Scotch-Weld™
Structural Adhesive Primer
EC-2174

Technical Data **June, 2002**

Introduction

3M™ Scotch-Weld™ Structural Adhesive Primer EC-2174 is a primer for Scotch-Weld film adhesives. It is especially suggested for use with 3M™ Scotch-Weld™ Structural Adhesive Film AF 31.

Specific data has been obtained with the Scotch-Weld AF 31 adhesive and can be found under the test results section of that data sheet.

Scotch-Weld EC-2174, properly applied, offers the following advantages:

- Insures complete wetting of film adhesive to adherend surfaces.
- Simplified production scheduling by protecting the cleaned surfaces until the bonding operations can be completed.
- Imparts improved corrosion protection to the metal.
- Retains high shear strength to 500°F (260°C) on 17-17PH stainless steel when used with Scotch-Weld AF 31.
- Scotch-Weld EC-2174 with Scotch-Weld AF 31, known as the AF-7431 system, is qualified to MMM-A-132 Types III and IV.

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:	Tan (Clear in thin films)
Base:	Synthetic resin-elastomer
Solvent:	Ketone
Viscosity:	(Brookfield RVF, #1 Spindle, 20 rpm at 80°F [27°C]) 8-18 cps
Solids Content:	10 ± 1% (2 gram samples at 350°F [177°C] for 30 minutes)
Net Weight:	6.9 ± .2 lbs./gallon
Flash Point:	20°F (-7°C) (Closed Cup)

Product Application

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

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Surface Preparation

A. Aluminum (3M Company Optimized FPL Etch-AC&S Test Method C-2803)

1. Vapor Degrease – Perchloroethylene condensing vapors for 5-10 minutes.
2. Alkaline Degrease – Oakite #164 solution (9-11 oz./gallon water) at 190°F ± 10°F (88°C ± 5°C) for 10-20 minutes. Rinse immediately in large quantities of cold running water.
3. Acid Etch* – Place panels in the following solution for 10 minutes at 150°F ± 5°F (66°C ± 2°C).

Sodium Dichromate ($Na_2Cr_2O_7 2H_2O$)	4.1 - 4.9 oz./gallon
Sulfuric Acid, 66° Be	38.5 - 41.5 oz./gallon
2024T-3 aluminum (dissolved)	0.2 oz./gallon minimum
Tap Water as needed to balance	

4. Rinse – Rinse panels in clear running tap water.
5. Dry – Air dry 15 minutes; force dry 10 minutes at 150°F ± 10°F (66°C ± 5°C).
6. It is advisable to coat the freshly cleaned surfaces with 3M™ Scotch-Weld™ Structural Adhesive Primer EC-2174 within four hours after surface preparation.
7. Care should be taken to avoid contaminating the cleaned aluminum by any substance which will hinder the wetting action of Scotch-Weld EC-2174.

B. Stainless Steel (17 - 7PH TH 1050)

1. Vapor Hone – #120 $A1_20_3$ Grit.
2. Vapor Degrease – Perchloroethylene condensing vapors for 5-10 minutes.
3. Acid Etch* – Place panels in the following solution for 2 minutes at 145°F ± 5°F (63°C ± 2°C).

   59.9 gms M.F. Acid (Wyandotte) 170 mls. Commercial Concentrated Nitric Acid. The balance of 1 liter of distilled water.
4. Rinse – Rinse immediately in cold running tap water. Remove smut with a distilled water-air spray under 90 psi pressure.
5. Acid Etch – Place panels in the following solution for 5 minutes at 160°F ± 5°F (71°C ± 2°C).

   30 parts by wt. distilled water
   10 parts by wt. concentrated sulfuric acid
   4 parts by wt. sodium dichromate
6. Rinse in cold tap water. Remove smut with a distilled water – air spray under 90 psi pressure.
7. Dry – Air dry 15 minutes; force dry 10 minutes at 160°F ± 5°F (71°C ± 2°C).
8. It is advisable to coat the freshly cleaned surfaces with Scotch-Weld EC-2174 within 1 hour after surface preparation.
9. Care should be taken to avoid contaminating the cleaned steel surface by any substance which will hinder the wetting action of Scotch-Weld EC-2174.

***CAUTION:** Use adequate respiratory, eye and skin protection when using etch solutions.

Primer Application:

The following procedure is suggested to obtain optimum results.

Method: Brush, flow, or dip coat to .0004-.0006 inches dry.

Surface Preparation ***(continued)***

Primer Dry/Cure:

The following cure for 3M™ Scotch-Weld™ Structural Adhesive Primer EC-2174 is suggested for use with 3M™ Scotch-Weld™ Structural Adhesive Film AF 31.

Air Dry: 75-85°F [24-29°C] for a maximum of 60 min.

Force Dry: Circulating air oven with part at 265°F [129°C] for 60 min.

The primed surface after cooling to ambient temperatures is ready for adhesive bonding. The primed surface should be protected from contamination introduced by dust, fingerprints, oil, etc. If extended periods of storage are contemplated, wrap the parts in unplasticized Kraft paper. If the primed surface is contaminated with dust, it may be cleaned prior to bonding by wiping with clean, unsized cheesecloth.

Primer Cleanup:

Excess primer and equipment may 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.

Storage

Avoid heat and dampness in storage. Store new shipments behind older lots. Refrigerated storage 40°F ± 5°F (4°C ± 2°C) is suggested for Scotch-Weld EC-2174. Rotate stock on a "first in – first out" basis.

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

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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.

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.

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ISO 9002

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

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