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Technical Data | January 2019

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 Accelerator Mixed	 25 - 45 Pa·s (25,000 – 45,000 cP) 8 – 14 Pa·s (8,000 – 14,000 cP) 15 – 25 Pa·s (15,000 – 25,000 cP)
Base Resin Base Accelerator	 White Amber
Net Weight Base Accelerator	 1.13 g/cm^3 (9.4 lb/gallon) 1.08 g/cm^3 (9.0 lb/gallon)
Mix Ratio (B:A) Volume Weight	 2:1 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) α2 (50°C to 110°C)	 90 (µm (m x °C)) 193 (µm (m x °C))
Dielectric Constant (1 KHz @ 23°C)	 4.6

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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 Characteristics[2]

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
Tg	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.

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

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