Technical Data Sheet

3M™ Scotch-Weld™ Epoxy Adhesive DP110 Gray

Product Description

3M™Scotch-Weld™ Epoxy Adhesive DP110 Gray is a two-part epoxy adhesive which combines a fast cure with flexibility.

Product Features

- Controlled flow
- 20 minute handling strength
- Duo-Pak cartridge dispensing system
- Good adhesion to many plastics and metals

Technical Information Note

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

Typical Uncured Physical Properties

Property	Values	Additional Information
Color	Gray	View

Notes: Colors may vary from nearly white to yellow/amber. Adhesive performance is not affected by color variation.

Base Color	White	
Accelerator Color	Black	
Base Viscosity Temp C: 23C Temp F: 72F	40,000-90,000 cP	View
Accelerator Viscosity Temp C: 23C Temp F: 72F	40,000-90,000 cP	View
Base Resin	Modified Epoxy	
Accelerator Resin	Amine	

Base Net Weight	9.1 to 9.4 lb/gal
Accelerator Net Weight	9.0 to 9.3 lb/gal
Mix Ratio by Volume (B:A)	100:100
Mix Ratio by Weight (B:A)	100:99

Typical Mixed Physical Properties

Property	Values	Additional Information
Open Time	8 min	View

Notes: POR=Pop Off Rubber

Worklife	8 to 13 min	View

Temp C: 23C
Temp F: 73F

Time to Full Cure	0.33 hr	View

Temp C: 23C
Temp F: 73F

Notes: The cure time is defined as that time required for the adhesive to achieve a minimum of 80% of the ultimate strength as measured by aluminum-aluminum OLS.

Typical Physical Properties

Property	Values	Additional Information
Color	Gray	View

Test Name: Cured

Typical Cured Characteristics

Property	Values	Additional Information
Shore D Hardness	45	View

Test Method: ASTM D2240

Temp C: 23C
Temp F: 73F

Typical Performance Characteristics

Property	Values	Additional Information
Elongation at Break	40 %	
Overlap Shear Strength 48hr Aluminum	2700 lb/in²	View

Test Method: ASTM D1002

Test Name: Overlap Shear Strength
Dwell/Cure Time: 48.0
Dwell Time Units: hr
Temp C: 23C
Temp F: 73F
Environmental Condition: Tested at -55C -67F
Substrate: Aluminum

Notes: Overlap shear strength was measured on FPL etched 1in wide x 1/2in overlap specimens. Bonds made with 2 panels of 4in x 7in x 0.063in, 2024 T3 clad AL, cut into 1 in. wide specimens, held with 2psi. Jaw separation 0.1 in/min.

Overlap Shear Strength 48hr Aluminum	3500 lb/in²	View

Test Method: ASTM D1002

Test Name: Overlap Shear Strength
Dwell/Cure Time: 48.0
Dwell Time Units: hr
Temp C: 23C
Temp F: 73F
Substrate: Aluminum

Notes: Overlap shear strength was measured on FPL etched 1in wide x 1/2in overlap specimens. Bonds made with 2 panels of 4in x 7in x 0.063in, 2024 T3 clad AL, cut into 1 in. wide specimens, held with 2psi. Jaw separation 0.1 in/min.

Overlap Shear Strength 48hr Aluminum	270 lb/in²	View

Test Method: ASTM D1002

Test Name: Overlap Shear Strength
Dwell/Cure Time: 48.0
Dwell Time Units: hr
Temp C: 23C
Temp F: 73F
Environmental Condition: Tested at 71C 160F
Substrate: Aluminum

Notes: Overlap shear strength was measured on FPL etched 1in wide x 1/2in overlap specimens. Bonds made with 2 panels of 4in x 7in x 0.063in, 2024 T3 clad AL, cut into 1 in. wide specimens, held with 2psi. Jaw separation 0.1 in/min.

Overlap Shear Strength 48hr Aluminum	250 lb/in²	View

Test Method: ASTM D1002

Test Name: Overlap Shear Strength
Dwell/Cure Time: 48.0
Dwell Time Units: hr
Temp C: 23C
Temp F: 73F
Environmental Condition: Tested at 82C 180F
Substrate: Aluminum

Notes: Overlap shear strength was measured on FPL etched 1in wide x 1/2in overlap specimens. Bonds made with 2 panels of 4in x 7in x 0.063in, 2024 T3 clad AL, cut into 1 in. wide specimens, held with 2psi. Jaw separation 0.1 in/min.

T-Peel Adhesion 48hr 23C	20 lb/in width	View

Test Method: ASTM D1876

Test Name: T-Peel Adhesion
Dwell/Cure Time: 48.0
Dwell Time Units: hr
Temp C: 23C

Temp F: 73F

Notes: T-Peel bonds were measured on 1 in. wide specimens cut from two FPL etched 8 in. x 8 in. x .032 in., 2024 T3 clad aluminum panels bonded together. The separation note of the testing jaws was 20 in/min.

Electrical and Thermal Properties

Property	Values	Additional Information
Glass Transition Temperature (Tg)	16 °C	View

Notes: Glass Transition Temperature (Tg) determined using DSC Analyzer with a heating rate of 68°F (20°C) per minute. Second heat values given.

Glass Transition Temperature (Tg)	61 °F	View

Notes: Glass Transition Temperature (Tg) determined using DSC Analyzer with a heating rate of 68°F (20°C) per minute. Second heat values given.

Volume Resistivity	6.9 x 10^10 Ω-cm	View

Test Method: ASTM D257

Temp C: 23C
Temp F: 73F

Coefficient of Thermal Expansion	73 x 10^-6

Coefficient of Thermal Expansion	165 x 10^-6

Storage and Shelf Life

Store products at 60-80°F (16-27°C) for maximum storage life.
These products have a shelf life of 24 months in their unopened original containers from date of manufacture.

Bottom Matter

3M
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Handling/Application Information

Application Equipment

These products may be applied by spatula, trowel or flow equipment.

Two part mixing/proportioning/dispensing equipment is available for intermittent or production line use. These systems are ideal because of their variable shot size and flow rate characteristics and are adaptable to many applications.

Directions for Use

1. For high strength structural bonds, paint, oxide films, oils, dust, mold release agents and all other surface contaminants must be completely removed from substrates to be bonded. However, the amount of surface preparation necessary directly depends on the user's required bond strength, environmental aging resistance and economic practicalities. For specific surface preparations on common substrates, see the section on surface preparation.

2. These products consist of two parts.

Mixing

For Duo-Pak Cartridges

3M™ Scotch-Weld™ Epoxy Adhesive DP110 Translucent and Gray are supplied in a dual syringe plastic duo-pak cartridge as part of the 3M™ EPX™ Applicator system. To use, simply insert the duo-pak cartridge into the EPX applicator and start the plunger into the cylinders using light pressure on the trigger. Next, remove the duo-pak cartridge cap and expel a small amount of adhesive to be sure both sides of the duo-pak cartridge are flowing evenly and freely. If automatic mixing of Part A and Part B is desired, attach the EPX mixing nozzle to the duo-pak cartridge and begin dispensing the adhesive. For hand mixing, expel the desired amount of adhesive and mix thoroughly. Mix approximately 15 seconds after a uniform color is obtained.

For Bulk Containers

Mix thoroughly by weight or volume in the proportions specified on the product label or in the uncured properties section. Mix approximately 15 seconds after a uniform color is obtained.

3. For maximum bond strength apply product evenly to both surfaces to be joined.

4. Application to the substrates should be made within 8 minutes. Larger quantities and/or higher temperatures will reduce this working time.

5. Join the adhesive coated surfaces and allow to cure at 60°F (16°C) or above until completely firm. Heat up to 200°F (93°C), will speed curing. These products will fully cure in 48 hours @ 75°F (24°C).

6. Keep parts from moving during cure. Contact pressure necessary. Maximum shear strength is obtained with a 3-5 mil bond line.

7. Excess uncured adhesive can be cleaned up with ketone type solvents.*

*Note: When using solvents, extinguish all ignition sources, including pilot lights, and follow the manufacturer's precautions and directions for use.

Adhesive Coverage: A 0.005 in. thick bondline will typically yield a coverage of

320 sqft/gallon.

Surface Preparation

For high strength structural bonds, paint, oxide films, oils, dust, mold release agents and all other surface contaminants must be completely removed from substrate to be bonded. However, the amount of surface preparation necessary directly depends on the user's required bond strength, environmental aging resistance and economic practicalities.

The following cleaning methods are suggested for common surfaces:

Steel:

1. Wipe free of dust with oil-free solvent such as acetone or isopropyl alcohol solvents.*

2. Sandblast or abrade using clean fine grit abrasives.

3. Wipe again with solvent to remove loose particles.*

4. If a primer is used, it should be applied within 4 hours after surface preparation.

Aluminum:

1. Alkaline Degrease: Oakite 164 solution (9-11 oz./gallon water) at 190°F ± 10°F (88°C ± 23°C) for 10-20 minutes. Rinse immediately in large quantities of cold running water.

2. Acid Etch: Place panels in the following solution for 10 minutes at 150°F ± 5°F (66°C ± 23°C).

Sodium Dichromate 4.1 - 4.9 oz./gallon

Sulfuric Acid, 66°Be 38.5 o 41.5 oz./gallon

2024-T3 aluminum (dissolved) 0.2 oz./gallon minimum

Tap water as needed to balance

3. Rinse: Rinse panels in clear running tap water.

4. Dry: Air dry 15 minutes; force dry 10 minutes at 150°F ± 10°F (66°C ± 23°C).

5. If primer is to be used, it should be applied within 4 hours after surface preparation.

Plastics/Rubber:

1. Wipe with isopropyl alcohol.*

2. Abrade using fine grit abrasives.

3. Wipe with isopropyl alcohol.*

*Note: When using solvents, extinguish all ignition sources, including pilot lights, and follow the manufacturer's precautions and directions for use.

References

Property	Values
3m.com Product Page	https://www.3m.com/3M/en_US/p/d/b40066461/
Safety Data Sheet SDS	https://www.3m.com/3M/en_US/company-us/SDS-search/results/?gsaAction=msdsSRA&msdsLocale=en_US&co=ptn&q=DP110 Gray

Family Group

Link Tags:

DP110 Translucent | DP110 Gray

Products	Open Time	Color	Worklife	Shore D Hardness
DP110 Gray	8 min	Gray	8 to 13 min	45
DP110 Translucent	8 min	Yellow Translucent	8 to 13 min	40

ISO Statement

This Industrial Adhesives and Tapes Division product was manufactured under a 3M quality system registered to ISO 9001 standards.

Precautionary Information

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.

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