

ERA-186
THERMALLY CONDUCTIVE EPOXY ADHESIVE

ERA-186 is a highly versatile epoxy adhesive formulated for the semiconductor industry. It is an easy to spread thixotropic paste offering high heat transfer, low shrinkage and a coefficient of thermal expansion comparable to that of copper and aluminum. Its strong bond to a wide variety of substrates resists severe temperature cycling. This adhesive is principally use to form thermally conductive joints in fabricated heat sinks and between heat sinks and power devices. Typical applications include fabricating heat sinks, bonding semiconductors and transistors to heat sinks and the general purpose bonding of electronic components.

TYPICAL HANDLING PROPERTIES:

| | |
|-----------------------------------|--|
| Resin | ERA-186A |
| Hardener | ERA-186B |
| Mix Ratio by weight, phr | 5 |
| Mixed Viscosity at 25°C, cp | Paste |
| Pot Life (100 grams) at 25°C, hrs | >4 |
| Recommended Cure Schedule | 2 hrs at 100°C + 2 hrs at 150°C |

TYPICAL CURED PROPERTIES AFTER RECOMMENDED CURE:

| | |
|--|-------------------|
| Color | Black |
| Specific Gravity | 2.3 |
| Hardness, Shore D | 94 |
| Lap Shear Strength to Aluminum, psi | |
| at -55°C | 1900 |
| at 25°C | 2400 |
| at 100°C | 1400 |
| Linear Shrinkage, % | 0.015 |
| Water Absorption (24 hour immersion) at 25°C, % | 0.007 |
| Thermal Conductivity, Btu.in/hr.ft ² .°F | 9.2 |
| Glass Transition Temperature, °C | 165 |
| Coefficient of Thermal Expansion, 10 ⁻⁶ /°C | |
| from -55°C to 25°C | 29 |
| Flexural Strength at 25°C, psi | 13,300 |
| Flexural Modulus at 25°C, psi | 2x10 ⁶ |
| Dielectric Strength, volts/mil | 460 |

| | |
|---------------------------------------|--------------------|
| Dielectric Constant at 1 kHz and 25°C | 6.19 |
| Dissipation Factor at 1 kHz and 25°C | 0.015 |
| Volume Resistivity at 25°C, ohm-cm | 1×10^{16} |

INSTRUCTIONS FOR USE:

Mix ERA-186A thoroughly before each use. If the contents are hard or lumpy, warm to 80°C before mixing.

At room temperature, mix 100 grams of ERA-186A with 5 grams of ERA-186B. Mix thoroughly until uniform in consistency and vacuum degas. Typical properties were determined using the recommended cure schedule. Some difference in properties may occur with other cure schedules.

FOR INDUSTRIAL USE ONLY:

These materials are intended for industrial use only, and the practices of good housekeeping, safety and cleanliness should be followed before, during and after use.

WARNING!!

Although the system contains low volatility materials, care should be taken in handling. Adequate ventilation of the work place and ovens is essential. These materials may cause injury to the skin following prolonged or repeated contact and dermatitis in susceptible individuals. In case of skin contact, wash thoroughly with soap and water. For eyes, flush immediately with plenty of water for at least 10 minutes and seek medical attention. Refer to the Material Safety Data Sheet for additional health and safety information.

SHELF LIFE:

The shelf life of these materials is greater than two years when stored in unopened containers at an average temperature of 25°C.