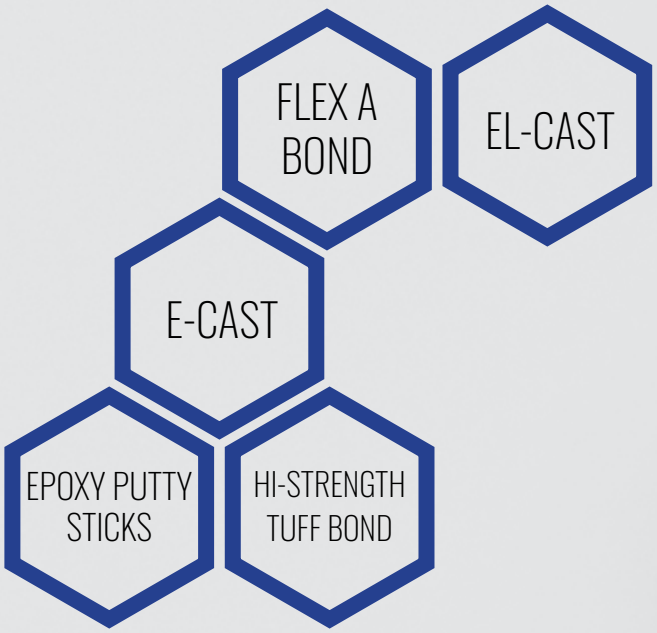
UNITED RESIN

OUR CHEMISTRY IS EPOXY SYSTEMS

PRODUCT & APPLICATION GUIDE

- Electronic Assembly Products
- Adhesives, Sealants, & Repair Products
- Electric Vehicle (EV) Batteries & EV Components
- Mil-Spec & NSN Products
- Epoxy Putty Sticks



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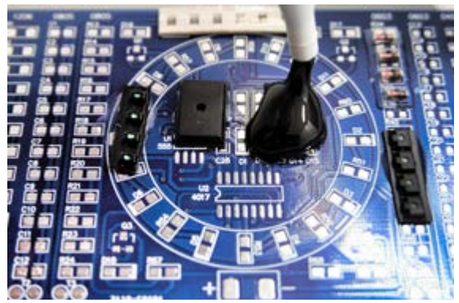
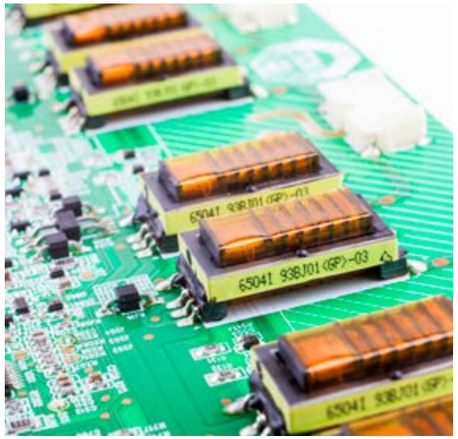
WHO WE ARE



United Resin has been meeting the epoxy resin needs of our customers for over 50 years and has extensive experience with the development and manufacturing of epoxy resin systems. United Resin's manufacturing processes are designed for consistent quality and performance. Many products meet stringent military specifications. United Resin has an unwavering commitment to quality.

United Resin is dedicated to ongoing product development, continuing research, and collaboration with our customers to develop special products that address particular requirements. Our objective is complete customer satisfaction. United Resin's trained personnel will assist you in seeking solutions to your project needs and keep you informed of emerging technologies. United Resin is proud to work with its customers to develop specialized products for their individual product design.



UNITED RESIN'S ADHESIVE EPOXY RESIN SYSTEMS

United Resin offers an extensive selection of epoxy adhesives that satisfy the most demanding requirements of any adhesive application. We offer systems that cure in as fast as 45 seconds. FDA compliant systems are available. One-component and two-component heat cured systems can be matched with your adhesive needs. Our adhesive and sealing systems are available in viscosities ranging from as thin as water to as thick as paste. We have a variety of epoxy repair systems, as well as our well-regarded epoxy putty sticks. In addition to established epoxy systems, we also custom formulate for specific needs. All our materials are non-hazardous, REACH/RoHS compliant, and contain no solvents. Our products are formulated and packaged at our manufacturing facility in Royal Oak, MI USA (made in America!) and sold worldwide.

UNITED RESIN'S ELECTRONIC ASSEMBLY EPOXY RESIN SYSTEMS

United Resin has an extensive and established selection of epoxy resin systems for the electronics industry, several of which are UL approved, meeting potting and encapsulating requirements in a variety of conditions. We have both filled and non-filled systems in a variety of viscosities. Our products are used for potting and encapsulating a wide range of electronic assembly components, including coils, batteries (including lithium), transformers, circuit boards, magnetic components, marine sonar, noise interference filters and surge protectors. Special systems include Optik-bond, COB and SMT materials used for applications on circuit boards, fiber optics, light emitting diodes and other adhesive applications. All our materials are non-hazardous, REACH/RoHS compliant, and contain no solvents.

UNITED RESIN'S EPOXY PUTTY STICKS

United Resin's highly regarded epoxy putty sticks are the result of over 30 years of product development and manufacturing experience. Our Fastweld Epoxy Putty Sticks and Fastwood Epoxy Putty Sticks are made with our best-in-class proprietary process. Our Epoxy Putty Sticks come in two standard lengths, 3.5-inch, and 7-inch. Custom lengths and colors are available.

FASTWOOD EPOXY PUTTY STICKS

This product is a cylindrical epoxy dough kit that is activated by hand mixing the material. It cures in 5 minutes. It is an epoxy compound for permanent wood repairs, such as filling nail holes, replacing and reshaping wood parts and for general restoration. Its unique properties include its ability to be molded to any shape and rapid cure. It forms a tenacious bond in minutes. Fastwood Epoxy Putty may be drilled, filed, tapped, or sanded after 1 hour of cure time.

FASTWELD EPOXY PUTTY STICKS

This product is a cylindrical epoxy dough kit that is activated by hand mixing the material. We have sticks that cure in 5 and 20 minutes and harden like steel in 30-40 minutes. It forms a tenacious bond in minutes, even underwater, and may be drilled, filed, tapped, or sanded after 1 hour of cure time. Fastweld Epoxy Putty Sticks come in gray, black, and white as standard colors.

UNITED RESIN'S EPOXY RESIN SYSTEMS FOR BATTERY POTTING, ENCAPSULATION, ELECTRIC VEHICLE (EV) & EV COMPONENTS

United Resin has several well-established epoxy systems for potting and encapsulating batteries, battery components, and electronic casting. Epoxy resin will keep your batteries secure from damage caused by shock, moisture vibration, chemicals, and many other elements. We have materials ready for most applications and can develop custom systems to meet all your requirements. Contact one of our epoxy experts to discuss your requirements and we will work with you to tailor a product to fit your needs. Our goal is to find the right material for your application.

MIL-SPEC AND NSN PRODUCTS

United Resin provides full technical support for government contractors, OEM and tier suppliers. Our team has the tools to assist you in identifying United Resin part numbers that comply with military federal specifications and standards. United Resin specializes in providing defense contractors, OEM and tier suppliers with adhesives, sealants, repair materials and other epoxy resin systems that are certified to a number of military and federal specifications and standards. United Resin manufactures a wide range of NSN products.

For a list of our NSN products visit unitedresin.com

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ELECTRONIC EPOXY SYSTEMS

RESINS ARE LISTED WITH MOST POPULAR HARDENER **WE HAVE MANY OTHER HARDENERS, ALLOWING FOR INDIVIDUAL PRODUCT DESIGN**

PRODUCT AND DESCRIPTION	HARDENERS	COLOR	HARDNESS SHORE "D"	MIXING RATIO (Parts by Weight)		MAXIMUM USE TEMPERATURE ºF	MIXED VISCOSITY CPS @ 72ºF	DIELECTRIC STRENGTH as per ASTM D149	DIELECTRIC CONSTANT as per ASTM D150	CTE In/In/ºF per ASTM D696	THERMAL CONDUCTIVITY-BTU as per ASTM C177	POT LIFE MINUTES (100 gram Mass) @ 72ºF
			@ 72ºF	RESIN	HARDENER							
EL-CAST is a filled, medium viscosity, general purpose potting and encapsulating resin. Excellent bonding properties, good air release and high gloss finish. Underwriter Laboratory (UL) approved 94 HB. Ideal for transformers, circuit boards, magnetic components, noise filters, and other applications.	111 117 118 150 215 641 4123 TP-41F TS-100	Black/White	85 70 "A" 85 80 85 80 85 80 85	100 100 100 100 100 100 100 100 100	85 50 10 25 12 13 13 13 8	250 250 350 250 250 250 250 300 300	24,000 4,160 7,600 8,800 11,500 16,000 8,000 17,400 2,800	490 440 498 498 409 409 409 409 498	3.71 4.15 4.21 4.39 4.21 4.39 4.32 4.32 4.14	1.16 x 10-5 3.21 x 10-5 3.89 x 10-6 5.62 x 10-6 1.32 x 10-5 3.87 x 10-6 9.75 x 10-6 5.76 x 10-6 5.74 x 10-6	6.40 5.85 6.10 5.50 6.91 6.50 6.00 6.95 6.95	15 120 120 300 270 60 70 20 120
EL-CAST 760 is a filled, medium viscosity, high temperature potting and encapsulating resin. Excellent impact resistance, thermal shock resistance, thermal conductivity and high deflection temperature. Ideal for control units, transformers, noise filters, and other applications.	118 150 215 641	Black	80 80 90 75	100 100 100 100	12 50 13 15	400 400 400 400	12,000 10,400 8,500 16,000	432 430 430 430	5.17 5.10 5.10 5.10	1.92 x 10-5 1.13 x 10-6 2.69 x 10-6 1.16 x 10-6	11.56 11.50 11.70 12.25	45 150 120 40
EL-CAST VFR PLUS is a filled, low viscosity, high temperature potting and encapsulating resin. Underwriter Laboratory (UL) approved 94 V-O. Resin has excellent bonding properties, high gloss finish with minimal shrinkage. Ideal for transformers, alarm systems, filters, magnetic components and surge protectors.	117 118 641 4123 TS-100	Black	75 "A" 85 85 80 85	100 100 100 100 100	30 10 12 12 6	200 400 250 250 300	7,000 6,000 8,000 5,000 6,000	496 499 496 496 408	4.22 4.28 4.28 4.22 4.48	4.41 x 10-5 5.35 x 10-6 5.33 x 10-6 1.34 x 10-5 7.90 x 10-6	6.25 6.65 7.00 6.70 6.65	180 120 80 80 240
EL-CAST SS is a highly filled, general purpose potting resin, with high thermal conductivity and high strength. Ideal for all applications requiring a tough protective system with high mechanical and physical properties.	118 203 210	Black	90 90 90	100 100 100	8 14 15	400 500 400	58,000 10,000 32,000	405 405 405	5.43 5.43 6.20	4.04 x 10-6 3.78 x 10-6 1.91 x 10-6	9.84 9.10 9.70	90 210 210
EL-CAST FR is a filled two component, lower cost epoxy system with excellent bonding qualities to metals, plastics, and ceramics. This system is UL approved for 94 V-O. Good air release and low viscosity allows the cured part to have a high gloss finish.	440	Black/White	80	100	94	250	26,000	409	4.32	1.26x10-5	6.00	60
EL-CAST 1-F-5 TAB , TAB-SR, TAB H are filled, medium viscosity resins that can be used as a one or two component system with excellent thermal conductivity and high temperature resistance. Exhibits good chemical resistance and excellent adhesion at high temperature with a room temperature or a heat cure. Ideal for transformers, filters, coils and all applications where heat cure is possible.	TAB-H - NONE TAB - NONE TAB-SR - TS-100 TAB-SR - 118	Black	95 95 90 90	N/A N/A 100 100	N/A N/A 7 10	500 500 250 500	275,000 50,000 5,000 8,000	550 550 550 550	4.88 4.88 4.88 4.88	2.35 x 10-5 1.62 x 10-5 4.90 x 10-5 2.35 x 10-5	10.00 10.00 10.00 10.00	N/A N/A 45 70
EL-CAST 1-F-5 TAB VO is a filled, high viscosity, high temperature one component system. Underwriter Laboratory (UL) approved 94 V-O. Exhibits low odor, good air release, high gloss finish, and good thermal conductivity. Also used as an encapsulant for "chip-on-board" applications.	NONE	Black	95	N/A		500	100,000	463	4.71	1.58 x 10-5	10.00	N/A
UNI-LAM 1069 is a filled, medium viscosity, general purpose potting compound. Excellent bonding to metals, plastic and ceramics with high gloss finish. Ideal for all potting applications.	4123	Black/White	80	100	12	300	5,800	398	4.14	8.37 x 10-6	6.10	72
E-CAST FLAME BLOC is an unfilled epoxy system approved UL 94 V-O. This system offers excellent air release and gloss. It has a rigid cure with excellent adhesion and chemical resistance.	125	Clear	85	100	20	200	1600	487	5.10	3.34 x 10-6	1.65	40
E-CAST F-28 is an unfilled, medium viscosity, high strength resin with good release, excellent adhesion, clarity and room temperature rigid cure. Ideal for applications where internal viewing is required.	110 117 118 130 150 215 282 641 4123 TP-41F	Black/Clear	80 70 "A" 85 80 85 85 75 85 80 85	100 100 100 100 100 100 100 100 100 100	84 100 20 80 50 33 80 25 25 25	250 200 300 200 200 250 250 250 250 300	12,000 7,000 7,000 4,000 9,100 4,000 14,000 8,400 3,600 7,600	450 460 522 450 490 490 630 487 522 498	5.41 5.12 4.47 5.41 3.75 3.75 5.51 4.10 5.47 3.90	3.73 x 10-6 7.55 x 10-6 1.35 x 10-5 9.64 x 10-6 2.40 x 10-6 3.83 x 10-6 3.35 x 10-5 1.33 x 10-5 3.40 x 10-6 1.14 x 10-5	1.70 1.70 1.70 1.70 1.70 1.70 1.37 1.70 1.70 1.70	20 50 40 40 180 120 150 30 45 20
E-CAST F-82 is an unfilled, low viscosity resin with high strength adhesion, good air release. Ideal for the most intricate applications, circuit boards, and other applications.	117 150 215 282 641 4123 TP-41F	Black/Clear	50 "A" 75 85 70 60 75 80	100 100 100 100 100 100 100	100 50 33 80 25 25 25	250 200 200 200 200 200 250	1,200 1,500 600 7,000 1,700 450 1,400	540 490 490 510 487 487 490	4.15 4.75 3.75 3.89 4.10 5.10 4.15	1.53 x 10-5 2.81 x 10-5 4.48 x 10-6 3.92 x 10-5 1.56 x 10-5 6.30 x 10-5 1.33 x 10-5	1.65 1.65 1.65 1.78 1.65 1.65 1.65	60 330 180 240 30 40 15
E-CAST W.G. is an unfilled, low viscosity, clear potting compound. Excellent adhesion and low viscosity allows for the most intricate applications. Ideal for circuit boards, power supplies, and other applications.	215 601 641	Clear	60 85 80	100 100 100	33 33 25	200 250 250	1,320 1,445 1,680	490 487 487	3.75 3.80 3.90	5.10 x 10-6 2.56 x 10-5 3.45 x 10-6	1.75 1.65 1.60	150 90 45
CONDUCTIVE EPOXY is a high strength, heat resistant, silver filled system, which can be cured at ambient or elevated temperatures.	601 TP-41F	Silver Silver	85 85	100 100	7.7 8	300 300	Paste Paste Paste	— —	3.90 3.90	1.15 x 10-5 1.16 x 10-5	13.0 13.0	60 25
E-CAST CCA is an unfilled, low viscosity resin with superior penetrating properties and high gloss finish.	125 300 4123	Clear/Black	75 80 85	100 100 100	44 20 29	250 375 250	620 540 330	558 450 478	4.71 5.41 3.61	1.82 x 10-5 8.27 x 10-6 5.05 x 10-6	1.15 1.70 1.15	14 40 12
VIBRAFLEX is a vibration dampening, flexible epoxy system featuring low exotherm, good thermal shock, low shrinkage, and can be easily cut for repair of components.	110 515 621	Black/Clear	70 50 "A" 85	100 100 100	88 100 45	200 200 250	34,000 19,800 28,000	400 400 400	4.15 4.15 4.15	1.15 x 10-5 1.52 x 10-5	1.65 1.65 1.65	18 90 23

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ADHESIVE & REPAIR EPOXY SYSTEMS

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PRODUCT	COLOR	MAXIMUM USE TEMP.	HARDNESS SHORE "D"	TENSILE STRENGTH	MIXED VISCOSITY	POT LIFE 100 GRAMS @ 72°F	DESCRIPTION
ALUMINUM FILLED REPAIR COMPOUND / HARDENER 205	GRAY	250°F	90	9,230 PSI	12,000	65 MINS.	Exhibits good impact resistance and improved wear resistance. Meets MIL Spec. R-22628.
AUTOBOND / HARDENER 506	GRAY	250°F	60	7,500 PSI	PASTE	5 MINS.	This system has superior adhesive properties on all metals, rubber and hard plastics (non-polyethylene) and is sandable in 10 to 15 minutes. Used in automotive repairs and all plastic parts repair.
AUTOBOND SMC / HARDENER 109	GRAY	250°F	85	5,000 PSI	PASTE	26 MINS.	A non-sag adhesive with superior bonding to all substrates including SMC and stainless steel.
E-CAST CCA / HARDENER 110	CLEAR/BLACK	250°F	85	5,000 PSI	2,800 CPS	15 MINS.	This system has a rigid cure with excellent adhesion and chemical resistance. It exhibits excellent thermal shock and impact resistance.
E-CAST F-28 / HARDENER 380 HARDENER 385	CLEAR/BLACK	250°F	80	2,500 PSI	14,000 CPS	4 MINS.	A general purpose, quick setting epoxy for adhesive and patching applications.
				4,500 PSI	13,750 CPS	45 SECONDS	
E-CAST F-28 / HARDENER 282	CLEAR/BLACK	250°F	75	3,000 PSI	9,500	2.5 HRS.	A high impact, vibration resistant, flexible adhesive for metals, plastics, wood and ceramics.
E-CAST F-28 / HARDENER F-14	CLEAR/BLACK	250°F	85	8,000 PSI	11,000 CPS	140 MINS.	Good adhesion to metals, plastics and ceramics. Meets requirements of FDA under 21 CFR 175.300 and MIL Spec. A-81236.
E-CAST SUR-GRIP / HARDENER 282	CLEAR/BLAVK	250°F	70	8,000 PSI	14,000 CPS	4.5 Hours	This is a rubber based epoxy system that exhibits good thermal shock and excellent impact resistance.
E-CAST SUR-GRIP / HARDENER 620	CLEAR/BLACK	250°F	80	8,000 PSI	14,000 CPS	105 MINS..	A high impact, vibration resistant, flexible adhesive for metals, plastics, wood and ceramics.
EPOXY BOND D.G. / HARDENER 141	CLEAR/BLACK	250°F	85	9,500 PSI	18,800 CPS	30 MINS.	This is an unfilled epoxy system with a room temperature cure with excellent adhesion to metals, plastics and ceramics.
EPOXY ALUMINUM REPAIR PUTTY / HARDENER 987	GRAY	300°F	90	5,000 PSI	PASTE	55 MINS.	A durable compound for repair to aluminum castings and tooling applications. When cured, this system can be drilled or tapped using conventional metalworking tools.
EPOXY ALUMINUM REPAIR LIQUID / HARDENER 988	GRAY	300°F	90	5,000 PSI	PASTE	55 MINS.	An aluminum-filled pourable epoxy system used for making molds, patterns and holding fixtures. This system permits reproduction of delicate or intricate parts for accurate reproduction of details.
EPOXY METAL REPAIR COMPOUND / HARDENER 619	BLACK	250°F	75	5,500 PSI	PASTE	150 MINS.	This system is a non-sag compound, with superior compressive and adhesive strength. It adheres to most metals and various substrates. Meets MIL Spec. C-24176 Type I and Type II.
EPOXY STEEL REPAIR PUTTY / HARDENER 987	GRAY	300°F	90	5,400 PSI	PASTE	45 MINS.	A durable compound that can be drilled, tapped, machined or painted when cured. Bonds to steel, aluminum, brass, wood, glass, ceramic and iron. Ideal for patching, repairing and rebuilding steel equipment. Meets AA-56015A.
EPOXY STEEL REPAIR LIQUID / HARDENER 988	GRAY	250°F	90	6,100 PSI	9,600 CPS	45 MINS.	A steel-filled pourable epoxy system for maintenance, repair and tooling applications. This system can be cast over models for accurate detail reproduction. When cured, this system can be drilled, tapped, machined or painted.
FASTWELD PUTTY STICK / Steel, Aluminum, Fiberglass, Plastic	VARIOUS	250°F	85	7,000 PSI	PUTTY	5 MINS.	Used to mold, fill and bond practically anything. May be drilled, filled and sanded after one hour. Adheres to aluminum, iron, steel, wood, glass, masonry, ceramics and many plastics. Meets MIL Spec. S-8802 Class B
FASTWOOD PUTTY STICK	VARIOUS	250°F	85	6,000 PSI	PUTTY	7-10 MINS	An epoxy compound for permanent wood repairs such as filling nail holes, replacing and reshaping wood parts and for general restoration. Its unique properties include its ability to be molded to any shape and rapid cure.
METALBOND-187B	GRAY	250°F	80	5,000 PSI	PASTE	2.5 HRS.	Exhibits excellent adhesive properties on metals and is resistant to most chemicals and moisture with good thermal shock resistance. Meets MIL Spec. MMM-A-187B.
METAL FILLED / HARDENER 230	GRAY	370°F	85	4,000 PSI	270,000 CPS	2.5 HRS.	An adhesive and sealing compound for all metals. Meets MIL Spec. MMM-A-1754.
QUICKBOND / QUICKBOND L.V.	OPAQUE	250°F	85	2,500 PSI	105,000	3-5 MINS.	Excellent all purpose repair epoxy that can be handled in 5 minutes and cures to a full bond strength in one hour. Excellent adhesion to wood, ceramics, metals, fiberglass, glass and china .
SUPERBOND GEL / SUPERBOND LIQUID	CLEAR	200°F	85/80	3,600 PSI	GEL/8,000 CPS	3-5 MINS.	This is a quick set adhesive with superior adhesive properties on all metals, rubber and hard plastics (non-polyethylene) and is sandable in 10 to 15 minutes.
UNI-BOND ECA / HARDENER 110	OPAQUE/BLACK	250°F	85	4,500 PSI	GEL	20 MINS.	Adhesive used for applications such as wire staking, bonding components, strain gauges, fiber optics and ferrite cores.
UNI-BOND ECA / HARDENER 621	OPAQUE/BLACK	300°F	85	3,000 PSI	61,500 CPS	15 MINS.	Adhesive used for applications such as wire staking, bonding components, strain gauges, fiber optics and ferrite cores.
UNI-BOND W.G. / HARDENER F-14	CLEAR	250°F	80	5,000 PSI	6,000 CPS	3-4 HRS.	Adhesive used for glass reinforced coating on metals for protection against the corrosive effects of salt water. Meets MIL Spec. R-23461A.
UNI-BOND W.G. / HARDENER TP-41F	CLEAR	250°F	85	3,000 PSI	1,810 CPS	12 MINS.	Widely used in the automotive and aerospace industries as impreg glue.
HI-STRENGTH TUFF BOND/ HARDENER 250	OPAQUE	250°F	80	10,500 PSI	91,000 CPS	20 MINS.	A toughened medium viscosity adhesive that forms a tough bond line with high peel resistance and high shear strength.
FLEX-A-BOND / HARDENER 740 Regular	CLEAR/BLACK	250°F	65	1,200 PSI	13,000 CPS	3-4 HRS.	An unfilled epoxy adhesive used for those hard to bond substrates such as PTFE, nylon, stainless steel and other difficult substrates.
FLEX-A-BOND / HARDENER 740 Sprayable	CLEAR/BLACK	250°F	65	1,200 PSI	5,840 CPS	3-4 HRS.	A unfilled epoxy adhesive used for those hard to bond substrates such as PTFE, nylon, stainless steel and other difficult substrates.
FLEX-A-BOND / HARDENER 741 Paste	GRAY	180°F	65	1,300 PSI	PASTE	2-3 HRS.	A non-sag paste version of above.
RAPID REPAIR PUTTY STICK	GRAY	250°F CONTINUOUS 400°F INTERMITENT	50D	7,000 PSI	PUTTY	5 MINS	An epoxy compound for permanent wood repairs such as filling nail holes, replacing and reshaping wood parts and for general restoration. Its unique properties include its ability to be molded to any shape and rapid cure. Meets MIL Spec. S-8802 Class B.

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SPECIALTY EPOXY SYSTEMS

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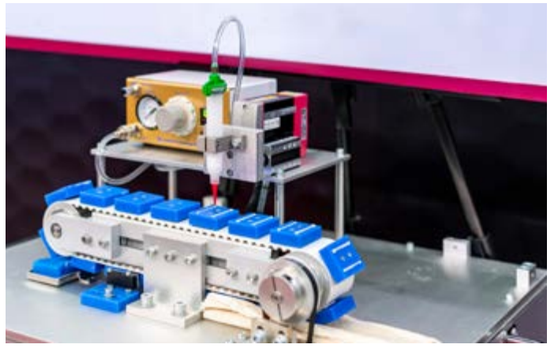
OPTIK-BOND ADHESIVES are ideal for potting and sealing optical connectors, fibers, lenses, and all other optical components.	MIXED VISCOSITY cps @ 72°F	TENSILE STRENGTH PSI	LAP SHEAR PSI	ELONGATION @ BREAK %	CTE PPM/°C	GLASS TRANSITION (Tg) °F	POT LIFE MINUTES (100 GRAM MASS) @ 72°F
LOW VISCOSITY — OPTIK-BOND CCA/125	620	1,180	1,970	100	55	140	14
IMPACT RESISTANT — OPTIK-BOND CCA/205	384	6,900	3,080	14	52.4	180	12
EXTENDED WORK LIFE — OPTIK-BOND CCA/929	220	5,500	5,600	7	51.9	140	50
GENERAL PURPOSE — OPTIK-BOND ECA/929	Thixotropic	8,160	8,200	8.16	52.3	200	240

COB SYSTEMS are a series of single component, high performance, flow control and encapsulating applications for the semiconductor industry.	VISCOSITY cps @ 72°F	GLASS TRANSITION (TG) °C	CTE PPM/ °C	HALOGEN FREE	CURE SCHEDULE HOURS @ 125 °C	SURFACE RESISTIVITY PER ASTM D257	DISSIPATION FACTOR PER ASTM D150	DIELECTRIC CONSTANT PER ASTM D149 (1 kHz)
EPOXY DAM CONTROL	PASTE	180	39.0	YES	6	$2.09 \times 10_{14}$	0.0092	4.94
EPOXY FILL SYSTEM	80,000	175	39.5	YES	6	$2.89 \times 10_{14}$	0.0081	5.02
LOW PROFILE GLOP TOP	105,000	175	39.5	YES	2	$2.39 \times 10_{14}$	0.0087	4.97
HIGH PROFILE GLOP TOP	455,000	177	39.1	YES	2	$2.39 \times 10_{14}$	0.0087	4.97
LOW CHLORINE ENCAPSULANT	63,000	165	28.0	YES	3	$2.39 \times 10_{14}$	0.0087	4.97

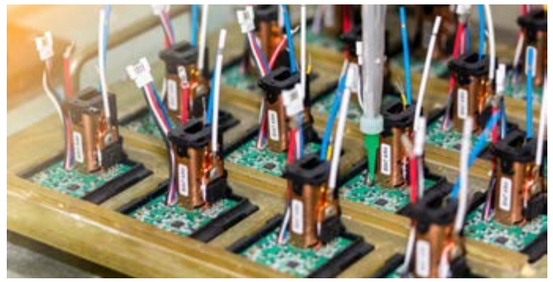
SMT SYSTEMS	COLOR	VISCOSITY cps @ 72°F	MAX USE TEMP	HALOGEN FREE	CURE @ 300 F MIN	GLASS TRANSITION °C	CTE In/In/°F PER ASTM D696	TENSILE STRENGTH PSI
CIRCUIT BOND — RV	RED/BLACK	1,000,000	500	YES	7-10	121	$1.57 \times 10_{-6}$	5,000
CIRCUIT BOND — MV	RED/BLACK	120,000	500	NO	7-10	121	$1.67 \times 10_{-6}$	5,000
CIRCUIT BOND — LV	RED/BLACK	50,000	500	NO	7-10	121	$6.59 \times 10_{-6}$	5,000
CIRCUIT BOND — SLV	RED/BLACK	11,000	500	NO	7-10	121	$2.57 \times 10_{-5}$	5,000

NOTES



United Resin's adhesive epoxy systems work well in dispensing equipment

Lightweight Epoxy Systems



Epoxy systems for potting and encapsulation

Epoxy systems for many battery applications

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SPECIALTY EPOXY SYSTEMS

RESINS ARE LISTED WITH MOST POPULAR HARDENER **WE HAVE MANY OTHER HARDENERS, ALLOWING FOR INDIVIDUAL PRODUCT DESIGN**

PRODUCT AND DESCRIPTION	POT LIFE MINUTES (100 gram Mass)	MAXIMUM USE TEMPERATURE °F	HARDNESS SHORE "D" @ 72°F	MIXING RATIO (Parts by Weight) RESIN/HARDENER	MIXED VISCOSITY cps @ 72°F	COMPRESSIVE STRENGTH PSI	FLEXURAL STRENGTH PSI	TENSILE STRENGTH PSI	CTE In/In/°F x 10-5
SURFACE COAT SYSTEMS:									
Uni-Gel S.C. 90 w/hardener TP-41F is a white, room temperature cure, epoxy surface coat. It has good bonding properties, holds well on vertical surfaces and its viscosity allows it to be easily measured through a dispenser. It is highly recommended for plastic faced plasters and renders a hard surface. This system is also available in a thin version suitable for spray applications.	20	250	90	100/14	170,000/ 15,000 (thin)	16,800	7,000	5,100	4.8
High Heat Surface Coat w/hardener 118 and hardener 203 are aluminum filled high heat surface coats used as a base on high heat tools. Designed to produce void free duplications that are dimensionally accurate. The system demonstrates high surface strength with superior physical properties. Post curing is required to obtain maximum deflection temperatures.	118 - 70 203 - 240	400 400	85 85	100/11 100/13	25,350 25,350	26,500 26,500	7,950 7,950	4,000 4,000	2.3 2.3
LAMINATING SYSTEMS:									
Uni-Lam RTL w/hardener PT-60F is a room temperature curing system, with excellent dimensional stability. It has excellent wet-out qualities when laminating with glass cloth. The material will not sag on vertical surfaces, nor will it shrink. It is approved for automotive and aerospace applications.	35	250	85	100/20	3,000	40,000	29,443	5,500	1.48
Uni-Heat w/hardener 118 and hardener 203 are high heat laminating systems especially designed for most high temperature tooling applications. They also work well where vacuum bag construction is used. They cure at room temperature or can be heat cycle cured. Post curing is required to obtain maximum deflection temperatures. Uni-Heat w/118 meets MIL Spec. S-83430A.	118- 60 203- 180	350 500	90 90	100/20 100/30	1,900 1,850	40,500 40,500	35,600 35,600	8,000 8,500	0.90 0.92
Uni-Bond W.G. w/hardener 601 is a clear, unfilled, multi-purpose lamination material which exhibits excellent moisture and chemical resistance. It has numerous adhesive applications, including extensive use in the automotive and aerospace industries as "impreg glue".	90	250	85	100/33	1,445	20,000	39,900	4,000	2.90
Uni-Bond 1070 w/hardener 601 is an unfilled room temperature laminating system with low exotherm. It is a dimensionally stable material with high surface strength and a long pot life. This material contains a tracer dye to insure proper mixing.	90	250	85	100/33	1,445	26,500	39,000	6,300	2.10
CASTING SYSTEMS:									
Uni-Cast M.C. w/hardener 210 is an iron-filled abrasion resistant compound used where heavy section casting is required. Its slow cure provides negligible shrinkage, excellent heat dissipation and a low coefficient of expansion.	120	250	85	100/7	14,350	29,000	8,500	7,200	2.10
Uni-Cast A.S.C.T. w/hardener 601 is a gray, aluminum filled surface casting resin that is virtually indestructible. It produces a hard, durable casting, and allows for extremely accurate reproductions. It is a safe, low odor system especially designed to cast in sections of 1/64" to 1/2" in thickness.	80	250	80	100/18	16,000	17,200	10,200	8,100	2.90
ADDITIONAL SYSTEMS:									
E-Cast F-28 w/hardener 213 provides high heat deflection temperatures coupled with excellent mechanical, chemical, and electrical properties. Formulated for low thermal expansion and excellent impact resistance. Meets Mil Spec. C-47257C. Ideal for filament winding and requires heat to cure.	N/A	400	85	100/80	2,500	25,000	14,500	6,000	2.23
Tooling Foam is a light weight, non-expanding/non-shrinking epoxy compound. It is color coded to insure proper mixing. Due to its consistency, it is easily packed onto the surface to be duplicated surface. When used with fiberglass cloth in a sandwich panel construction, it exhibits excellent dimensional stability and strength. Approved for use in the aerospace, automotive, marine and recreational vehicle industries.	50	250	55	100/33	Syntatic Dough	28,000	32,000	500	2.44
Epoxy Molding Compound is a light weight, durable molding material that is color coded to insure proper mixing. Its low exotherm during cure offers high dimensional stability, making it ideal for structural applications.	180-240	250	72	100/100	Paste	5,100	4,550	8,850	2.34

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