

**Advanced Materials****XB 5308 Resin / XB 5309-1 Hardener Adhesive**

## TOUGHENED EPOXY ADHESIVE

**DESCRIPTION :**

XB 5308 resin / XB 5309-1 hardener epoxy adhesive is a two-component, thixotropic paste that cures at room-temperature. Non-sagging to a 0.4 inch (10 mm) thickness, the epoxy adhesive produces resilient bondlines. It is particularly suitable for use on SMC and GRP.

**APPLICATIONS :**

- Metals
- SMC
- GRP

**ADVANTAGES :**

- Thixotropic
- Toughened adhesive
- Gap-filling, non-sagging up to 0.4 inch (10 mm) thickness
- Suitable for SMC and GRP bonding
- High shear and peel strength

**TYPICAL PROPERTIES :**

| Property                          | Test Method | Test Values <sup>(1)</sup> |                   |
|-----------------------------------|-------------|----------------------------|-------------------|
|                                   |             | Resin                      | Hardener          |
| Color/Form                        | Visual      | Neutral paste              | Neutral paste     |
| Specific Gravity                  | ASTM D-792  | 1.40                       | 1.40              |
| Viscosity (cP) @ 77 °F<br>(25 °C) |             | Thixotropic paste          | Thixotropic paste |

**TYPICAL MIXED PROPERTIES :**

| Property                             | Test Method | Test Values <sup>(1)</sup> |
|--------------------------------------|-------------|----------------------------|
| Reaction Ratio (by weight)           |             | 100R/100H                  |
| Reaction Ratio (by volume)           |             | 100R/100H                  |
| Pot Life, minutes @ 77 °F (25 °C)    | ASTM D-2471 | 35                         |
| 4 fl oz mass                         |             |                            |
| Mixed Viscosity (cP) @ 77 °F (25 °C) | ASTM D-2393 | Thixotropic paste          |

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**RECOMMENDED CURED SCHEDULES :**

| <b>Temperature</b> | <b>Handling Strength</b> | <b>Minimum Cure Time</b> |
|--------------------|--------------------------|--------------------------|
| 50 °F (10 °C)      | 12 hours                 | 21 hours                 |
| 59 °F (15 °C)      | 7.5 hours                | 13 hours                 |
| 77 °F (25 °C)      | 4 hours                  | 10 hours                 |
| 104 °F (40 °C)     | 1 hour                   | 2 hours                  |
| 158 °F (60 °C)     | 17 minutes               | 35 minutes               |
| 212 °F (100 °C)    | 6 minutes                | 7 minutes                |

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**TYPICAL CURED PROPERTIES :****Application of Adhesive**

The resin/hardener mix is applied with a spatula to the pretreated and dry joint surfaces.

A layer of adhesive 0.002 to 0.004-inches (0.05 to 0.10-mm) thick will normally impart the greatest lap shear strength to a joint.

The joint components should be assembled and clamped as soon as the adhesive has been applied. Even contact throughout suffices to ensure proper cure.

**Standard Test Specimens**

Unless otherwise stated, the figures given below were all determined by testing standard specimens made up by lap-jointing 4-inch x 1-inch x 0.06-inch (10-cm x 2.5-cm x 1.5-mm) strips of aluminum. The joint area was 0.5 x 1 inch (12.5 mm x 2.5 cm) in each case.

| <b><u>Property</u></b>                             | <b><u>Test Method</u></b> | <b><u>Test Values</u> <sup>(1)</sup></b> |
|--|---------------------------|--|
| <b>Lap Shear Strength, psi (Mpa)</b>               | DIN 53283                 |  |
| <b><i>Effects of cure time and temperature</i></b> |                           |  |
| <b><u>Cure Cycle</u></b>                           |                           |  |
| 7 days @ 77 °F (25 °C)                             |                           | 3150 (21.7)                              |
| 24 hours @ 77 °F (25 °C) +                         |                           | 3300 (22.7)                              |
| 30 min @ 176 °F (80 °C)                            |                           |  |

| <u>Property</u>   | <u>Test Method</u> | <u>Test Values</u> <sup>(1)</sup> |
|---|--------------------|-----------------------------------|
| <b>Lap Shear Strength</b> , psi (Mpa)   | DIN 53283          |                                   |
| <b>Effects of test temperature</b><br>(Load applied 10 minutes after specimens reach test temperature.) |                    |                                   |
| <u>Cure Cycle</u>   | <u>Test Temp.</u>  |                                   |
| 5 days @ 77 °F (25 °C)  | -40 °F (60 °C)     | 3200 (22)                         |
|   | 32 °F (-20 °C)     | 3550 (24.4)                       |
|   | 68 °F (20 °C)      | 3200 (22)                         |
|   | 104 °F (40 °C)     | 2950 (20.3)                       |
|   | 140 °F (60 °C)     | 1900 (13.1)                       |
|   | 176 °F (70 °C)     | 1050 (7.2)                        |
|   | 212 °F (100 °C)    | 850 (5.8)                         |
| 20 min @ 212 °F (100 °C)  | -40 °F (-40 °C)    | 3250 (22.4)                       |
|   | -4 °F (-20 °C)     | 3625 (25)                         |
|   | 68 °F (20 °C)      | 3300 (22.7)                       |
|   | 104 °F (40 °C)     | 2800 (19.3)                       |
|   | 140 °F (60 °C)     | 2400 (16.5)                       |
|   | 176 °F (70 °C)     | 1100 (7.6)                        |
|   | 212 °F (100 °C)    | 850 (5.8)                         |

| <u>Property</u>  | <u>Test Values</u> <sup>(1)</sup> |
|--|-----------------------------------|
| <b>Lap Shear Strength</b> , psi (Mpa)  |                                   |
| <b>Effect of Immersion</b><br>(Cure cycle 16 hours @ 104 °F (40 °C). Immersion for 90 days in media listed.) |                                   |
| <u>Media</u>   |                                   |
| Standard – As prepared   | 2600 (17.9)                       |
| IMS  | 1800 (12.4)                       |
| Gasoline   | 2300 (15.8)                       |
| Ethyl Acetone (30 days)  | 1800 (12.4)                       |
| Xylene   | 1900 (13.1)                       |
| Lubricating Oil – HD30   | 2900 (20)                         |
| Paraffin   | 2800 (19.3)                       |
| Water @ 68 °F (20 °C) (60 days)  | 1600 (11)                         |
| Water @ 194 °F (90 °C)   | 1700 (11.7)                       |

| <u>Property</u>   | <u>Test Method</u>                            | <u>Test Values</u> <sup>(1)</sup> |
|---|---|-----------------------------------|
| <b>Lap Shear Strength</b> , psi (Mpa)<br><b>Effect of Tropical Exposure</b><br>(104 °F (40 °C) / 92 % R.H.)     |   |                                   |
| <u>Cure Cycle</u><br>16 hrs @ 104 °F (40 °C)  | <u>Exposure Time</u>                          |                                   |
|   | 0 day   | 2600 (17.9)                       |
|   | 30 days                                       | 2300 (15.8)                       |
|   | 60 days                                       | 2200 (15.2)                       |
|   | 90 days                                       | 2200 (15.2)                       |
| <b>Lap Shear Strength</b> , psi (Mpa)<br><b>Effect of Heat Aging</b><br>(Cured 16 hours @ 104 °F (40 °C))       | <u>Test Method</u><br>DIN 53283               |                                   |
| <u>Aging Temperature</u><br>158 °F (70 °C)  | <u>Exposure Time</u>                          |                                   |
|   | 0 day   | 2600 (17.9)                       |
|   | 10 days                                       | 3100 (21.3)                       |
|   | 30 days                                       | 3000 (20.6)                       |
|   | 90 days                                       | 3350 (23.1)                       |
| <b>Lap Shear Strength</b> , psi (Mpa)<br><b>Tested on Metal Substrates</b><br>(Cured 16 hours @ 104 °F (40 °C)) |   |                                   |
| <u>Metal</u>  | <u>Substrate Thickness</u><br><u>(in./mm)</u> |                                   |
| Carbon Steel  | 0.039/1.0                                     | 2200 (15.2)                       |
| Stainless Steel   | 0.039/1.0                                     | 2800 (19.3)                       |
| Galvanized Steel <sup>2</sup>   | 0.06/1.5                                      | 1700 (11.7)                       |
| Copper  | 0.06/1.5                                      | 2600 (17.9)                       |
| Brass   | 0.06/1.5                                      | 2400 (16.5)                       |
| <sup>2</sup> Surface degreased only, not roughened.   |   |                                   |
| <b>Lap Shear Strength</b> , psi (Mpa)<br><b>Tested on SMC</b><br>(Cured 1 hour @ 176 °F (80 °C))                |   |                                   |
| <u>Substrate</u>  |   |                                   |
| SMC gray  | 4   | 1750 (12)                         |
| Low profile SMC white   | 4   | 1850 (12.7)                       |
| Tg per DMA, °F (°C)   | <u>Test Method</u><br>ASTM D-4065             | 181 (83)                          |
| Roller Peel Test, pli (N/mm)  | ISO 4578                                      | 25 (4.4)                          |

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**FIRST AID :**

Eyes and skin : Flush eyes with water for 15 minutes. Contact a physician if irritation persists. Wash skin thoroughly with soap and water. Remove and wash contaminated clothing before reuse.

Inhalation : Remove subject to fresh air.

Swallowing : Dilute by giving water to drink and contact a physician promptly. Never give anything to drink to an unconscious person.

**KEEP OUT OF REACH OF CHILDREN  
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