

## TRA-BOND 2151

### THERMAL CONDUCTIVE ELECTRICAL INSULATING COMPOUND

TRA-BOND 2151 is a thixotropic (smooth paste) heat conductive epoxy system that passes the NASA Outgassing Specification. It is used for staking transistors, diodes, resistors, integrated circuits and other heat-sensitive components to printed circuit boards. This two-part adhesive develops strong, durable, high-impact bonds at room temperature which improve heat transfer while maintaining electrical insulation. TRA-BOND 2151 bonds readily to itself, and to metals, silica, steatite, alumina, sapphire and other ceramics, glass, plastics and many other materials, because its coefficient of thermal expansion provides a good match for those materials over a fairly wide temperature range. Fully cured TRA-BOND 2151 provides excellent resistance to salt solutions, mild acids and alkalis, and many other chemicals including petroleum solvents, lubricating oils, and alcohol. This adhesive complies with the requirements of NASA's Outgassing Specification.

PROPERTY		TYPICAL VALUES
Color		Blue
Specific gravity, mixed		2.300
Viscosity, cps, mixed	rv #7, 10 rpm @ 25°C	40,000
Thixotropic index	(5 rpm/50 rpm)	1.7
Operating temperature range, °C		-70 to 115
Hardness, Shore D		90
Mix ratio, pbw, Resin/Hardener		100/9.5
Thermal conductivity, W/M °K		9.50E-01
Lap shear, alum to alum, psi	2 hours @ 65°C	2,850
	24 hours @ 25°C	2,150
Lap shear, gold to gold, psi	4 hours @ 65°C	880
Glass transition (Tg), °C, ultimate		60.00
Coefficient of expansion, cm/cm/°C		2.60E-05
Impact, izod, ft. lbs/inch of notch		0.49
Tensile strength, psi	30 minutes @ 65°C	7,500
Volume resistivity, ohm-cm @ 25°C		2.10E+15
	ohm-cm @ 75°C	3.20E+13
Reactive solids contents, %		100
Outgassing, NASA		Passes

<b>POT LIFE</b>	25 grams, 45 minutes
	100 grams, 35 minutes
<b>WORKING LIFE</b>	25 grams, 1.5 hours
	100 grams, 1.25 hours

<b>CURE SCHEDULE</b>
24 hours @ 25°C or
2 - 4 hours @ 65°C

**APPLICATION DIRECTIONS**

- (1) Carefully clean and dry all surfaces to be bonded.
- (2) Remove clamp and thoroughly mix the TRA-BOND 2151 epoxy adhesive system components in the handy BIPAX mixing-dispenser package until color is uniform throughout.
- (3) Apply this completely mixed adhesive to the prepared surfaces, and gently press these surfaces together. Contact pressure is adequate for strong, reliable bonds - however maintain contact until mixed adhesive is cured.

**AVAILABILITY**

Please contact TRA-CON's technical service department at 800-TRA-CON1 for packaging options for this material that will best suit your process.

**EXPIRATION DATE**

TRA-CON resin products are marked with an expiration date at the time of manufacture which is similar to the the dating system used for most perishable materials such as foodstuffs, photographic films, pharmaceuticals and most reactive products. This date is marked "Use Before" which indicates that the product will yield its best properties when mixed and cured before the date shown. The expiration date should be monitored to ensure that inventory levels are replenished in adequate time to avoid unnecessary interruptions in the manufacturing process.

**STORAGE AND HANDLING CONDITION**

The expiration date is based upon dry storage conditions at or below 80°F (27°C), unless specified otherwise on the packaging, in the original, sealed and unopened containers for BIPAX, TRA-PAX and bulk packaged materials. The expiration date for pre-mixed and frozen materials is based upon dry storage conditions at or below the temperature indicated on each package. Contents may separate during storage. Resin or hardener in bulk containers (e.g. quarts, gallons) should be thoroughly mixed prior to combining them to obtain all the benefits of the properties designed into the formulation.

Contents may settle either during storage or during the curing cycle, therefore complete mixing of the individual resin and hardener components prior to combining them is recommended to obtain all the benefits of the properties designed in the formulation

Some ingredients in this formulation provided in BIPAX, TRA-PAX and bulk packaging may crystallize when subjected to low temperature storage. Merely returning the product back to room temperature will not always redissolve the crystals and a gentle warming cycle of 125°F for 30 minutes prior to mixing the resin and hardener components may be necessary to return the product to its best condition. Crystallized epoxy components do not react as well as liquid components and should be redissolved prior to use for best results.

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**WARNING: THIS MATERIAL IS SOLD FOR INDUSTRIAL USE ONLY**

Uncured epoxy adhesives - consisting of resin and hardener components - may cause dermatitis, skin sensitization or other allergic responses. Prevent all contact with skin and eyes. If contact occurs, flush immediately with plenty of water (get prompt medical attention for eyes). Keep away from heat and open flame. KEEP OUT OF REACH OF CHILDREN. Immediately clean up any spills that may occur.

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**The properties given are TYPICAL VALUES and are not intended for use in preparing specifications. Users should make their own tests to determine the suitability of this product for their own purposes.**