 MPa	4,900 psi / 33.8 MPa	4,000 psi / 27.6 MPa
		77 °F (psi) / 25 °C (MPa)	5,000 psi / 34.5 MPa	5,000 psi / 34.5 MPa	5,000 psi / 34.5 MPa
		180 °F (psi) / 82 °C (MPa)	750 psi / 5.2 MPa	2,300 psi / 15.9 MPa	3,000 psi / 20.7 MPa
		Elevated Temperature (psi / MPa)	when tested at 400 °F / 204 °C	–	250 °F / 121 °C
Bulk Properties	Tg Dry (°F / °C)	142 °F / 61 °C	180 °F / 82 °C	151 °F / 66 °C	
	Tg Wet (°F / °C)	147 °F / 64 °C	–	–	
	Tensile Strength @ 77 °F (psi) / 25 °C (MPa)	4,670 psi / 32.2 MPa	5,000 psi / 34.5 MPa	–	
	Tensile Modulus @ 77 °F (ksi) / 25 °C (MPa)	334 ksi / 2,303 MPa	330 ksi / 2,274 MPa	487.2 ksi / 3360 MPa	
	Elongation @ 77 °F / 25 °C (% at break)	10	9	5	
	Compressive Strength @ 77 °F (psi) / 25 °C (MPa)	7,500 psi / 51.7 MPa	8,000 psi / 55.1 MPa	9,878 psi / 68 MPa	
	Compressive Modulus @ 77 °F (ksi) / 25 °C (MPa)	245 ksi / 1,688 MPa	265 ksi / 1,826 MPa	368 ksi / 2,538 MPa	
	Handling	Mix Ratio Weight (Part A / Part B)	100:22	100:19	100 :43
Cure Temperature (°F / °C)		77 °F / 25 °C, 180 °F / 82 °C	> 77 – 200 °F / > 25 – 93 °C	77 – 180 °F / 25 – 82 °C	
Cure Time		3 – 5 Days / 1 Hour	5 – 7 Days / 1 Hour	5 – 7 Days / 1 Hour	
Storage Temperature (°F / °C)		77 °F / 25 °C	77 °F / 25 °C	77 °F / 25 °C	
Pot Life (Minutes / lb) / (Minutes / kg)		35 Minutes / 450 Gram Mass	25 Minutes / 200 Gram Mass	50 Minutes / 200 Gram Mass	
Product	New Product Name	LOCTITE EA 9309.3NA AERO	LOCTITE EA 9320NA AERO	LOCTITE EA 9360 AERO	
	Known As	Hysol® EA 9309.3NA™	Hysol® EA 9320NA™	Hysol® EA 9360™	
Availability	Packaging Configurations	Quart Kit, Gallon Kit, Gram Kit, Injection Kit	Quart Kit, Gallon Kit, Injection Kit	Quart Kit, Dual Cartridge, Gallon Kit	
Description	LOCTITE EA 9309.3NA AERO • High Shear Strength • High Peel Strength • Bondline Thickness Control • Good Environmental Resistance		LOCTITE EA 9320NA AERO is a two-component paste adhesive with good peel strength as well as elevated temperature resistance.		
			LOCTITE EA 9360 AERO • Available in dual cartridge packaging • High peel strength • Excellent static stress durability • >225 °F (107 °C) service • Easy mixing two component system • Room temperature cure • Low Slump		

	•		•	•	•
		•			
	•			•	•
	•	•			•
	Thixotropic	Moderate Viscosity	Moderate Viscosity	Low Viscosity	Thixotropic
	2 Part	2 Part	2 Part	2 Part	2 Part
	High	High	Low	Nil	Low
	50 lbs / in 178 N / 25 mm	25 lbs / in 111 N / 25 mm	10 lbs / in 45 N / 25 mm	–	20 lbs / in 89 N / 25 mm
	4,650 psi / 32.1 MPa	6,700 psi / 46.2 MPa	3,500 psi / 24.1 MPa	2,200 psi / 15.2 MPa	3,300 psi / 22.7 MPa
	5,350 psi / 36.9 MPa	6,100 psi / 42.1 MPa	5,000 psi / 34.5 MPa	2,600 psi / 17.9 MPa	4,200 psi / 28.9 MPa
	4,200 psi / 29.0 MPa	1,300 psi / 9.0 MPa	4,000 psi / 27.5 MPa	3,000 psi / 20.7 MPa	3,000 psi / 20.7 MPa
	250 °F / 121 °C		350 °F / 177 °C	350 °F / 177 °C	350 °F / 177 °C
	200 °F / 93 °C	127 °F / 53 °C	–	345 °F / 174 °C	172 °F / 78 °C
	225 °F / 108 °C	147 °F / 64 °C	–	302 °F / 150 °C	154 °F / 68 °C
	–	4,500 psi / 31 MPa	–	8,200 psi / 56.5 MPa	6,675 psi / 46.0 MPa
	–	338 ksi / 2,331 MPa	–	418 ksi / 2,880 MPa	615 ksi / 4,237 MPa
		10	–	2.5	1.7
	11,300 psi / 78 MPa	7,000 psi / 48.2 MPa	32,000 psi / 220.7 MPa	5,300 psi / 36.6 MPa	10,000 psi / 68.9 MPa
	355 ksi / 2,950 MPa	249 ksi / 1,716 MPa	–	–	–
	100:55	100 :23	100 :20	100:56	100:17
	≥ 160 – 175 °F / 70 – 80 °C	77 °F / 25 °C, 150 °F / 66 °C	> 200 °F / 93 °C	200 °F/93 °C, 250 °F/121 °C, 300 °F / 149 °C	77 – 200 °F / 25 – 93 °C
	4 Hours	3 – 5 Days 1 Hour	1 Hour	3 Hours 40 Minutes / 2 Hours 30 Minutes / 2 Hours 10 Minutes	3 – 5 Days / 1 Hour
	40 °F / 4 °C	77 °F / 25 °C	77 °F / 25 °C	40 °F / 4 °C	77 °F / 25 °C
	180 Minutes / 500 Gram Mass	120 Minutes 100 Gram Mass	7 Hours 450 Gram Mass	120 Minutes 250 Gram Mass	90 Minutes 450 Gram Mass
	LOCTITE EA 9380 AERO	LOCTITE EA 9309NA AERO	LOCTITE EA 9394/C-2 AERO	LOCTITE EA 9390 AERO	LOCTITE EA 9394 AERO
	Hysol® EA 9380™	Hysol® EA 9309NA™	Hysol® EA 9394™ / C-2™	Hysol® EA 9390™	Hysol® EA 9394™
	Barrier Kit, Quart Kit	Pint Kit, Quart Kit, Gallon Kit, Clip Pack, Injection Kit	Quart Kit, Injection Kit, Clip Pack	Quart Kit, Clip Pack, Barrier Kit, Gram Kit	Dual Cartridge, Quart Kit, Gallon Kit, Clip Pack, Pint Kit, Gram Kit
	LOCTITE EA 9380 AERO • Low temp curing two-part adhesive • Meter mixable • High strength, toughness and high temp resistance • Prebond humidity resistant	LOCTITE EA 9309NA AERO • High Peel Strength • Bonds Many Surfaces • Room Temperature Cure • Two Component	LOCTITE EA 9394/C-2 AERO is an elevated temperature curing, high service temperature structural paste adhesive. It uses a non-aromatic amine curing agent that retains many of the excellent properties offered by aromatic amine cured systems, high temperature service with a long pot life.	LOCTITE EA 9390 AERO • Low Viscosity • Good Hot/Wet Strength • Good Wetting • High Shear Modulus • Cures at 200 °F / 93 °C • BMS 8-301 Qualified	LOCTITE EA 9394 AERO • Room Temperature Cure • Good Gap Filling Capabilities • 350 °F / 177 °C Performance • Potting Material • Room Temperature Storage • Outstanding Mechanical Properties • Long Pot Life • Low Toxicity

Paste

Characteristics	300 °F / 149 °C Service		•	•	
	300 °F / 149 °C Service	•			
	350 °F / 177 °C Service				
	Cured Density (g / cc)				
	Improved Hot / Wet Properties				
	Toughened		•	•	
	Consistency	Thixotropic	Thixotropic	Thixotropic	
	Form	2 Part	2 Part	2 Part	
	Peel Strength	Nil	Low	Nil	
Mechanical Properties	Bell Peel @ 77 °F (lb / in) / 25 °C (N / 25 mm)	–	15 lbs / in 67 N / 25 mm	20 lbs / in 90 N / 25 mm	
	TENSILE LAP SHEAR	-67 °F (psi) / -55 °C (MPa)	2,000 psi / 13.8 MPa	2,300 psi / 15.8 MPa	2,700 psi / 18.6 MPa
		77 °F (psi) / 25 °C (MPa)	2,200 psi / 15.2 MPa	4,300 psi / 29.7 MPa	4,910 psi / 33.9 MPa
		180 °F (psi) / 82 °C (MPa)	700 psi / 4.8 MPa	3,500 psi / 24.1 MPa	3,140 psi / 21.7 MPa
		Elevated Temperature (psi / MPa)	–	350 °F / 177 °C	350 °F / 177 °C
Bulk Properties	Tg Dry (°F / °C)	150 °F / 66 °C	163 °F / 73 °C	158 °F / 70 °C	
	Tg Wet (°F / °C)	175 °F / 79 °C	246 °F / 119 °C	196 °F / 91 °C	
	Tensile Strength @ 77 °F (psi) / 25 °C (MPa)	2200 psi / 15.2 MPa	8,070 psi / 55.6 MPa	–	
	Tensile Modulus @ 77 °F (ksi) / 25 °C (MPa)	–	717 ksi / 4,940 MPa	–	
	Elongation @ 77 °F / 25 °C (% at break)	–	2.6	–	
	Compressive Strength @ 77 °F (psi) / 25 °C (MPa)	–	14,000 psi / 94.5 MPa	11,329 psi / 78.1 MPa	
	Compressive Modulus @ 77 °F (ksi) / 25 °C (MPa)	–	429 ksi / 2.956 MPa	–	
	Handling	Mix Ratio Weight (Part A / Part B)	100 :50	100 :17	100 :27
Cure Temperature (°F / °C)		77 – 160 °F / 25 – 71 °C	77 – 150 °F / 25 – 66 °C	77 °F / 25 °C	
Cure Time		24 Hours / 1 Hour	5 Days / 1 Hour	24 Hours	
Storage Temperature (°F / °C)		77 °F / 25 °C	77 °F / 25 °C	77 °F / 25 °C	
Pot Life (Minutes / lb) / (Minutes / kg)		30 minutes / 100 Gram Mass	95 – 100 Minutes / 450 Gram Mass	20 – 30 Minutes 100 Gram Mass	
Product	New Product Name	LOCTITE EA 960F AERO	LOCTITE EA 9395 AERO	LOCTITE EA 9394.2 AERO	
	Known As	Hysol® EA 960F™	Hysol® EA 9395™	Hysol® EA 9394.2™	
Availability	Packaging Configurations	Quart Kit	Quart Kit, Injection Kit, Clip Pack, Gallon Kit	Dual Cartridge, Pint Kit, Quart Kit, Clip Pack, Gallon Kit	
Description	LOCTITE 960F AERO is a fairing and smoothing compound for exterior aircraft surfaces. It is a two-component system, which cures rapidly at room temperature. It is color coded to identify when fully mixed.	LOCTITE EA 9395 AERO <ul style="list-style-type: none"> • Non-Metallic Filler • Excellent Mechanical Properties • Good Compressive Strength 	LOCTITE EA 9394.2 AERO is a fast curing two-part structural paste adhesive, which cures at room temperature. Its thixotropic nature makes it ideal for potting, filling, and liquid shim applications.		

	•		
		•	•
		0.87	0.72
	•		
	•		
	Low Viscosity	Thixotropic	Thixotropic
	2 Part	1 Part	1 Part
	Moderate	Nil	Nil

	25 lbs / in 111 N / 25 mm	-	-
	3,300 psi / 22.8 MPa	-	-
	3,500 psi / 24.1 MPa	-	2,000 psi / 13.8 MPa
	3,200 psi / 22.0 MPa	-	-
	350 °F / 177 °C	-	-

	208 °F / 98 °C	-	-
	145 °F / 63 °C	-	-
	8,000 psi / 55.2 MPa	-	-
	400 ksi / 2,750 MPa	-	-
	3.4	-	-
	70,000 psi / 482.8 MPa	22,800 psi / 157 MPa	12,232 psi / 84 MPa
	8,000 psi / 55,150 MPa	-	-

	100:30	-	-
	77 – 150 °F / 25 – 66 °C	250 °F / 121 °C / 350 °F / 177 °C	250 °F / 121 °C / 350 °F / 177 °C
	3 – 5 Days / 1 Hour	90 – 100 Minutes / 60 – 70 Minutes	90 – 100 Minutes / 60 – 70 Minutes
	77 °F / 25 °C	0 °F / -18 °C	0 °F / -18 °C
	120 Minutes 100 Gram Mass	> 8 Hours	> 8 Hours

	LOCTITE EA 9396 AERO	LOCTITE EA 9820 AERO	LOCTITE EA 9825 AERO
	Hysol® EA 9396™	Hysol® EA 9820™	Hysol® EA 9825™

Gallon Kit, Quart Kit, Clip Pack, Pint Kit, Injection Kit, Barrier Kit, Gram Kit	Cartridge, Gallon Kit	Dual Cartridge
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<p>LOCTITE EA 9396 AERO</p> <ul style="list-style-type: none"> • Low Viscosity • Room Temperature Cure • Room Temperature Storage • High Strength at Low and High Temperatures 	<p>LOCTITE EA 9820 AERO</p> <p>is an intermediate density, one-component epoxy syntactic for use on honeycomb composite parts requiring high compressive strength at temperatures up to 350 °F (177 °C). It may also be used for fastener or attachment potting and panel edge reinforcing.</p>	<p>LOCTITE EA 9825 AERO</p> <p>is a low-density, one-component epoxy syntactic for use on honeycomb composite parts requiring high compressive strength at temperatures up to 350 °F (177 °C). It may also be used for fastener or attachment potting and panel edge reinforcing.</p>
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Syntactic Materials

Applications	Syntactic Film Non-Expanding	•	•
	Syntactic Film Expanding		
	180 °F / 82 °C Service		
	250 °F / 121 °C Service	•	
	300 °F / 149 °C Service		•
	300 °F / 149 °C Service – High Strength		
Product Characteristics	Continuous Service Temperature (F° / °C)	Maximum 250 °F 121 °C	Maximum 350 °F 177 °C
	Block Compressive (dry) at 73 °F (psi) / 23 °C (MPa)	9000 psi 62 MPa	8800 psi 61 MPa
	Tensile Strength at 73 °F (psi) / 23 °C (MPa)	4700 psi 32 MPa	4800 psi 33 MPa
	Tensile Modulus at 73 °F (ksi) / 23 °C (MPa)	380 ksi 2606 MPa	400 ksi 2,758 MPa
Process & Handling	Cure Temperature (°F / °C)	250 °F 121 °C	350 °F 177 °C
	Cure Time	1 Hour	1 Hour
	Storage Temperature (°F / °C)	0 °F ≤ -18 °C	0 °F ≤ -18 °C
	Storage Time	> 12 Months	> 12 Months
	Out-time (Days at 77 °F / 25 °C)	15 Days	15 Days
	Out-time (Days at 90 °F / 32 °C)	10 Days	10 Days
Products	New Product Name	LOCTITE HC 9823.1 AERO	LOCTITE HC 9872.1 AERO
	Known As	SynCore® 9823.1™	SynCore® 9872.1™
Regional Availability & Packaging	Asia Pacific	Roll, Sheet	Roll, Sheet
	Europe / Middle East / Africa	Roll, Sheet	Roll, Sheet
	Latin America	Roll, Sheet	Roll, Sheet
	North America	Roll, Sheet	Roll, Sheet
Description	<ul style="list-style-type: none"> • Structural syntactic film • Excellent moisture resistance • Lightweight syntactic core material • Modified epoxy • Co-curable with 250 °F / 121 °C prepregs 	<ul style="list-style-type: none"> • Structural syntactic film • Excellent moisture resistance • Lightweight syntactic core material • Modified epoxy • Co-curable with 350 °F / 177 °C prepregs 	

Characteristics	250 °F / 121 °C Service		•
	350 °F / 177 °C Service	•	
	Cured Density (g / cc)		
	Cure Temperature (°F / °C)		250 – 350 °F / 121 – 177 °C
	Cure Time		60 Minutes
	Storage Temperature (°F / °C)		0 °F / -18 °C
	Out-time (Days @ 77 °F / 25 °C) – FILM		15 Days
	Out-time (Days @ 90 °F / 32 °C) – FILM		10 Days
	Consistency	–	–
	Form	Film	–
	Peel Strength	–	–
Mechanical Properties	Tube Shears @ 77 °F (psi) 25 °C (MPa)	1,150 psi 8.0 MPa	–
	Tube Shears @ 250 °F (psi) / 121 °C (MPa)	1,150 psi 8.0 MPa	–
Bulk Properties	Tg Dry (°F / °C)	300 °F 149 °C	383 °F 195 °C
	Compressive Strength @ 77 °F (psi) / 25 °C (MPa)	–	1,500 psi / 10.3 MPa
	Compressive Modulus @ 77 °F (ksi) / 25 °C (MPa)	–	86 ksi / 585 MPa
	Block Compressive (dry) @ 77 °F (psi) / 25 °C (MPa)		500 at 12 pcf density 3.45 at 0.19 g / cc
Handling	Mix Ratio Weight (Part A / Part B)	–	–
	Cure Temperature (°F / °C)	250 °F / 121 °C 350 °F / 177 °C	–
	Cure Time	60 Minutes	–
	Storage Temperature (°F / °C)	0 °F -18 °C	–
	Out-time (Days @ 77 °F / 25 °C) – FILM	20 Days	–
	Out-time (Days @ 90 °F / 32 °C) – FILM	10 Days	–
Product	New Product Name	LOCTITE EF 562 AERO	LOCTITE EF 9899 AERO
	Known As	Hysol® MA 562™	SynSpand® 9899™
Availability	Packaging Configurations	Roll Sheet	Roll, Sheet
Description	LOCTITE EF 562 AERO is a general purpose 250 °F (121 °C) or 350 °F (177 °C) curing foaming adhesive. It is designed for service temperatures from -67 °F (-55 °C) to 350 °F (177 °C).	LOCTITE EF 9899 AERO is a 250 °F / 121 °C or 350 °F / 177 °C curing expanding syntactic film. It expands using a unique closed cell process, providing for a completely homogenous cell structure. Its applications include honeycomb core stabilization, edge close out, RTM core, and many others.	

BONDERITE

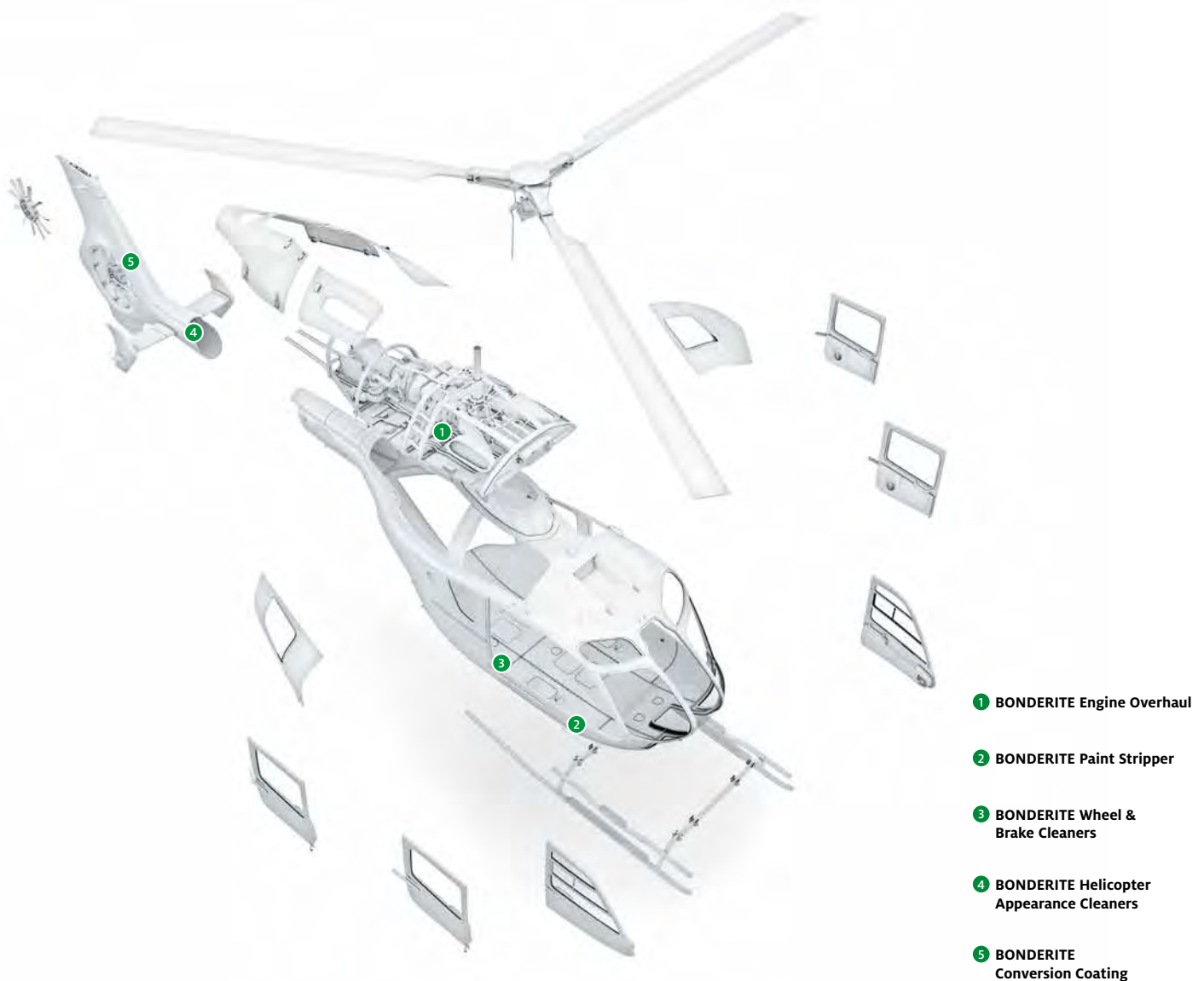
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Bonderite surface treatment solutions

Surface Treatment Technology	Product	Application
Engine Overhaul	BONDERITE C-AK 4181GL AERO	Removes rust, oils, paints, etc. from ferrous alloys by tank immersion.
Paint Strippers	BONDERITE S-ST 6930 AERO	Peroxide activated paint stripper
Conversion Coating	BONDERITE M-CR 1132 AERO	Touch-up aluminum conversion coating for small areas in preparation for bonding or paint. MIL-DTL-81706B approved.
	BONDERITE M-CR MAGNESIUM AERO	Touch-up and corrosion repair processes of magnesium alloys.
Chrome Free Conversion Coating	BONDERITE M-NT 5700 AERO	Ready to use chrome free conversion coating for preparation of aluminum substrates prior to painting or bonding.
Wheel & Brake Cleaner	BONDERITE C-AK 5948DPM THK AERO	Cleaner for wheel & brake systems.
Appearance Cleaner	BONDERITE C-AK 5948DPM AERO	Exterior appearance cleaner for helicopters.



Surface Treatment

Applications	Immersion for Parts	•						
	Paint Stripper		•					
	Conversion Coating			•				
	Non-Chrome							
	Spray / Brush				•			
Substrate	Aluminum		•	•	•			
	Magnesium	•			•			
	Magnesium – Die Cast							
	Mild Steel							
	Stainless Steel	•	•		•			
	Titanium	•	•		•			
	Ferrous	•	•		•			
	Non Ferrous		•		•			
Product Characteristics	Consistency	Liquid	Liquid	Liquid	Liquid			
	Form	Concentrated	Ready-to-Use	Ready-to-Use	Concentrated			
	Chemistry	Alkaline	Peroxide-Activated, Water-Based	Chromate	Alkaline, Water-Based			
Process (Immersion)	Time (Minutes)	15 – 30 Minutes	–	Until Dry	5 – 15 Minutes			
	Temperature °F / °C	General: 185 – 205 °F 90 – 95 °C Titanium: 168 °F (max.) 75 °C (max.)	–	Ambient	130 – 170 °F 65 – 80 °C			
	Mix Ratio (product: water)	75 – 100 % by volume	–	Used as Received	3 – 20 % by value			
Process (Spray)	Time (Minutes)	–	Varies as Needed	–	Varies as Needed			
	Temperature °F / °C	–	Ambient	–	Ambient			
	Mix Ratio (product: water)	–	Use as Received	–	1 part concentrate to 9 – 30 parts water			
Products	New Product Name	BONDERITE C-AK 4181 GL AERO	BONDERITE S-ST 6930 AERO	BONDERITE M-CR 1132 AERO	BONDERITE C-AK 5948DPM AERO			
	Known as	Turco® 4181-GL	Turco® EA Stripper 6930	Alodine® 1132 Touch-N-Prep Coating	Turco® 5948-DPM			
Regional Availability & Packaging	Asia Pacific	Drum, Pail	Drum, Pail	Pen	Drum, Pail			
	Europe / Middle East / Africa	Pail	Drum, Pail	Pen	Drum, Pail, Tot			
	Latin America	–	Drum	Pen	Drum, Tot			
	North America	–	Drum, Pail	Pen	Bottle, Drum, Pail			
Description	<p>BONDERITE C-AK 4181 GL AERO is a concentrated liquid product formulated to simultaneously strip paint, dissolve rust, and light heat from jet engine parts. It is used during routine maintenance. It removes carbonaceous deposits, phosphate coatings and Semetal W as well as light oils and unwanted lubricant residues.</p>		<p>BONDERITE S-ST 6930 AERO environmentally advantaged paint remover is low odor, thixotropic, activated by hydrogen peroxide. It was developed for effective stripping of such resistant finishes as epoxies, epoxy primers, polyurethanes, and similar catalyzed aircraft paints. It offers a significant advance in paint stripper technology. It complies fully with NESHAP. It meets the corrosivity requirements of TT-R 2918A. It is not recommended for use on magnesium.</p>		<p>BONDERITE M-CR 1132 AERO is designed to save labor, material and time when applying a dry-in place hexachrome conversion coating for touch-up applications. Its proper use also reduces worker contact to chromated solution and decreases waste water such as rinse water generated from a chromating process.</p>		<p>BONDERITE C-AK 5948DPM AERO is an alkaline, water-based, blue concentrated compound formulated to effectively clean painted and unpainted aircraft exterior and interior surfaces when diluted with water. It is ideally suited for use on all models of jet aircraft and is also designed to be used in immersion tanks for dip applications.</p>	

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	•		
	•		
	Liquid	Liquid	Liquid
	Concentrated	Ready-to-Use	Ready-to-Use
	Alkaline, Water-Based	Acid	Chromate
	-	-	-
	-	-	-
	-	-	-
	5 – 15 Minutes	1 – 5 Minutes	Until Dry
	Ambient	Ambient	Ambient
	Use as received	Used as Received	Used as Received
	BONDERITE C-AK 5948DPM THK AERO	BONDERITE M-NT 5700 AERO	BONDERITE M-CR MAGNESIUM AERO
	Turco® 5948-DPM Thick	Alodine® 5700	Alodine® Magnesium Treatment Kit
	Pail	-	Kit
	Pail	Pail	-
	Drum	-	-
	Bottle, Drum, Pail	Bottle, Case, Drum, Pail	Kit, Drum
	BONDERITE C-AK 5948DPM THK AERO is an environmentally advantaged thixotropic, water-based, heavy duty aircraft cleaner. It is formulated to effectively cling to painted and unpainted aircraft exterior and interior surfaces. It is ideally suited for use on all jets, especially in baggage bins, flap and wheel well areas, and on engines before overhaul. It can be applied as spray or mop.	BONDERITE M-NT 5700 AERO treatment is a chromium free conversion coating specifically formulated for treating aluminum and its alloys. This product is formulated as a ready-to-use material for spray applications. The process provides an excellent base for organic finishes.	BONDERITE M-CR MAGNESIUM AERO contains products formulated for treating magnesium alloys to produce a chromate conversion coating conforming to SAE AMS-M-3171, Type VI. The application method conforms to requirements in NAVAIR 01-1A-509 and is meant primarily for touch-up and corrosion repair processes of magnesium alloys.

