

ERA-164 **LOW EXPANSION EPOXY ADHESIVE**

ERA-164 is an instrument grade, filled adhesive having a low coefficient of thermal expansion, low shrinkage, good solvent resistance, excellent dielectric properties and low outgassing. It exhibits excellent adhesion to aluminum, glass, ceramics, and other difficult to bond substrates. It has been used for hermetic sealing under vacuum applications. **It meets NASA outgassing requirements for space applications.**

TYPICAL HANDLING PROPERTIES:

Resin	ERA-164A
Hardener	ERA-164B
Mix ratio by weight, phr	27
Pot Life at 70°C (100 grams), mins	25
Recommended Cure Schedule	2 hrs at 70°C + 4 hrs at 100°C

TYPICAL CURED PROPERTIES AFTER RECOMMENDED CURE:

Color	Black
Specific Gravity	1.99
Hardness, Shore D	90
Lap Shear Strength to Aluminum, psi	
at -55°C	2300
at 25°C	2290
at 93°C	620
at 25°C (after aging two years at 150°C)	2000
Linear Shrinkage, %	0.4
Flexural Strength at 25°C, psi	14,600
Flexural Modulus at 25°C, psi	2.1x10 ⁶
Service Temperature range	-55°C to 120°C
Glass Transition Temperature, °C	56
Coefficient of Linear Thermal Expansion, 10 ⁻⁶ /°C	
from -55°C to 25°C	22
Outgassing (ASTM E595-84), %	
Total Mass Loss (TML)	0.233
Collectible Volatile Condensable Material (CVCM)	0.02
Dielectric Strength, volts/mil	430
Dielectric Constant at 1 kHz and 25°C	5.3
Dissipation Factor at 1 kHz and 25°C	0.005

Volume Resistivity at 25°C, ohm-cm

2x10¹⁵

Solvent resistance, % change after 24 hr immersion at 25°C plus 24 hr oven dry at 50°C

Acetone	2.5
Methylene chloride	0.7
Methanol	0.6
Toluene	0.9
n-Hexane	0.1

INSTRUCTIONS FOR USE:

Mix ERA-164A 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-164A with 27 grams of ERA-164B. Mix thoroughly until uniform in consistency and vacuum degas. Cure as recommended to achieve the desired properties. Typical cured 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.

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