



Products / Interface Materials / Adhesives

Thermal Adhesives

Ther-O-Bond 1500

Epoxy casting system for potting and encapsulation

Ther-O-Bond 1600

Two part epoxy for bonding

Ther-O-Bond 2000

Rapid cure acrylic adhesive

Thermalbond™



High strength epoxy adhesive

Adhesives offer excellent heat transfer and high voltage isolation. Epoxy adhesives offer low shrinkage, and coefficients of thermal expansion comparable to copper or aluminum. They bond readily to metals, glass, ceramics, and most plastics.

Ther-O-Bond 1500

Ther-O-Bond 1500 is a versatile epoxy casting system developed for high performance, production potting and encapsulating applications where low shrinkage and rapid air evacuation are required. This formulation has a very low surface tension and a flowable viscosity, which affords excellent air release. Ther-O-Bond 1500 adheres to rigid plastics and laminates, metals and ceramics, has a low coefficient of thermal expansion and is readily machined and shaped with ordinary shop tools. The fully cured epoxy system is an excellent electrical insulator which provides good resistance to electrolysis, leakage and corrosion room water, weather, gases and chemical compounds.

Ordering Information

Description	Part Number	RoHS	PCN	Package/Kit	Size
Ther-O-Bond 1500	159900F00000G	RoHS  Compliant		Resin and Hardener	.946 liter (1 Qt.)

Handling Characteristics

Mix Ratio by Weight, Resin to Hardener:	100 to 15
Mixed Viscosity @ 25°C, cps:	1000 - 1500
Work-Life @ 25°C	45 Minutes
Gel Time @ 25°C	3-6 Hours
Cure Schedule @ 25°C	8 Hours
Cure Schedule @ 65°C	1 Hour
Cure Schedule @ 100°C	0.5 Hour






(1) Stated shelf life is from date of manufacture. To allow for inventory cycle, product shipped from Aavid will have less than 12 months remaining shelf life. Aavid guarantees a minimum of 3 months remaining shelf life. Please adjust order quantity so all product will be consumed within 3 months of date of shipment.

Thermalbond Resistance Calculator

Enter the area of the device that will contact the heat sink:	mm ²
Enter the grease thickness:	mm
Interface Resistance =	

Formula

$$\text{interface resistance} = \frac{\text{interface thickness (mm)} * 1000}{\text{thermal conductivity (W/m-K)} * \text{contact area (mm}^2\text{)}}$$

Part No.	RoHS	PCN	Net Weight	MSDS Safety Sheets
4949G	RoHS ✓ Compliant		25 grams (.875 oz) in single use package	Hardener Epoxy
4950G Part Discontinued	RoHS ✓ Compliant		50 grams (1.75 oz) in single use package	Hardener Epoxy
4951G	RoHS ✓ Compliant		100 grams (3.5 oz) in single use package	Hardener Epoxy
4952G	RoHS ✓ Compliant		200 grams (7.0 oz) in single use package	Hardener Epoxy
4953G	RoHS ✓ Compliant		1.81 Kg. (4.00 lbs.)	Hardener Epoxy

Note: Matched quantity of RT-7 hardener is included.

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product name: **THERMALBOND 4952 A**
Product Use/Class: **EPOXY RESIN**
Reference: Also sold as Circalok 6037 Green

**Manufactured for AAVID THERMALLOY,
LLC**

2. COMPOSITION/INFORMATION ON INGREDIENTS

<u>Chemical Name</u>	<u>CAS Number</u>	<u>Weight % Less Than</u>	<u>ACGIH TLV- TWA</u>	<u>ACGIH TLV- STEL</u>	<u>OSHA PEL- TWA</u>	<u>OSHA PEL- CEILING</u>	<u>Skin</u>
Epoxy resin	PROPRIETARY	25.0 %	N.E.	N.E.	N.E.	N.E.	N.A.
N-Butyl glycidyl ether	2426-08-6	5.0 %	3 ppm	N.E.	270 mg/m3 50 ppm	N.E.	S

N.A. - Not Applicable, N.E. - Not Established, S - Skin Designation

3. HAZARDS IDENTIFICATION

***** EMERGENCY OVERVIEW ***:** Green Viscous Liquid, with No odor. May cause skin and eye irritation. May cause allergic skin reaction. May cause respiratory tract irritation.

EFFECTS OF OVEREXPOSURE - EYE CONTACT: May cause eye irritation.

EFFECTS OF OVEREXPOSURE - SKIN CONTACT: May cause skin irritation. May cause skin sensitization. May cause dermatitis.

EFFECTS OF OVEREXPOSURE - INHALATION: May cause respiratory tract irritation. Significant overexposure to n-butyl glycidyl ether by the inhalation route is unlikely under most ambient conditions due to its low volatility. However, vapors, aerosols, and mists may be formed during some applications such as heating or applications of uncured material on large surface areas.

EFFECTS OF OVEREXPOSURE - INGESTION: Harmful if swallowed. Ingestion is not an expected route of entry in industrial or commercial uses.

EFFECTS OF OVEREXPOSURE - CHRONIC HAZARDS: Chronic skin contact may cause dermatitis.

PRIMARY ROUTE(S) OF ENTRY: Skin Contact, Inhalation, Ingestion, Eye Contact

4. FIRST AID MEASURES

FIRST AID - EYE CONTACT: Flush eyes immediately with large amount of water for at least 15 minutes holding eyelids open while flushing. Get prompt medical attention.

FIRST AID - SKIN CONTACT: Flush contaminated skin with large amounts of water while removing contaminated clothing. Wash affected skin areas with soap and water. Get medical attention if symptoms occur.

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Product: THERMALBOND 4952 A,

FIRST AID - INHALATION: Move person to fresh air. Restore and support continued breathing. If breathing is difficult, give oxygen. Get immediate medical attention.

FIRST AID - INGESTION: If swallowed, do not induce vomiting. Give victim one or two glasses of water or milk. Call a physician or poison control center immediately for further instructions. Never give anything by mouth if victim is rapidly losing consciousness, unconscious or convulsing.

5. FIRE-FIGHTING MEASURES

FLASH POINT: 201 °F, 93 °C
Setaflash Closed Cup

LOWER EXPLOSIVE LIMIT (%): Not Applicable
UPPER EXPLOSIVE LIMIT (%): Not Applicable

AUTOIGNITION TEMPERATURE: N.D.

EXTINGUISHING MEDIA: Carbon Dioxide, Dry Chemical, Foam, Water Fog

UNUSUAL FIRE AND EXPLOSION HAZARDS: Keep containers tightly closed. Closed containers may rupture when exposed to extreme heat. Use water spray to keep fire exposed containers cool. During a fire, irritating and/or toxic gases and particulate may be generated by thermal decomposition or combustion.

SPECIAL FIREFIGHTING PROCEDURES: Wear full firefighting protective clothing, including self-contained breathing apparatus (SCBA). If water is used, fog nozzles are preferable.

6. ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Avoid breathing vapors. Notify appropriate authorities if necessary. Avoid contact. Use appropriate respiratory protection for large spills or spills in confined area. Keep non-essential personnel away from spill area. Scoop spilled material into an appropriate container for proper disposal. (If necessary, use inert absorbent material to aid in containing the spill).

7. HANDLING AND STORAGE

HANDLING: Keep closure tight and container upright to prevent leakage. Avoid skin and eye contact. Wash thoroughly after handling. Do not handle until all safety precautions have been read and understood. Empty containers should not be re-used. Use with adequate ventilation.

STORAGE: Store only in well-ventilated areas. Keep container closed when not in use.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS: Sufficient ventilation in pattern and volume should be provided in order to maintain air contaminant levels below recommended exposure limits.

RESPIRATORY PROTECTION: Use a NIOSH approved air-purifying organic vapor respirator if occupational limits are exceeded. For emergency situations, confined space use, or other conditions where exposure limits may be greatly exceeded, use an approved air-supplied respirator. Observe OSHA regulations (29CFR 1910.134) for respirator use.

SKIN PROTECTION: Use neoprene, nitrile, or rubber gloves to prevent skin contact.

EYE PROTECTION: Use safety eyewear including safety glasses with side shields and chemical goggles where splashing may occur.

OTHER PROTECTIVE EQUIPMENT: Use disposable or impervious clothing if work clothing contamination is likely. Remove and wash contaminated clothing before reuse.

HYGIENIC PRACTICES: Wash hands before eating, smoking, or using toilet facility. Food or beverages should not be consumed anywhere this product is handled or stored. Wash thoroughly after handling.

9. PHYSICAL AND CHEMICAL PROPERTIES

ODOR:	No	BOILING RANGE:	244 °F - 340 °F
APPEARANCE:	Green	VAPOR PRESSURE:	N.D.
PHYSICAL STATE:	Viscous Liquid	VAPOR DENSITY:	Heavier than Air
ODOR THRESHOLD:	N.D.	EVAPORATION RATE:	Not Applicable
SOLUBILITY IN H2O:	Insoluble	DENSITY, LB/GL:	20.01 lb/gal
pH:	N.A.	VOLATILE BY WEIGHT:	0.36 %
FREEZE POINT:	N.D.	VOLATILE BY VOLUME:	0.00 %
COEFFICIENT OF WATER/OIL	N.D.		
DISTRIBUTION:			

(See section 16 for abbreviation legend)

10. STABILITY AND REACTIVITY

CONDITIONS TO AVOID: High temperatures.

INCOMPATIBILITY: Amines, acids, water, hydroxyl, or active hydrogen compounds.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide, aldehydes.

HAZARDOUS POLYMERIZATION: Hazardous polymerization will not occur under normal conditions.

STABILITY: Product is stable under normal storage conditions.

11. TOXICOLOGICAL INFORMATION

PRODUCT LD50	(ORAL)	No Data
	(DERMAL)	No Data
PRODUCT LC50		No Data

12. ECOLOGICAL INFORMATION

ECOLOGICAL INFORMATION: No Information

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Disposal should be done in accordance with Federal (40CFR Part 261), state and local environmental control regulations. If waste is determined to be hazardous, use licensed hazardous waste transporter and disposal facility.

14. TRANSPORT INFORMATION

This product is NOT REGULATED for non-bulk road shipments. For the most accurate shipping information, refer to your transportation/compliance department regarding changes in package size, mode of shipment or other regulatory descriptors.

15. REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS: AS FOLLOWS -

This product is considered hazardous as defined by 29 CFR 1910.1200 (OSHA HazCom Standard.)

SARA SECTION 313

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR part 372:

Product: THERMALBOND 4952 A,

NONE

TOXIC SUBSTANCES CONTROL ACT:

INVENTORY STATUS

The chemical substances in this product are on the TSCA Section 8 Inventory.

EXPORT NOTIFICATION

This product contains the following chemical substances subject to the reporting requirements of TSCA 12(B) if exported from the United States:

NONE

16. OTHER INFORMATION

HMS RATINGS - HEALTH: 2 FLAMMABILITY: 1 PHYSICAL HAZARD: 0

* - Indicates a chronic hazard; see Section 3

VOLATILE ORGANIC COMPOUNDS

Calculated 0 lb/gal, 0 g/l

LEGEND: N.A. - Not Applicable, N.E. - Not Established, N.D. - Not Determined

DISCLAIMER

The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. It is the responsibility of the user to comply with all applicable federal, state and local laws and regulations.