

3M™ Scotch-Weld™ Epoxy Adhesive DP-460EG

Product Description

3M™ Scotch-Weld™ Epoxy Adhesive DP-460EG is a toughened, two-part epoxy adhesive with a 2:1 mix ratio, 110-minute work life and handling strength in approximately four hours. This product provides a strong, durable bond to many surfaces.

Application Ideas

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

Key Features

- Curing and bonding performance comparable to 3M™ Scotch-Weld™ Epoxy Adhesive DP-460.
- Total outgassing < 1000 µg/g (via GC/MS, 85°C for 3 hours) test based on ASTM5116.
- Siloxane outgassing ≤ 5 µg/g (via GC/MS, 85°C for 3 hours) test based on ASTM5116.
- Lower chloride ion content than standard epoxies test based on JPCA ES05, IPC-TM650-2.3.41 or IEC 61249-2-21.

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.

3M™ Scotch-Weld™ Epoxy Adhesive DP460EG	
Property	Typical Value
Viscosity (at 72°F [23°C])	
Base	25 - 45 Pa·s (25,000 – 45,000 cP)
Accelerator	8 - 14 Pa·s (8,000 – 14,000 cP)
Mixed	15 - 25 Pa·s (15,000 – 25,000 cP)
Base Resin	
Base	White
Accelerator	Amber
Net Weight	
Base	1.13 g/cm ³ (9.4 lb/gallon)
Accelerator	1.08 g/cm ³ (9.0 lb/gallon)
Mix Ratio (B:A)	
Volume	2:1
Weight	2.0:0.96
Worklife (at 72°F [23°C])	110 minutes
Thermal Conductivity @ 45°C	0.263 W/(m·K) (0.152 btu-ft./sq.ft.-hr.°F)
Thermal Coefficient of Expansion	
α1 (-50°C to 30°C)	90 (µm (m x °C))
α2 (50°C to 110°C)	193 (µm (m x °C))
Dielectric Constant (1 KHz @ 23°C)	4.6

3M™ Scotch-Weld™ Epoxy Adhesive DP-460EG

Dielectric Strength ¹	35.8 (volts/mil)
----------------------------------	------------------

¹ Used thickness of 31 mil

Curing

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

This adhesive will cure in 24 hours at room temperature. Heating will accelerate the cure and can result in a higher T_g than what room temperature curing yields.

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 Characteristics²

Shear and Peel Strength vs Cure Temperature / Time					
	72°F (23°C) 24 hours	120°F (49°C) 270 minutes	160°F (71°C) 90 minutes	200°F (93°C) 30 minutes	250°F (121°C) 10 minutes
T _g	49°C	58°C	74°C	75°C	66°C
Overlap Shear ³ (MPa)	> 35.5	> 35.5	> 38	> 38	> 38
T-Peel ⁴ (lbf/in)	60 ⁵	59 ⁵	43 ⁵	39 ⁶	45 ⁶
T-Peel ⁴ (N/mm)	10.5 ⁵	10.33 ⁵	7.5 ⁵	6.8 ⁶	7.9 ⁶

² See Technical Data Sheet 3M™ Scotch-Weld™ Epoxy Adhesive DP-460 for additional typical performance characteristics.

³ 0.060 inch thick, etched aluminum pulled at 0.10 inches/minute. Tested in accordance with ASTM D-1002-72 test method.

⁴ 0.032 inch thick, anodized aluminum pulled at 20 inches/minute. Tested in accordance with ASTM D1876-61T test method.

⁵ Cohesive failure mode.

⁶ Adhesive failure mode.

Storage and Shelf Life

Storage: Store 3M™ Scotch-Weld™ Epoxy Adhesive DP-460EG at 60-80°F (15-27°C) or refrigerate for maximum shelf life.

Shelf Life: 3M™ Scotch-Weld™ Epoxy Adhesive DP-460EG has a shelf life of 15 months when stored in its original container.

3M™ Scotch-Weld™ Epoxy Adhesive DP-460EG

Regulatory: For regulatory information about this product, contact your 3M representative.

Technical Information: The technical information, recommendations and other statements contained in this document are based upon tests or experience that 3M believes are reliable, but the accuracy or completeness of such information is not guaranteed.

Product Use: Many factors beyond 3M's control and uniquely within user's knowledge and control can affect the use and performance of a 3M product in a particular application. Given the variety of factors that can affect the use and performance of a 3M product, user is solely responsible for evaluating the 3M product and determining whether it is fit for a particular purpose and suitable for user's method of application.

Warranty, Limited Remedy, and Disclaimer: Unless an additional warranty is specifically stated on the applicable 3M product packaging or product literature, 3M warrants that each 3M product meets the applicable 3M product specification at the time 3M ships the product. 3M MAKES NO OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY IMPLIED WARRANTY OR CONDITION ARISING OUT OF A COURSE OF DEALING, CUSTOM OR USAGE OF TRADE. If the 3M product does not conform to this warranty, then the sole and exclusive remedy is, at 3M's option, replacement of the 3M product or refund of the purchase price.

Limitation of Liability: Except where prohibited by law, 3M will not be liable for any loss or damage arising from the 3M product, whether direct, indirect, special, incidental or consequential, regardless of the legal theory asserted, including warranty, contract, negligence or strict liability.



Electronics Materials Solutions Division
3M Center, Building 224-3N-11
St. Paul, MN 55144-1000
1-800-251-8634 phone
651-778-4244 fax
www.3M.com/electronics

3M is a trademark of 3M Company.
Please recycle.
©3M 2019. All rights reserved.
60-5005-0069-3