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Thermal Adhesives

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

- [MSDS Safety Sheet for Ther-O-Bond 1500 Resin](#)
- [MSDS Safety Sheet for Ther-O-Bond 1500 Hardener](#)

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			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

Physical Properties

Color	Black
Specific Gravity	1.50
Operating Temp, °C	-60 to 155
Heat Distortion Temp, °C	100
Hardness, Shore D:	88
Thermal Conductivity W/(m °C)	1.26
Compressive Strength, psi	14,000
Dissipation Factor, 100 KHz @25 °C	0.01
Self Extinguishing?:	yes
C.T.E. (ppm/°C)	25
Tensile Strength (@25 °C)	9200 psi

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Dielectric Strength (volts/mil)	800
Shelf Life (DOM)	12 months ¹

(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.

Ther-O-Bond 1500 Resistance Calculator

Enter the area of the device that will contact the heat sink:	<input type="text"/> mm ²
Enter the grease thickness:	<input type="text"/> mm
	<input type="button" value="Calculate"/>
Interface Resistance =	<input type="text"/>

Formula

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

Ther-O-Bond 1600

[MSDS Safety Sheet for Ther-O-Bond 1600 Resin in PDF format](#)
[MSDS Safety Sheet for Ther-O-Bond 1600 Hardener in PDF format](#)

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, 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.

Ordering Information

Description	Part Number	RoHS	PCN	Package/Kit	Size
Ther-O-Bond 1600	161000F00000G			2-Part Plastic Kit	10gm (.35 oz.)
Ther-O-Bond 1600	164000F00000G			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
Dielectric Constant (1 KHz @ 25°C)	5.9
Dissipation Factor, KH@ 25°C	5.9
Shelf Life (DOM)	18 months ¹

(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 1600 Resistance Calculator

Enter the area of the device that will contact the heat sink:	<input type="text"/> mm ²
Enter the grease thickness:	<input type="text"/> mm
	<input type="button" value="Calculate"/>
Interface Resistance =	<input type="text"/>

Formula

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

Thermalbond™

Thermalbond™ is a thermally conductive, high strength epoxy adhesive. It provides exceptional adhesion to copper, aluminum, steel, glass, ceramics, and most plastics. Thermalbond also has a coefficient of thermal expansion compatible with aluminum, copper, and brass, making it particularly well suited for thermally bonding semiconductors and other components to chassis or heat sinks.

Mixing Instructions:

Mix resin thoroughly before removing material. Add 7.1 parts of RT-7 hardener to 100 parts of resin by weight, or 17 parts of RT-7 hardener to 100 parts of resin by volume.

Adhesive will set up in:

- 24 hrs at 25°C (77°F) 1 hr. at 100°C (212°F)
- 2 hrs. at 65°C (149°F) 30min. at 130°C (266°F)

Note: For maximum electrical and physical properties, a post cure is necessary. Post cure at room temperature for 4 days or for 4 hours at 93°C (200°F).

Typical Electrical and Physical Properties at Room Temperature with RT-7 Hardener

Characteristics	Typical Values
Specific gravity	2.35
Working viscosity	25,000 cps
Thermal conductivity	1.34Wm ⁻¹ °C ⁻¹ (.77 Btu/hr •ft• °F)
Thermal resistivity	29.4 °C in/watt
Tensile strength	6.34 x 10 ⁷ Pa(9,200 psi)
Compressive strength	1.44 x 10 ⁸ Pa(20,900 psi)
Bond shear strength	3.17 x 10 ⁷ Pa(4,600 psi)
aluminum to aluminum, 25.4mm (1") overlap @ 25°C, (77°F)	
Thermal coefficient of expansion	24 x 10 ⁻⁶ /°C (1.32 x 10 ⁻⁶ /°F)
Water absorption, % after 10 days@ 25°C (77°F)	.20
Hardness, Shore D	86
Volume resistivity	1.0 x 10 ¹⁶
Dielectric strength	59.1 x 10 ³ volts/mm (1500 volts/mil)
Dielectric constant@25°C (77°F) 100KHz	6.1
Dielectric factor@25°C (77°F) 100KHz	0.020
Operating temperatures	-65°C to 155°C (-85°F to 311°F)
Linear shrinkage	0.002 in/in
Shelf life (DOM)	12 months ¹
Pot life@25°C (77°F)	2-3 hours
Suggested stripping agent	Miller-Stephenson MS 111
Cleaning solvent	Acetone



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Thermalbond Resistance Calculator

Enter the area of the device that will contact the heat sink:	<input type="text"/> mm ²
Enter the grease thickness:	<input type="text"/> mm
	<input type="button" value="Calculate"/>
Interface Resistance =	<input type="text"/>

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			25 grams (.875 oz) in single use package	Hardener Epoxy

4950G Part Discontinued	RoHS Compliant ✓	Product Change Notice	50 grams (1.75 oz) in single use package	Hardener Epoxy
4951G	RoHS Compliant ✓	Product Change Notice	100 grams (3.5 oz) in single use package	Hardener Epoxy
4952G	RoHS Compliant ✓	Product Change Notice	200 grams (7.0 oz) in single use package	Hardener Epoxy
4953G	RoHS Compliant ✓	Product Change Notice	3.25 lbs.	Hardener Epoxy

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

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