



## LOW THERMAL EXPANSION ADHESIVES

Low Thermal Expansion adhesives are specifically designed to provide maximum adhesion while maintaining a balance of other important properties such as pot life, cure time & temperature, low thermal expansion, Glass transition temperature, dielectric properties etc.

These high performance adhesives are used for bonding and sealing critical high technology applications. They are recommended for bonding metals that will be subjected to thermal shock and temperature ranges from -65°C to 230°C. The fully cured products provide excellent dielectric properties, and very good thermal shock & impact resistance. They also have good resistance to weather, water, most petroleum products, mild acids & alkalis, and many other chemicals. **All adhesives meet NASA outgassing requirements.**

| EPOXIBOND                                |                      | EB-301             | EB-304             | EB-304LV           | EB-309             | EB-315                         | EB-348                         |
|------------------------------------------|----------------------|--------------------|--------------------|--------------------|--------------------|--------------------------------|--------------------------------|
| Hardener                                 |                      | EH-4               | EH-5C              | EH-5C              | EH-5C              | EH-3                           | PART-B                         |
| FEATURES                                 |                      | High bond strength | High bond strength | High bond strength | Very Low Expansion | High Temp. Resistance          | High Temp. Resistance          |
| Mix ratio by weight (Epoxybond/Hardener) |                      | 100/1              | 100/5              | 100/5              | 100/5              | 100/5.5                        | 100/5                          |
| Viscosity @ 25°C                         | cps                  | Paste              | 53,000             | 30,000             | Paste              | Paste                          | Paste                          |
| Pot life (100 grams)                     |                      | 1 hr @ 25°C        | 1 hr @ 25°C        | 1½ hr @ 25°C       | 1½ hr @ 25°C       | 2 hrs @ 100°C                  | 2 hrs @ 100°C                  |
| Shelf Life @ 25°C                        |                      | 2 years            | 2 year             | 2 year             | 2 year             | 1 year                         | 1 year                         |
| Recommended Cure                         |                      | 2 hrs @ 100°C      | 2 hrs @ 100°C      | 2 hrs @ 100°C      | 2 hrs @ 100°C      | 1 hr @ 100°C+<br>2 hrs @ 150°C | 1 hr @ 100°C+<br>2 hrs @ 150°C |
| Alternate Cure                           |                      | 24-48 hrs @ 25°C   | 24 hrs @ 25°C      | 24 hrs @ 25°C      | 24 hrs @ 25°C      | 1 hr @ 165°C                   | 1 hr @ 165°C                   |
| TYPICAL CURED PROPERTIES                 |                      |                    |                    |                    |                    |                                |                                |
| Color                                    |                      | Beige              | Light Green        | Light Green        | Green Tan          | Beige                          | Black                          |
| Specific Gravity                         |                      | 1.8                | 1.84               | 1.84               | 1.7                | 1.8                            | 1.75                           |
| Hardness                                 | Shore D              | 91                 | 92                 | 90                 | 92                 | 92                             | 93                             |
| Lap shear strength to Aluminum @ 25°C    | psi                  | 2100               | 2300               | 2300               | 2300               | 2100                           | 2000                           |
| Glass Transition Temperature             | °C                   | 80                 | 84                 | 82                 | 84                 | 175                            | 194                            |
| Coefficient of Thermal Expansion         | 10 <sup>-6</sup> /°C | 32                 | 25                 | 25                 | 18                 | 25                             | 23                             |
| Service Temperature Range                | °C                   | -65°C to 120°C     | -65°C to 130°C     | -65°C to 130°C     | -65°C to 130°C     | -65°C to 200°C                 | -65°C to 230°C                 |
| Dielectric Strength (3mm thickness)      | Volts/mil            | 410                | 430                | 430                | 430                | 420                            | 410                            |
| Dielectric Constant                      | @ 1 kHz              | 5.6                | 4.8                | 4.8                | 4.8                | 5.6                            | 4.3                            |
| Dissipation Factor                       | @ 1 kHz              | 0.004              | 0.007              | 0.007              | 0.007              | 0.004                          | 0.08                           |
| Volume Resistivity                       | Ohm-cm               | 5x10 <sup>15</sup> | 2x10 <sup>15</sup> | 2x10 <sup>15</sup> | 2x10 <sup>15</sup> | 5x10 <sup>15</sup>             | 3x10 <sup>15</sup>             |

**DISCLAIMER:** All data given here is offered as a guide to the use of these materials and not as a guarantee of their performance. The user should evaluate their suitability for own purposes. Properties are typical and should not be used in preparing specifications. Statements are not to be construed as recommendations to infringe any patent.