

## Starting Formulation

### SF 4002 High Cure Adhesive 8021 3271 High Strength, Room Temperature Cure Adhesive High Strength, Room Temperature Cure Adhesive

**Introduction** This moderate reactivity, filled epoxy adhesive is a general purpose formulation characterized by development of high bond strength to a variety of substrates including metals, plastics, concrete, and glass.

**Suggested Uses** General purpose bonding of

- Metals
- Concrete
- Glass and many rigid plastics

**Features**

- Moderate gel times, 15-20 minutes for 100 grams
- High Lap shear strength
- Bonds to damp concrete
- Medium viscosity thixotropic liquid

| Formula | Material                  | Supplier             | Pounds       | Gallons     |
|---------|---------------------------|----------------------|--------------|-------------|
| Part A  |                           |                      |              |             |
|         | EPON Resin 8021           | Hexion               | 100.0        | 10.88       |
|         | Cab-O-Sil M-5             | Cabot Corp.          | 5.0          | 0.28        |
|         | Novacite 1250             | Malvern Minerals Co. | <u>150.0</u> | <u>6.80</u> |
|         |                           | Part A               | 255.0        | 17.96       |
| Part B  |                           |                      |              |             |
|         | EPIKURE 3271 Curing Agent | Hexion               | <u>19.0</u>  | <u>2.22</u> |
|         |                           | Part B               | 19.0         | 2.22        |
|         |                           | Total Part A & B     | 274.0        | 20.18       |

**Mixing Instructions** Disperse the Cab-O-Sil M-5 into a portion of the EPON Resin 8021 using a Cowles Dissolver, 3-roll mill, or other suitable high shear dispersing technique. Add the remaining EPON Resin 8021 and the Novacite 1250 to the resulting dispersion and mix, using conventional mixing equipment, until all of the Novacite 1250 has been wetted and a uniform consistency is attained.

Filler types such as aluminum powder, talc, alumina, wollastonite, and calcium carbonate may be used.

Modification with silane coupling agents, such as Z-6040 Epoxy Silane from Dow-Corning, improves bonds to concrete and glass.

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Pigment may be incorporated into either or both portions for purposes of color coding.

Typical Handling Properties Table 1 / Handling Properties

|                                  | <u>Units</u> | <u>Value</u> |
|----------------------------------|--------------|--------------|
| Resin/Converter Combining Ratio  | by weight    | 11.5 : 1     |
|                                  | by volume    | 6.8 : 1      |
| Viscosity at 25 °C               |              |              |
| Resin Portion                    |              |              |
| at 1 rpm                         | cP           | 15,600       |
| at 5 rpm                         | cP           | 7,360        |
| at 10 rpm                        | cP           | 5,680        |
| at 50 rpm                        | cP           | 3,300        |
| Converter Portion                | cP           | 150          |
| Pounds/Gallon                    |              |              |
| Resin Portion                    | lbs/gal      | 14.20        |
| Converter Portion                | lbs/gal      | 8.56         |
| Combined System                  | lbs/gal      | 13.58        |
| Gel Time at 25 °C, 100 gram mass | min.         | 17           |

**Application Instructions** Surfaces to be bonded should be clean and free of dust, dirt, greases, or other extraneous material. Mix the adhesive components and apply immediately by spreading the material in a thin film over the surface to be bonded. Maintain light pressure during cure to achieve the best bond.

Typical Adhesive Properties Table 2 / Adhesive Properties

| Substrate                              | Cure Schedule                               | Tensile Shear Strength at 25 °C     |
|--|---|-------------------------------------|
| Aluminum, Alloy 2024T-3                | 24 hours at 25 °C                           | 3,000 psi                           |
| Acid Etched                            | 7 days at 25 °C                             | 3,400 psi                           |
|  | 24 hours at 25 °C plus<br>2 hours at 100 °C | 4,200 psi                           |
|  | 7 days at 25 °C plus<br>7 days water soak   | 2,900 psi                           |
| Aluminum, Alloy 2042T-3, solvent wiped | 24 hours at 25 °C plus<br>2 hours at 100 °C | 2,000 psi                           |
| Cold-rolled Steel, solvent-wiped       | 24 hours at 25 °C plus<br>2 hours at 100 °C | 2,200 psi                           |
| High Impact Polystyrene, solvent wiped | 7 days at 25 °C                             | 940 psi                             |
| Polyvinyl Chloride, solvent wiped      | 7 days at 25 °C                             | 360 psi                             |
|  |   | Compressive Shear Strength at 25 °C |

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|                         |                 |                                   |
|-------------------------|-----------------|-----------------------------------|
| Concrete, dry           | 7 days at 25 °C | >900 (concrete failure)           |
| Concrete, damp          | 7 days at 25 °C | >900 psi (Concrete Failure)       |
|                         |                 | Tensile Bond Strength<br>at 25 °C |
| Concrete, damp to steel | 3 days at 25 °C | >300 psi (concrete failure)       |

Storage Recommendations regarding storage conditions can be obtained by visiting our web site at [www.hexion.com](http://www.hexion.com)

#### General Information

These are starting formulations and are not proven in the user's particular application but are simply meant to demonstrate the efficacy of the products and to assist in the development of the user's own formulation. It is the user's responsibility to fully-test and qualify the formulation, along with the ingredients, methods, applications or equipment identified herein ("Information"), by the user's knowledgeable formulator or scientist, and to determine the appropriate use conditions and legal restrictions, prior to use of any Information.

#### Safety, Storage & Handling

Please refer to the MSDS for the most current Safety and Handling information.

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