# 3M™ Scotch-Weld™ Epoxy Adhesive DP-4XL EG

## Product Description

3M™ Scotch-Weld™ Epoxy Adhesive DP-4XL EG is an electronic grade, high performance, two-part, toughened epoxy adhesive offering outstanding shear and peel adhesion, and very high levels of durability similar to 3M™ Scotch-Weld™ Epoxy Adhesive DP-460 EG. Scotch-Weld DP-4XL EG has an extra long worklife to allow for bonding large parts, longer dispensing time after mixing or assembling large batches of parts prior to heat curing. Scotch-Weld DP-4XL EG will achieve handling strength after 24 hours at room temperature and will finish curing at room temperature in 7 days. Curing can be completed more quickly at elevated temperatures as shown in the attached figure.

## Application Ideas

- Hard Disk Drive Assembly
- Spindle Motor Assembly
- Magnet Bonding
- E-Block Assembly
- Bearing Cartridge Assembly

## Key Features

- High shear and peel strength
- Total outgassing < 1000 $\mu$g/g (via GC/MS, 85°C for 3 hours)
- Siloxane outgassing ≤ 5 $\mu$g/g (via GC/MS, 85°C for 3 hours)
- Lower chloride ion content than standard epoxies

## Typical Physical Properties

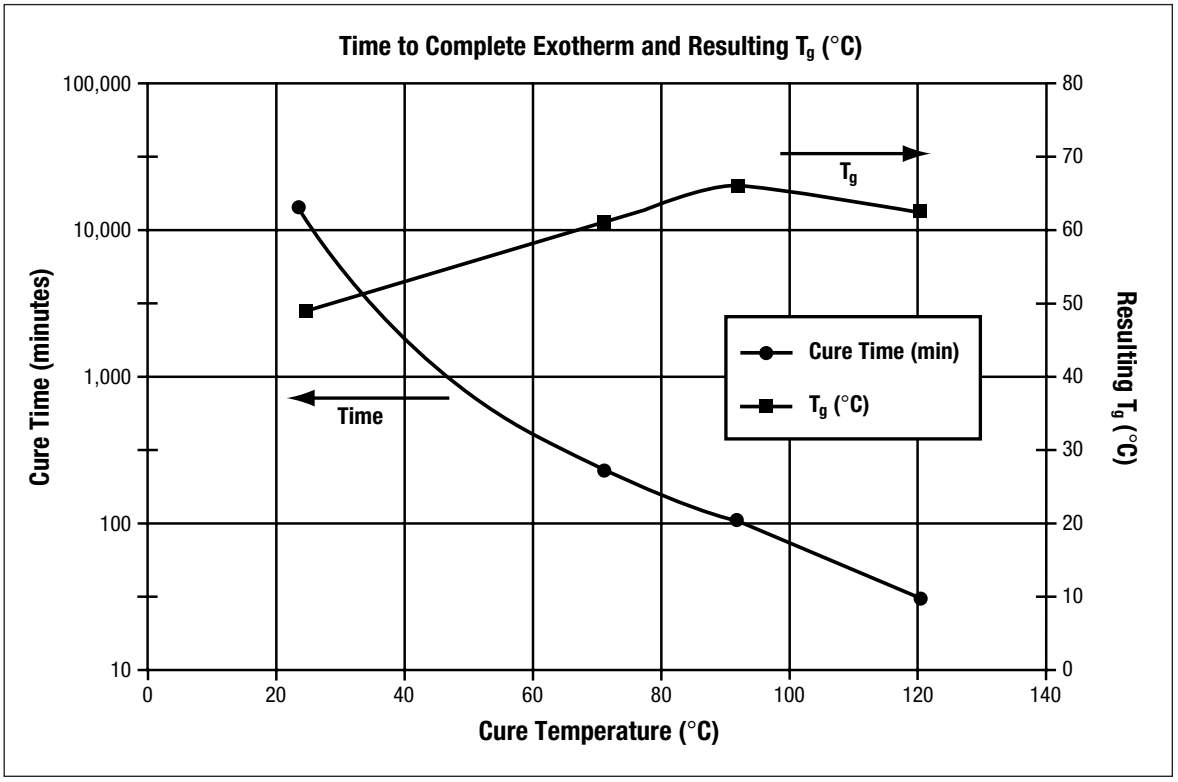
**Note:** The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

| Product | | 3M™ Scotch-Weld™ Epoxy Adhesive DP-4XL EG |
|---|---|---|
| **Viscosity (at 72°F [23°C])** | **Base**<br>**Accelerator**<br>**Mixed** | 25,000 - 45,000 cps<br>10,000 - 15,000 cps<br>15,000 - 25,000 cps |
| **Base Resin** | **Base**<br>**Accelerator** | Epoxy<br>Amine |
| **Color** | **Base**<br>**Accelerator** | White<br>Amber |
| **Net Weight (lb/gallon)** | **Base**<br>**Accelerator** | 9.4<br>8.7 |
| **Mix Ratio (B:A)** | **Volume**<br>**Weight** | 2:1<br>2:0 : 0.89 |
| **Worklife (72°F [23°C])** | | 5-6 Hours |

## Curing

**Note:** The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

3M™ Scotch-Weld™ Epoxy Adhesive DP-4XL EG cures in 7 days at room temperature. Heat accelerates cure and results in a higher $T_g$ than room temperature cure. See figure below.




**Note:** If the adhesive has become grainy or lumpy in appearance when dispensed, this may be due to crystallization of the adhesive. This can be corrected by heating the adhesive in the syringe to 120°F (49°C) for 30 minutes, then allowing the adhesive to cool before dispensing.

## Typical Performance Characteristics[1]

**Note:** The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

**Shear and Peel Strength as a Function of Different Curing Conditions.**

| | 72°F (23°C) 4 weeks | 160°F (71°C) 240 minutes | 200°F (93°C) 120 minutes | 250°F (121°C) 30 minutes |
|---|---|---|---|---|
| **Overlap Shear[2] ($lbf/in^2$) (ASTM D-1002-72)** | 5000 | > 5300 | > 5300 | > 5300 |
| **T-Peel[3] (lbf/in) (ASTM D1876-61T)** | 5 | 31[4] | 26[4] | 30[4] |

[1] - See Technical Data Sheet 3M™ Scotch-Weld™ Epoxy Adhesive DP-460 for electrical and environmental performance characteristcs.

[2] - 0.060 inch thick, etched aluminum pulled at 0.1 inches/minute.

[3] - 0.032 inch thick, etched aluminum pulled at 20 inches/minute.

[4] - Adhesive failure mode is observed under these conditions, heating for shorter times will give cohesive failure and higher values.

## Storage and Shelf Life

**Storage:** Store 3M™ Scotch-Weld™ Epoxy Adhesive DP-4XL EG at 60-80°F (15-27°C) or refrigerate for maximum shelf life.

**Shelf Life:** 3M™ Scotch-Weld™ Epoxy Adhesive DP-4XL EG has a shelf life of 15 months in its original container.

## Certification/Recognition

**MSDS:** Refer to Product Label and Material Safety Data Sheet for Health and Safety Information before using this product. For additional health and safety information, call 1-800-364-3577 or (651) 737-6501.

**TSCA:** This product is defined as an article under the Toxic Substances Control Act and therefore, it is exempt from inventory listing requirements.

**RoHs Complaint/REACH Compliant:** This product complies with the European Union's "Restriction of Hazardous Substances" (RoHs) initiative and with European REACH regulations 2002/95/EC and 2005/618/EC.

## For Additional Information

To request additional product information or to arrange for sales assistance, call toll free 1-800-251-8634. Address correspondence to: 3M, Electronics Markets Materials Division, 3M Center, Building 225-3S-06, St. Paul, MN 55144-1000. Our fax number is 651-778-4244 or 1-877-369-2923. In Canada, phone: 1-800-364-3577. In Puerto Rico, phone: 1-787-750-3000. In Mexico, phone: 52-70-04-00.

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78-6900-9815-3

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