Technical Data Sheet

3M™ Scotch-Weld™ Epoxy Adhesive DP100FR

Product Description

3M™ Scotch-Weld™ Epoxy Adhesive DP100 FR is a two-part flame retardant (self-extinguishing) version of Scotch-Weld DP100. It meets the UL94 V-O Burn Test requirements and has a work life of 4-8 minutes after mixing. It is ideal for many applications requiring a self-extinguishing structural epoxy adhesive system.

Product Features

- Fast Cure
- Cream Color
- Easy Mixing
- Meets UL 94 V-O (File No. E61941)
- Passes 14 CFR 25.853 (60 Sec. Vertical Burn Test: As listed in code Federal Regulations, FAA, DOT Regulations 25.853 paragraph a.)
- Does not contain brominated or antimony-based flame retardants.

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	Cream	View
Notes: Colors may vary from nearly white to yellow/amber. Adhesive performance is not affected by color variation.		
Base Viscosity	45,000-90,000 cP	View
Temp C: 23C Temp F: 72F Notes: Brookfield RVF #7 spindle at 20 rpm.		
Accelerator Viscosity	40,000-120,000 cP	View
Temp C: 23C Temp F: 72F Notes: Brookfield RVF #7 spindle at 20 rpm.		
Base Resin	Epoxy	
Base Net Weight	10.6 to 11.0 lb/gal	

Accelerator Net Weight	10.1 to 10.5 lb/gal
Mix Ratio by Volume (B:A)	1:1
Mix Ratio by Weight (B:A)	1:0.95

Typical Mixed Physical Properties

Property	Values	Additional Information
Open Time	6 min	View

Notes: POR=Pop Off Rubber

Worklife, 20g mixed	4 to 8 min	View

Temp C: 23C
Temp F: 73F

Notes: Approximate time during which a 20 gram quantity of mixed resin at 73°F (23°C) will adequately wet out on a substrate.

Set Time (min)	10 to 20 min	View

Temp C: 23C
Temp F: 73F

Notes: Minimum time required to achieve 50 psi of overlap shear strength. Cure times are approximate and depend on adhesive temperature.

Time to Full Cure	24 to 48 hr	View

Temp C: 23C
Temp F: 73F

Notes: Time to develop 80% of maximum overlap shear values.

Time to Full Cure	24 to 48 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.

Time to Full Cure	24 to 48 hr	View

Temp C: 23C
Temp F: 73F

Rate of Strength Buildup 4hr	1650 lb/in²	View

Test Method: ASTM D1002

Test Name: Overlap Shear Strength
Dwell/Cure Time: 4.0
Dwell Time Units: hr
Temp C: 23C

Temp F: 72F
Substrate: Etched Aluminum

Notes: 1 in wide 1/2 in overlap specimens with 1 in x 4 in substrates. 0.005-0.008in bondline. Jaw separation 0.1 in/min. Substrate thickness 0.05-0.064 in

Rate of Strength Buildup 1day	2200 lb/in²	View

Test Method: ASTM D1002

Test Name: Overlap Shear Strength
Dwell/Cure Time: 1.0
Dwell Time Units: day
Temp C: 23C
Temp F: 72F
Substrate: Etched Aluminum

Notes: 1 in wide 1/2 in overlap specimens with 1 in x 4 in substrates. 0.005-0.008in bondline. Jaw separation 0.1 in/min. Substrate thickness 0.05-0.064 in

Rate of Strength Buildup 20min	1250 lb/in²	View

Test Method: ASTM D1002

Test Name: Overlap Shear Strength
Dwell/Cure Time: 20.0
Dwell Time Units: min
Temp C: 23C
Temp F: 72F
Substrate: Aluminum

Notes: 1in wide 1/2in overlap shear specimens. 2 panels 0.063 in. thick, 4 in. x 7 in. of 2024T-3 clad aluminum bonded and cut 1in wide samples after 24hr. 7mil bondline. Jaw Separation 0.1in/min

Rate of Strength Buildup	450 lb/in²	View

Test Method: ASTM D1002

Test Name: Overlap Shear Strength
Dwell/Cure Time: 10.0
Dwell Time Units: min
Temp C: 23C
Temp F: 72F
Substrate: Aluminum

Notes: 1in wide 1/2in overlap shear specimens. 2 panels 0.063 in. thick, 4 in. x 7 in. of 2024T-3 clad aluminum bonded and cut 1in wide samples after 24hr. 7mil bondline. Jaw Separation 0.1in/min

Rate of Strength Buildup	0 lb/in²	View

Test Method: ASTM D1002

Test Name: Overlap Shear Strength
Dwell/Cure Time: 5.0
Dwell Time Units: min
Temp C: 23C
Temp F: 72F
Substrate: Aluminum

Notes: Cohesive (CF), Adhesive (AF), Substrate (SF) Failure

Typical Physical Properties

Property	Values	Additional Information
Color	Cream	View

Test Name: Cured

Typical Cured Characteristics

Property	Values	Additional Information
Modulus	650000 lb/in²	View

Notes: Determined using DMA.

Property	Values	Additional Information
Shore D Hardness	87	View

Test Method: ASTM D2240

Temp C: 23C
Temp F: 73F

Typical Performance Characteristics

Property	Values	Additional Information
Overlap Shear Strength 7day Aluminum	1050 lb/in²	View

Test Method: ASTM D1002

Test Name: Overlap Shear Strength
Dwell/Cure Time: 7.0
Dwell Time Units: day
Temp C: 23C
Temp F: 73F
Environmental Condition: 50%RH
Substrate: Aluminum
Surface Preparation: MEK/Abrade/MEK

Notes: 1in wide 1/2in overlap specimens. 2 panels of 0.05-0.064in x 4in x 7in 2024T-3 clad aluminum bonded and cut to 1in wide samples after 24hr. Jaw separation 0.1 in/min, 0.005-0.008in bondline. Cohesive (CF), Adhesive (AF), and Substrate (SF) Failure

Property	Values	Additional Information
Overlap Shear Strength 7day Cold Rolled Steel	1100 lb/in²	View

Test Method: ASTM D1002

Test Name: Overlap Shear Strength
Dwell/Cure Time: 7.0
Dwell Time Units: day
Temp C: 23C
Temp F: 73F
Environmental Condition: 50%RH
Substrate: Cold Rolled Steel
Surface Preparation: MEK/Abrade/MEK

Notes: Overlap shear (OLS) strengths were measured on 1in wide 1/2in overlap specimens on 1in x 4in x .060in substrates. Jaw separation 0.1 in/min. 0.005-0.008in bondline. Cohesive (CF), Adhesive(AF), and Substrate(SF) Failure

Property	Values	Additional Information
T-Peel Adhesion	2 lb/in width	View

Test Method: ASTM D1876

Dwell/Cure Time: 7.0
Dwell Time Units: day
Temp C: 23C
Temp F: 73F
Substrate: Etched 2024 T3 Aluminum

Notes: Data from 3M™ EPX™ Applicator System equipped with an EPX static mixer, to manufacturer's directions. Thorough manual mixing should afford comparable results. T-Peel with 1in bonds. Separation 10in/min. 0.032in thick substrate, 17 - 20 mil bondline

Electrical and Thermal Properties

Property	Values	Additional Information
Glass Transition Temperature (Tg)	61 °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)	142 °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.		

Storage and Shelf Life

Store product at 60-80°F (16-27°C) for maximum storage life. Higher temperatures reduce normal storage life. Lower temperatures may cause increased viscosity of a temporary nature. Rotate stock on a “first in-first out” basis.
When stored in the original, unopened container at the storage conditions suggested, 3M™ Scotch-Weld™ Epoxy Adhesive DP100 FR has a shelf life of 24 months from the date of manufacture.

Industry Specifications

UL 94 V-O (File E61941)
14 CFR 25.853

Bottom Matter

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Handling/Application Information

Directions for Use

For high strength structural bonds, paint, oxide films, oils, dust, mold release agents and all other surface contaminants must be completely

removed. However, the amount of surface preparation necessary depends on the required bond strength and the environmental aging resistance desired by user. For specific surface preparations on some common substrates, see the section on surface preparation.

3M™ Scotch-Weld™ Epoxy Adhesive DP100 FR is 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 simultaneous mixing of Part A and Part B is desired, attach the EPX mixing nozzle to the duo-pak cartridge and begin dispensing the adhesive.

When mixing Part A and Part B manually, the components must be mixed in the ratio indicated in the Physical Uncured Properties section. Thorough mixing of the two components is required to obtain optimum properties.

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

Surface Preparation

For high strength structural bonds, paint, oxide films, oils, dust, mold release agents and all other surface contaminants must be completely removed. However, the amount of surface preparation necessary depends on the required bond strength and the environmental aging resistance desired by user.

The following cleaning methods are suggested for these common surfaces:

Steel:

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

2. Sandblast or abrade using clean fine grit abrasives.

3. Wipe again with solvent to remove loose particles.

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

Aluminum:

1. Alkaline Degrease: Oakite 164 solution (9-11 oz./gallon water) at 190°F (88°C) ± 10°F (-13°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 (66°C) ± 5°F (-15°C).

Sodium Dichromate: 4.1-4.9 oz./gallon

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

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

Tap Water as needed to balance

Note: Read and follow component suppliers environmental, health and safety recommendations prior to preparing this etch solution.

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

4. Dry: Air dry 15 minutes; force dry 10 minutes at 190°F (88°C) ± 10°F (5°C).

Plastics/Rubber

1. Wipe with isopropyl alcohol.*

2. Abrade using fine grit abrasives.

3. Wipe with isopropyl alcohol.*

Glass

1. Solvent wipe surface using acetone or methyl ethyl ketone (MEK).*

2. Apply a thin coating (0.0001 in. or less) of primer such as 3M™ Scotch-Weld™ Structural Adhesive Primer EC-3901 to the glass surfaces to be bonded and allow the primer to dry before bonding.

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

References

Property	Values
3m.com Product Page	https://www.3m.com/3M/en_US/p/d/b40066500/
Safety Data Sheet SDS	https://www.3m.com/3M/en_US/company-us/SDS-search/results/?gsaAction=msdsSRA&msdsLocale=en_US&co=ptn&q=DP100FR

Family Group

Link Tags:

DP100FR

Products	Open Time	Color	Set Time (min)	Time to Full Cure
DP100FR	6 min	Cream	10 to 20 min	24 to 48 hr

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.

Information

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