

ADHESIVE SYSTEMS

Hysol® Paste Adhesives and Specialty Resins

Product	Applications				Characteristics				Mechanical Properties				Bulk Properties				Handling				Description									
	Potting	Structural Repair	Low Viscosity Wet Lay-up	Composite Bonding	High Peel Strength	Synthetic	Liquid Shim	≥180°F/82°C Service	≥300°F/149°C Service	Improved Hot/Wet Properties	Toughened	Service Temperature (°F/°C)	Consistency	Form (1 part or 2 part)	Peel Strength	Bell Peel 77°F (lb/in)/25°C (N/25mm)	Tensile Lap Shear			Tensile Strength @ 77°F (psi)/25°C (MPa)		Tensile Modulus @ 77°F (ksi)/25°C (MPa)	Elongation @ 77°F/25°C% at break	Compressive Strength @ 77°F (psi)/25°C (MPa)	Compressive Modulus @ 77°F (ksi)/25°C (MPa)	Mix Ratio Weight (Part A/Part B)	Cure Temperature (°F/°C)	Cure Time	Storage Temperature (°F/°C)	Pot Life (minutes/lb)/(minutes/kg)
Hysol® EA 934NA™	•	•					•	•			300/149	Thixotropic	2	Nil	—	2800/19.3	3100/21.4	2000/13.8		6200/42.8	647/4450	1.2	13500/93.1	367/2530	100:33	77/25 200/93	5-7 days 1 hour	40/4	40/1 40/.5	Cures at 77°F/25°C, possesses superior strength to 300°F/149°C. Ideal for potting, filling, fairing, and shim applications.
Hysol® EA 956™		•	•				•				300/149	Low Viscosity	2	Nil	—	1800/12.4	2300/15.9	1500/10.3		5800/40.0	370/2250	2.5	16900/116.6	580/4000	100:58	77/25 200/93	5-7 days 1 hour	40/4	30/1 30/.5	Very low viscosity, cures at room temperature, maintains strength at high temperatures. Ideal for wet lay-up repair.
Hysol® EA 960F™											160/71	Thixotropic	2	Nil	—	2000/13.8	2200/15.2	700/4.8		—	—	—	—	—	100:50	77/25 160/71	24 hours 1 hour	77/25	30/.25 30/1	Fast-set fairing and smoothing compound for exterior aircraft surfaces. Color changes when fully mixed. Sandable after six hours.
Hysol® EA 9150™ Resin			•	•			•		•		250/121	Low Viscosity	2	Low	—	—	—	—		11000/75.9	414/2850	5	—	—	100:88	250/121	1 hour	77/25	480/1 480/.5	Low viscosity, toughened system formulated for resin transfer molding. 250°F/121°C cure and service temperature.
Hysol® EA 9309.3NA™		•		•	•		•	•	•		180/82	Moderate Viscosity	2	High	75/335	5500/38.0	5000/34.5	750/5.2		4500/31.0	324/2230	10	7500/51.7	245/1700	100:22	77/25 180/82	5-7 days 1 hour	77/25	35/1 35/.5	Toughened adhesive with excellent peel strength. Contains glass beads for bondline control.
Hysol® EA 9313™					•				•		120/49	Low Viscosity	2	High	50/225	4200/29.0	4500/31.0	500/3.5		6300/43.5	330/2280	8	9000/62.1	263/1800	100:25	77/25 180/82	5-7 days 1 hour	77/25	60/1 60/.5	Very low viscosity adhesive yielding tough, flexible bonds. Injectable.
Hysol® EA 9320NA™						•			•		>180/82	Moderate Viscosity	2	Moderate	35/150	3400/23.5	4600/31.7	1000/6.9		5000/34.5	330/2280	9	8800/60.7	265/1820	100:19	77/25 180/82	5-7 days 1 hour	77/25	25/.5 25/.25	High shear and high peel adhesive system with room temperature cure.
Hysol® EA 9321™	•	•					•		•		250/121	Thixotropic	2	Low	6/25	3000/20.7	4000/27.6	1700/11.7		7100/49.0	420/2900	6	9000/62.1	284/1960	100:50	77/25 180/82	5-7 days 1 hour	40/4	40/1 40/.5	Thixotropic adhesive that yields tough, durable bonds over a wide temperature range.
Hysol® EA 9323™		•					•		•		250/121	Low Viscosity	2	Low	4/20	2800/19.3	4200/29.0	1100/7.6		3500/24.1	375/2600	9	10700/73.8	256/1770	100:45	77/25 180/82	5-7 days 1 hour	40/4	30/1 30/.5	Viscous, but pourable liquid adhesive that yields tough, durable adhesive bonds over a wide temperature range.
Hysol® EA 9330™		•	•	•			•		•		180/82	Moderate Viscosity	2	High	60/265	5000/34.5	5000/34.5	750/5.2		5600/38.6	384/2650	2.4	7700/53.1	253/1750	100:33	77/25 180/82	5-7 days 1 hour	77/25	60/.25 60/1	Easy mix adhesive with high peel strength and excellent environmental durability.
Hysol® EA 9330.3™		•	•	•			•		•		180/82	Thixotropic	2	High	60/265	5700/39.3	4900/33.8	750/5.2		6100/42.1	390/2680	9	—	—	100:33	77/25 180/82	5-7 days 1 hour	77/25	60/.25 60/1	Non-slump thixotropic adhesive with high peel strength and excellent environmental durability.
Hysol® EA 9346.5™		•	•	•			•	•	•		275/135	Moderate Viscosity	1	High	60/265	4500/31.0	5500/38.0	4500/31.0		5000/34.5	260/1800	3	15000/103.5	400/2750	—	250/121	1 hour	40/4	14 days/1 14 days/.5	Moderate viscosity, one component, high peel and shear strength. Outstanding hot/wet properties. Recommended replacement for Hysol® EA 9304.1™, Hysol® EA 9304.2™.
Hysol® EA 9359.3™		•	•	•			•	•	•		200/93	Thixotropic	2	High	75/335	4000/27.6	4500/31.0	1000/6.9		5300/36.6	320/2200	7.7	—	—	100:44	77/25 180/82	5-7 days 1 hour	77/25	40/1 40/.5	Excellent peel and shear strength. Bonds a variety of substrates. Volumetric mix ratio 2:1. Improvement over Hysol® EA 9309NA™ series adhesives.
Hysol® EA 9360™		•	•	•			•	•	•		>225/107	Thixotropic	2	High	60/265	4000/27.6	5000/34.5	1200/8.3		—	—	—	—	—	100:43	77/25 180/82	5-7 days 1 hour	77/25	40/.5 40/.25	Volumetric mix ratio 2:1. Structural adhesive, exhibits excellent peel strength and tensile lap shear strength to 250°F/121°C.
Hysol® EA 9361™		•	•						•		140/60	Low Viscosity	2	Moderate	35/150	4000/27.6	3500/24.1	500/3.5		3000/20.7	105/720	50	—	—	100:140	77/25 180/82	5-7 days 1 hour	77/25	120/.25 120/1	High elongation, good shear, peel and flexibility. General purpose bonding, sealing, and cryogenic applications.
Hysol® EA 9371™		•	•				•		•		180/82	Moderate Viscosity	2	Low	15/70	1600/11.0	3700/25.5	1000/6.9		—	—	—	—	—	100:62	77/25 180/82	24 hours 1 hour	40/4	18/.25 18/1	Fast-set, tough, good hot/wet properties. Handling strength after two hours. Volumetric mix ratio 1:1.
Hysol® EA 9377™						•	•				>200/93	Thixotropic	2	Nil	—	2300/15.9	2300/15.9	2000/13.8		—	—	—	16000/110.3	700/4820	100:19	77/25 180/82	5-7 days 1 hour	40/4	60/.25 60/1	Moldable plastic shim, excellent microcracking resistance under thermal cycling. High compressive strength.
Hysol® EA 9380™		•	•	•			•	•	•		250/121	Thixotropic	2	High	50/225	4650/32	5350/37	>3500/ >24.1		—	—	—	26739/184	267/1843	100:55	160/70	4 hours	40/4	180/1 180.5	Cures at low temperature. Offers strength, toughness and high temperature resistance of heat-curing film adhesives, with greater flexibility and ease of use. Can be applied to large parts with controlled meter mix operation.
Hysol® EA 9390™		•	•	•			•	•			>350/177	Low Viscosity	2	Nil	—	2200/15.2	3500/24.1	3000/20.7		8200/56.6	418/2900	2.5	5300*/36.6*	—	100:56	200/93	3.5 hours	40/4	120/.5 120/.25	Low viscosity system for high temperature wet lay-up composite repair. Qualified to BMS 8-301.
Hysol® EA 9392™	•	•	•				•		•		350/177	Thixotropic	2	Moderate	40/180	3500/24.0	4300/29.7	2200/15.2		6000/41.4	480/3300	4.6	—	—	100:32	77/25 180/82	5-7 days 1 hour	77/25	75/.25 75/1	Room temperature cure, excellent shear strength at high temperatures. Tough, durable over wide temperature range. Toughened version of Hysol® EA 934NA™ and Hysol® EA 9394™.

* Compression shear strength as a wet lay-up resin with 3K-70-P fiber.

ADHESIVE SYSTEMS

Hysol® Paste Adhesives and Specialty Resins (continued)

Product	Applications				Characteristics				Mechanical Properties				Bulk Properties				Handling				Description								
	Potting	Structural Repair	Low Viscosity Wet Lay-up	Composite Bonding	High Peel Strength	Syntactic	Liquid Shim	≥180°F/82°C Service	≥300°F/149°C Service	Improved Hot/Wet Properties	Toughened	Service Temperature (°F/°C)	Consistency	Form (1 part or 2 part)	Peel Strength	Bell Peel 77°F (lb/in)/25°C (N/25mm)	Tensile Lap Shear -67°F (psi)/-55°C (MPa)	77°F (psi)/25°C (MPa)	200°F (psi)/93°C (MPa)	Tensile Strength @ 77°F (psi)/25°C (MPa)		Tensile Modulus @ 77°F (ksi)/25°C (MPa)	Elongation @ 77°F/25°C% at break	Compressive Strength @ 77°F (psi)/25°C (MPa)	Compressive Modulus @ 77°F (ksi)/25°C (MPa)	Mix Ratio Weight (Part A/Part B)	Cure Temperature (°F/°C)	Cure Time	Storage Temperature (°F/°C)
Hysol® EA 9394™	•	•	•	•	•	•	•	•	•	•	350/177	Thixotropic	2	Low	20/90	3300/22.8	4200/29.0	2900/20.0	6675/46.0	615/4250	1.7	10000/158.6	—	100:17	77/25 150/66	5-7 days 1 hour	77/25	100/1 100/5	Thixotropic adhesive with structural properties to 350°F/177°C. Volumetric mix ratio 4:1.
Hysol® EA 9394.2™	•	•									225/107	Thixotropic	2	Nil	—	2900/20.0	4500/31.0	—	—	—	—	—	—	100:27	77/25 200/93	24 hours 1 hour	77/25	15/25 15/1	Fast cure adhesive for liquid shim and potting. Handling strength within 6-8 hours.
Hysol® EA 9394™/C-2™		•									450/232	Moderate Viscosity	2	Low	10/45	3500/24.0	5000/34.5	3500/24.1	—	—	—	24000/165.5	—	100:20	200/93	1 hour	77/25	480/1 480/5	Elevated cure, thixotropic adhesive with structural properties to 450°F/232°C.
Hysol® EA 9395™	•	•	•								350/177	Thixotropic	2	Low	15/70	2300/15.9	4000/27.6	2400/16.6	8070/55.7	715/4900	2.6	14000/96.6	428/2950	100:17	77/25 150/66	5-7 days 1 hour	77/25	100/1 100/5	Two-part, nonmetallic filled version of Hysol® EA 9394™.
Hysol® EA 9396™		•	•	•							350/177	Low Viscosity	2	Moderate	25/110	3300/22.8	3500/24.1	3200/22.1	8000/55.2	400/2750	3.4	70000*/482.8*	8000*/55150*	100:30	77/25 150/66	5-7 days 1 hour	77/25	75/1 75/5	Two-part, low viscosity, unfilled version of Hysol® EA 9394™. Qualified to BMS 8-301.
Hysol® EA 9396™/C-2™		•	•	•							400/204	Low Viscosity	2	Low	15/70	2500/17.2	3000/20.7	2000/13.8	—	—	—	14000/96.6	—	100:36	200/93	1 hour	77/25	480/25 480/1	Two-part, elevated cure, unfilled, low viscosity adhesive with structural properties to 400°F/204°C.
Hysol® EA 9396.6MD™	•				•						300/149	Syntactic	2	Nil	—	2000/13.8	2600/18.0	1500/10.3	—	—	—	3800/26.2	—	100:31	77/25 180/82	5-7 days 1 hour	40/4	120/1 120/5	77°F/25°C cure, syntactic, with excellent high temperature properties. Density of 37 pcf (0.6 g/cc).
Hysol® EA 9815™	•		•	•							250/121	Moderate Viscosity	1	High	50/275	4500/31	5100/35	2500/1700	—	—	—	26739/185	267/1843	—	250/121	1 hour	0/-18	14 days/1 14 days/5	Pumpable, one-component, high peel and high shear strength when bonding to aluminum and composite substrates. Reduces application time.

HYSOL® PASTE ADHESIVES & SPECIALTY RESINS

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Frekote® Mold Release Products

Product	Application Temperature Range	Cure Time	Benefits	Description	Product	Application Temperature Range	Cure Time	Benefits	Description
Frekote® 900WB™	70°-90°F/21°-32°C	Cure for more than 1 hour at ambient temperature after last coat	<ul style="list-style-type: none"> Non-toxic water-based system Apply at room temperature Cure at room temperature Low VOC Non-flammable Thermal stability 480°F/250°C 	A proprietary water-based emulsion developed for releasing aerospace and other high performance composite structures. Designed to be applied and cured at ambient shop temperature. Spray application is recommended for best appearance of part off tool.	Frekote® 48-NC™	Up to 140°F/60°C	3 hours at room temperature, or bake for 15 mins. at 210°-300°F/100°-150°C	<ul style="list-style-type: none"> High thermal stability Better mold utilization No mold build-up High productivity Significantly lower mold maintenance costs No contaminating transfer 	A non-CFC release agent with the same polymeric base as Frekote® 44-NC™, with only a slight modification in the solvent blend for better non-transference. This semi-permanent, non-migratory release system chemically bonds to the mold surface to form a microthin film, which is stable at temperatures exceeding most molding processes. Can be used for the release of epoxies (thermosets and prepregs), polyester resins, thermoplastics, adhesives, and rotational molded plastics.
Frekote® B-15™ Sealer	Up to 140°F/60°C	24 hours at room temperature, or bake for 60 mins. at 210°-300°F/100°-150°C	<ul style="list-style-type: none"> Seals mold porosity No contaminating transfer Compatible with all Frekote® products 	Formulated as a sealer for molds with micro-porosity problems, small surface scratches or imperfections. Used in conjunction with other Frekote® products, Frekote® B-15™ provides an excellent base coat enhancing the release advantages of all Frekote® products.	Frekote® 55-NC™	Up to 140°F/60°C	30 mins. at room temperature, or bake for 5 mins. at 210°-300°F/100°-150°C	<ul style="list-style-type: none"> Fast dry and cure No mold build-up High thermal stability Reduced odor No contaminating transfer 	A non-CFC release agent designed to provide multiple releases with no contaminating transfer. This semi-permanent, non-migratory release system chemically bonds to the mold surface to form a microthin film that is stable at process temperatures.
Frekote® 1-NC™	400°F/204°C	No curing time required	<ul style="list-style-type: none"> All purpose lubricating Fast drying Easy to use Excellent anti-stick properties 	A non-CFC, PTFE-based release agent that exhibits excellent anti-stick and release characteristics. Provides a release coating effective with all types of rubber compounds, epoxies, and polyurethanes. Particularly effective for releasing silicone rubber and epoxies. All purpose dry lubricant for gears, belts, connectors, glass, metals, wood, and even paper.	Frekote® 700-NC™	Up to 275°F/135°C	5-10 mins. after final coat at room temperature	<ul style="list-style-type: none"> Superior multiple release High gloss and high slip No chlorinated solvents Versatile: releases most polymers 	A non-CFC, semi-permanent, multiple release polymer resin that effectively releases all polymer resins. Versatile agent that provides slip where mold geometry problems are encountered. Cures at room temperature, gives high-gloss finish to molded parts.
Frekote® 44-NC™	Up to 140°F/60°C	3 hours at room temperature, or bake for 15 mins. at 210°-300°F/100°-150°C	<ul style="list-style-type: none"> High thermal stability Better mold utilization No mold build-up High productivity Significantly lower mold maintenance costs No contaminating transfer 	A non-CFC release agent designed to provide multiple releases with no contaminating transfer. Can be used for the release of thermoplastics, thermosetting resins, boron, aramid, graphite/carbon fiber composites and fiberglass laminates.	Frekote® 770-NC™	Up to 140°F/60°C	5-10 mins. after final coat at room temperature	<ul style="list-style-type: none"> Fast dry and cure High gloss and high slip Versatile: releases most polymers No mold build-up Reduced odor 	A non-CFC, semi-permanent, multiple release polymer resin that effectively releases all thermoset resins. Versatile agent that provides slip where mold geometry problems are encountered. Rapid dry and cure at room temperature to give a high slip film capable of maximum release performance.

FREKOTE® MOLD RELEASE PRODUCTS

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* Longitudinal compressive strength as a wet lay-up resin with T-300-W133 fiber.