

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

## Ther-O-Bond 1600

For smaller applications, Ther-O-Bond 1600 produces a stable, durable, high-impact bond, with good heat transfer characteristics. It is a thixotropic (smooth paste) thermally conductive epoxy system used for staking thermistors, 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. Therobond 1600 bonds readily to itself, to metals, silica, steatie, 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.

### Ordering Information

Description	Part Number	RoHS	PCN	Package/Kit	Size
Ther-O-Bond 1600	161000F00000G	RoHS  Compliant		2-Part Plastic Kit	10gm (.35 oz.)
Ther-O-Bond 1600	164000F00000G	RoHS  Compliant		2-Part Plastic Kit	40gm (1.40 oz.)

### Handling Characteristics

Mix Ratio by Weight, Resin to Hardener:	100 to 5
Mixed Viscosity @ 25°C, cps:	33,000
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

### Physical Properties

Color	Blue
Specific Gravity:	2.30
Operating Temp, °C	-70 to 115
Hardness, Shore D:	90
Izod impact, F1 Lbs/Inch of Notch	0.49
Thermal Conductivity W/(m·°C)	0.85
C.T.E. (ppm/°C)	25
Tensile Strength (@25°C)	9200 psi
Tensile Lap Shear, psi	2900
Dielectric Strength (volts/mil)	410

### Ther-O-Bond 1600 Resistance Calculator

Enter the area of the device that will contact the heat sink:	mm <sup>2</sup>
Enter the grease thickness:	mm
<b>Interface Resistance =</b>	

### Formula

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



<b>Dielectric Constant (1 KHz @ 25°C)</b>	5.9
<b>Dissipation Factor, KH@ 25°C</b>	5.9
<b>Shelf Life (DOM)</b>	18 months <sup>1</sup>

(1) Stated shelf life is from date of manufacture. To allow for inventory cycle, product shipped from Aavid will have less than 18 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.

### Ther-O-Bond 2000

Ther-O-Bond 2000 Acrylic Adhesive cures rapidly at room temperature, while providing a repairable, thermally conductive bond.

### Ordering Information

Description	Part Number	RoHS	PCN	Package/Kit	Size
Ther-O-Bond 2000	200000F00000G			Adhesive Syringe Activator Bottle	25ml 13ml

<b>Color</b>	White
<b>Thermal Conductivity W/(m·°C)</b>	0.48
<b>C.T.E. (ppm/°C)</b>	25
<b>Tensile Strength (@25°C)</b>	2360 psi
<b>Dielectric Strength (volts/mil)</b>	220
<b>Shelf Life (DOM)</b>	18 months <sup>1</sup>

### Ther-O-Bond 2000 Resistance Calculator

Enter the area of the device that will contact the heat sink:	mm <sup>2</sup>
Enter the grease thickness:	mm
<b>Interface Resistance =</b>	

### Formula

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

(1) Stated shelf life is from date of manufacture. To allow for inventory cycle, product shipped from Aavid will have less than 18 months remaining shelf life. Aavid guarantees a minimum of 3 months remaining shelf life.

# RESIN TECHNOLOGY GROUP, LLC

## MATERIAL SAFETY DATA SHEET

### 1. MATERIAL IDENTIFICATION

Product Name: **THER-O-BOND 1600 RESIN**

### 2. COMPOSITION

HAZARDOUS COMPONENTS	CAS NO.	PERCENT	Exposure Limits	
			ACGIH TLV-TWA	OSHA PEL
Epoxy Resin	25068-38-6	>20	N.E.	N.E.
N - Butyl Glycidyl Ether	2426-08-6	<5	133 mg/m <sup>3</sup>	133 mg/m <sup>3</sup>

Abbreviations: N.E.: Not Established

### 3. HEALTH HAZARDS IDENTIFICATION

Routes of Exposure:	Eyes: Yes	Skin: Yes	Inhalation: Yes
Eye Contact:	Contact can cause moderate irritation.		
Skin Contact:	Contact can cause moderate irritation; contact with this product at elevated temperatures can result in thermal burns.		
Inhalation:	May cause irritation to the respiratory tract.		
Ingestion:	May be slightly toxic and may be harmful if swallowed.		

### 4. FIRST AID MEASURES

Eyes:	Flush eyes with plenty of water for 15 minutes while holding eyelids open. Obtain prompt medical attention.
Skin:	Remove contaminated clothing and wipe excess from skin. Flush skin with water. Follow by washing with soap and water. If irritation occurs, get medical attention. Do not reuse clothing until laundered.
Inhalation:	If vapor is inhaled, remove to fresh air. Administer oxygen if there is difficulty breathing. Give artificial respiration if breathing has stopped. Obtain medical attention.
Ingestion:	Give no more than 2 glasses of water and induce vomiting by giving 30 cc (2 tablespoons) syrup of Ipecac, or by sticking finger to back of victim's throat. Seek medical attention promptly.

**5. FIRE FIGHTING MEASURES****FLAMMABLE PROPERTIES**

Flashpoint:	270 °F (PMCC)
Explosive Limits:	Not available.
Auto-Ignition Temperature:	Not available.
Hazardous Decomposition Products:	Carbon monoxide, aldehydes, acids and other organic substances may be formed during combustion or elevated (>500 °F) temperature degradation.

**Fire Fighting Instructions:** Firefighters should not enter a confined fire space without full bunker gear including a positive pressure NIOSH approved self-contained breathing apparatus. Cool fire exposed containers with water.

**Extinguishing Media:** Use water fog, foam, dry chemical, or carbon dioxide.

**6. ACCIDENTAL RELEASE MEASURES**

Wear respirator and protective clothing as appropriate. Shut off source of leak if safe to do so. Soak up residue with an absorbent such as clay, sand or other suitable material; dispose of properly. Flush area with water to remove trace residue.

**7. HANDLING AND STORAGE**

Store in a cool, dry place. Keep away from open flames and high temperatures. Heating this resin above 300 °F in the presence of air may cause slow oxidative decomposition above 500 °F, polymerization may occur. Some curing agents, e.g. aliphatic polyamines, can produce exothermic reactions, which in large masses can cause runaway polymerization and charring of the reactants. Fumes and vapors from these thermal and chemical decompositions vary widely in composition and toxicity. Do not breathe fumes.

**8. EXPOSURE CONTROLS AND PERSONAL PROTECTION**

**Engineering/Ventilation Controls:** General ventilation and local exhaust may be required to maintain airborne concentrations below the established exposure limits exposure when generating vapors or mists.

**Respiratory Protection:** Where exposure exceeds established airborne limits, use a NIOSH approved respirator, or a self-contained breathing apparatus, or a supplied air respirator as necessary to control exposure.

**Skin Protection:** Wear impervious gloves and protective clothing as necessary to prevent skin contact.

**Eye Protection:** Wear chemical splash goggles or safety glasses with side shields.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

Appearance:	Blue liquid
Odor:	Sweet, pleasant odor
Boiling Point:	Not established.
Specific Gravity:	2.3
Vapor Pressure (mm Hg):	1
Vapor Density (air =1):	3.8
Evaporation Rate:	Not applicable
Solubility in Water:	Negligible