

3M

Scotch-Weld™

Structural Adhesive

EC-3710 Clear

Technical Data

Issue No. 1

Introduction

3M™ Scotch-Weld™ Structural Adhesive EC-3710 Clear is a modification of 3M™ Scotch-Weld™ Structural Adhesive Film AF 191 in solution form. It produces excellent performance up to 350°F (177°C).

Advantages

- Sprayable structural adhesive
- Can be used to tack Scotch-Weld AF 191 to honeycomb core for reticulation
- Can be used to hold screens or other components in place which need structural adhesive strength at elevated temperatures
- Extremely tough at low or high temperatures
- Extremely strong at low or high temperatures
- Can be brushed, roll coated, or sprayed in place

Product Description


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

Color:	Clear
Base:	Epoxy Resin
Solvent:	Methyl ethyl ketone (MEK) and toluene
Solids Content:	21 ± 2%
Flash Point:	20°F
Suggested Cure Cycle:	350°F for 60 minutes
Storage:	Storage at 0°F is required
Viscosity at Brookfield: RVF #1 Spindle at 75 ± 5°F:	14-20 cps
Coverage (2.5 mils thick):	90 ft ² /gallon (approximate)


Scotch-Weld™ Structural Adhesive EC-3710 Clear

Mechanical Properties: Typical Performance

Note: The following performance data have been obtained in the 3M laboratory and tested in accordance with ASTM D 1002.

	Test Temperature		Typical Value	
	°F	(°C)	psi	(MPa)
Lap Shear Strength 	75	(24)	5000	(34.5)
	350	(176)	900	(6.2)

Note: The following performance data have been obtained in the 3M laboratory and tested in accordance with ASTM D 3167.

	Test Temperature	Typical Value
Floating Roller Peel 	75°F (24°C)	65 piw (285 N/25 mm)

Procedure: Above tests were conducted on optimized FPL etched 2024-T3 Alclad aluminum. The adhesive was applied, dried and cured as outlined in the product application section. The lap shear specimens were tested at 0.10 inches/minute and the floating roller peel specimens were tested at 12 inches/minute. The 350°F (177°C) lap shear specimens were held at 350 ± 5°F (177 ± 3°C) for 15 to 30 minutes prior to test.

Product Application

Note: While this information is provided as a general application guideline based upon typical conditions, it is recognized that no two applications are identical due to differing assemblies, methods of heat and pressure application, production equipment and other limitations. It is therefore suggested that experiments be run, within the actual constraints imposed by purchasers' or customers' facilities, to determine optimum conditions for user's specific application and to determine suitability of product for particular intended use.

Surface Preparation

A thoroughly cleaned, dry, grease-free surface is essential for maximum performance. Cleaning methods which will produce a break-free water film on the substrate are generally satisfactory. Surface preparation should be fully evaluated with the adhesive if resistance to specific environments is anticipated.

Recommended Cleaning Procedures for Aluminum

1. Alkaline Degrease – Oakite No. 164 solution (9-11 oz./gal. water) at 190 ± 10°F (88 ± 5°C) for 10-20 minutes. Rinse immediately in large quantities of cold running water.
2. Acid Etch – Place panels in either of the following solutions for 10 minutes at 150 ± 5°F (66 ± 3°C).

	<u>A (FPL Etch)</u>	<u>B</u>
	Parts/Weight	Parts/Weight
Distilled Water	30	30
Sulfuric Acid (conc)	10	10
Sodium Dichromate	1	4

3. Rinse panels in clear running water.
4. Air dry 15 minutes, force dry 10 minutes at 150 ± 5°F 66 ± 3°C).

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

Scotch-Weld™ Structural Adhesive EC-3710 Clear

Spray Procedure

Scotch-Weld EC-3710 has been designed for spray application. Prior to use, Scotch-Weld EC-3710 must be thoroughly agitated to redisperse the pigmentation which settles upon storage. Agitation of containers on a vibrating paint shaker for approximately 5 minutes is suggested.

1. Spray Equipment and Procedure

Spray Gun	Binks Model #62 or equivalent
Air Cap	66S
Fluid Tip and Needle	66-365
Cup Pressure	0, Siphon Feed
Line Pressure	30-35 psi
Fan Adjustment	Wide open
Fluid Adjustment	One turn open
Distance from Panel	9-12 inches
Adhesive Weight	0.03 - .04 lbs./ft. ² after drying

When product is sprayed, use functioning spray booth to prevent vapor buildup from exceeding permissible exposure limits.

2. Adhesive Dry

- A. Adhesive air dry cycle: 24 hours at 75 ± 10°F (24 ± 5°C) (minimum)
30 minutes at 150°F (66°C)
30 minutes at 200°F (93°C)
If forced air oven is used, dry at 75°F (24°C) for
1 hour (maximum)

The adhesive surface should be protected from contamination introduced by dust, fingerprints and oil.

Cleanup:

Prior to curing, excess adhesive and the equipment may be cleaned with methyl ethyl ketone*.

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

Cure Cycle

The following cure cycle is suggested to obtain optimum performance.

		<u>Cure Cycle</u>
1. Bonding Pressure: Apply at ambient temperature and maintain throughout cycle		45 psi
2. Bonding temperature rise rate:		4 to 5°F (2 to 3°C)/minute
3. Cure time and temperature:		60 minutes at 350°F (177°C)
4. Temperature at which pressure is released:		150°F (66°C) or below

Scotch-Weld™ Structural Adhesive EC-3710 Clear

Handling and Storage

3M standard shelf life for Scotch-Weld EC-3710 Clear is 6 months from date of shipment from 3M when stored at 0°F (-18°C) or lower.

Storing and Aging Precaution – Avoid heat and dampness in storage. Store new shipments behind older lots. Refrigerated storage, 0 ± 5°F (-18 ± 3°C) is required. Rotate stock on a “first in - first out” basis.

CAUTION: Adhesive should be permitted to thoroughly warm to room temperature before being used in order to prevent moisture condensation.

Precautionary Information

See 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.

For Additional Information

To request additional product information or to arrange for sales assistance, call toll free (800) 235-2376. Our fax number is (417) 869-5219. Address correspondence to: 3M Aerospace Central, 3211 E. Chestnut Expressway, Springfield, MO 65802.

Important Notice

3M MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. User is responsible for determining whether the 3M product is fit for a particular purpose and suitable for user's method of application. Please remember that many factors can affect the use and performance of a 3M Adhesives Division product in a particular application. The materials to be bonded with the product, the surface preparation of those materials, the product selected for use, the conditions in which the product is used, and the time and environmental conditions in which the product is expected to perform are among the many factors that can affect the use and performance of a 3M product. Given the variety of factors that can affect the use and performance of a 3M product, some of which are uniquely within the user's knowledge and control, it is essential that the user evaluate the 3M product to determine whether it is fit for a particular purpose and suitable for the user's method of application.

Limitation of Remedies and Liability

If the 3M product is proved to be defective, THE EXCLUSIVE REMEDY, AT 3M'S OPTION, SHALL BE TO REFUND THE PURCHASE PRICE OF OR TO REPAIR OR REPLACE THE DEFECTIVE 3M PRODUCT. 3M shall not otherwise be liable for loss or damages, whether direct, indirect, special, incidental, or consequential, regardless of the legal theory asserted, including, but not limited to, contract, negligence, warranty, or strict liability.

ISO 9002

This Adhesives Division product was manufactured under a 3M quality system registered to ISO 9002 standards.

For Additional Product Safety and Health Information, See Material Safety Data Sheet, or call:

3M

Adhesives Division

3M Center, Building 220-8E-05
St. Paul, MN 55144-1000
Phone: 1-800-364-3577 or 651/737-6501
www.3m.com/adhesives



Recycled Paper
40% pre-consumer
10% post-consumer

Printed in U.S.A.
©3M IPC 2001 78-6900-9573-8