



# 3M™ Scotch-Weld™ Structural Adhesive EC-1648 B/A

## Technical Data Sheet

### Introduction

3M™ Scotch-Weld™ Structural Adhesive EC-1648 B/A is a two-part room temperature curing adhesive designed for bonding to metal substrates. It has similar properties to 3M™ Scotch-Weld™ Epoxy Adhesive EC-1838 B/A with increased high temperature resistance.

It offers the following advantages:

- Paste viscosity which allows the use of Scotch-Weld EC-1648 B/A on vertical or overhead surfaces with little or no tendency to flow.
- Good retention of strength after aging in many environments.
- 60-minute work life

### Product Description

<b>Color:</b>	<b>Base</b> <b>Accelerator</b>	White Green
<b>Chemical Base:</b>	<b>Base</b> <b>Accelerator</b>	Modified Epoxy Modified Amine
<b>Weight/Gallon (lbs/gal):</b>	<b>Base</b> <b>Accelerator</b>	11.0-11.6 8.9-9.3 lbs/gal
<b>Viscosity @ 80°F (27°C):</b>	<b>Base</b> <b>Accelerator</b>	70,000-600,000 cps 300,000-1,000,000 cps
<b>Work Life:</b>	100 grams at 73°F (23°C)	60 Minutes
<b>Mix Ratio:</b>	By Weight	3:2 (B:A)

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

### Product Application

Proper adhesive application is as important as proper bond design and adhesive choice to obtain maximum joint properties. Improper adhesive application techniques can result in partial or complete failure of an assembly.

1. For high strength structural bonds, paint, oxide films, oils, dust, mold release agents and all other surface contaminants must be completely removed. The amount of surface preparation directly depends on the user's required bond strength and environmental aging resistance.
2. This product consist of two parts. Carefully measure both components by weight at a ratio of 3:2 (B:A) and thoroughly mix until a uniform color results. Properly reseal containers in-between use.
3. For maximum bond strength apply product evenly to both surfaces to be joined.

## Product Application (*continued*)

- Application to the substrates should be made within 1 hour for 3M™ Scotch-Weld™ Epoxy Adhesives EC-1648 B/A. Larger quantities and/or higher temperatures will reduce this working time.
- Join the adhesive coated surfaces and allow to reach a handling strength. Overnight curing @75°F (24°C) for a minimum of 10 hours is sufficient. Heat, up to 200°F (93°C), will speed curing.
- The following times and temperatures will result in handling strength for these products:

Temperature	Time
Room Temperature:	10-12 hours
150°F (65°C):	15-20 minutes
- The following times and temperatures will result in a full cure of these products:

Temperature	Time
75°F (24°C)	7 days
150°F (65°C)	2 hours
200°F (93°C)	30 minutes
- Keep parts from moving during cure. Contact pressure of approximately 2-5 psi is necessary. Maximum shear strength is obtained with a 3-5 mil bond line.

### Surface Preparation

The following cleaning methods are suggested for common surfaces.

#### Steel:

- Wipe free of dust with oil-free solvent such as Methyl Ethyl Ketone (MEK).\*
- Sandblast or abrade using clean fine grit abrasives.
- Wipe again with solvents to remove loose particles.

#### Aluminum

- The best performance will be achieved with the surface preparation by alkaline degreasing, then FPL etching according to ASTM D2674
- If primer is to be used, it should be applied within 4 hours after surface preparation.

Application and Equipment Suggestions: These products may be applied with spatula or trowel

### Cleanup

Excess adhesive can be cleaned up, prior to curing, with Ketone\* type solvents.

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

## Typical Product Performance

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

### Etched Aluminum Overlap Shear Strength

Test Temperature	Test Results
-67°F (-55°C)	2200 psi
75°F (24°C)	3200 psi
165°F (73°C)	1000 psi
180°F (82°C)	1000 psi

Cure Cycle: 7 days @ 75°F (24°C), 2 psi.

## Etched Aluminum Overlap Shear Strength After Environmental Aging

Environment	Time	Test Results 75°F (24°C)
JP-4 Fuel @ 140°F (60°C)	14 days	3806 psi
100% Relative Humidity @ 120°F (49°C)	14 days	3566 psi
Salt Spray @ 95°F (35°C)	14 days	3000 psi

Cure Cycle: 1 hour @ 130°F (54°C), 10 psi, plus 2 hours @ 150°F (66°C). No Pressure.

## Storage

The shelf life of 3M™ Scotch-Weld™ Epoxy Adhesive EC-1648 B/A 24 months from the date of shipment when stored at 60-80°F (16-27°C) in original unopened container.

## Regulatory Information

Please refer to the product label and Safety Data Sheet (SDS) for health and safety information before using.

## Contact Information

The information provided in this technical document is intended as a guide for these products. For more information or help in selecting a 3M product for an application, please contact your 3M technical service representative or call 1-800-328-1684.

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