

3M

Scotch-Weld™

Metal Primer

3901

Technical Data

July, 2011

Product Description 3M™ Scotch-Weld™ Metal Primer 3901 is a primer for 3M™ Scotch-Weld™ film and liquid adhesives in those applications where it is desired to obtain improved metal and glass adhesion or improved resistance to environmental exposure with epoxy and urethane adhesives.

- Features**
- Ensures complete wetting of film adhesive to adherend surfaces.
 - Simplifies production scheduling by protecting the cleaned surfaces until the bonding operations can be completed.
 - Imparts improved corrosion protection to metal.

Typical Physical Properties

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

Color:	Red
Base:	Synthetic Resin
Solvent:	Methyl alcohol
Viscosity:	5 ± 2 cps (Brookfield, RVF, No. 1 spindle, 20 rpm at 80°F [27°C])
Net Weight:	6.5 ± 0.2 lbs./gallon
Flash Point:	60°F (16°C) [COC]

Contains non-photochemically reactive solvent. Consult local air quality regulations which may regulate product use.

Typical Performance Characteristics

Note: The following data is 3M™ Scotch-Weld™ Metal Primer 3901 brushed on various metal substrates and tested with various 3M adhesives. The following technical data should be considered representative or typical only and should not be used for specification purposes.

Adherend	Adhesive	Overlap Shows Strength at		
		-67°F (-55°C)	75°F (24°C)	180°F (82°C)
50 MIL 6-4 Titanium Alloy	AF-126 0.06 wt.	6380 psi	5280 psi	3650 psi
50 MIL 17-7 Stainless Steel	AF-126 0.06 wt.	10203 psi	6310 psi	3600 psi

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Product Application A thoroughly cleaned, dry, grease-free surface is essential for maximum performance. Cleaning methods which will produce a break-free 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.

Surface Preparation **Suggested Cleaning Procedure for Aluminum**

1. 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.
2. Optimized FPL Etch Solution (1 liter):

Material	Amount
Distilled Water	700 ml plus balance of liter (see below)
Sodium Dichromate	28 to 67.3 grams
Sulfuric Acid	287.9 to 310.0 grams
Aluminum Chips	1.5 grams/liter of mixed solution

To prepare 1 liter of this solution, dissolve Sodium Dichromate in 700 ml of distilled water. Add sulfuric acid and mix well. Add additional distilled water to fill to 1 liter. Heat mixed solution to 66 to 71°C (150 to 160°F). Dissolve 1.5 grams of 2024 bare aluminum chips per liter of mixed solution. Gentle agitation will help aluminum dissolve in about 24 hours.

Place panels in FPL etch solution for 10 minutes at 155 ± 5°F (68 ± 2°C) for 12 to 15 minutes.

3. Rinse – Rinse panels in clear running water.
4. Dry – Air dry 15 minutes, force dry 10 minutes at 140°F (60°C) maximum.

Note: It is advisable to coat the freshly-cleaned surfaces with 3M™ Scotch-Weld™ Metal Primer 3901 within four (4) hours after surface preparation.

Care should be taken to avoid contaminating the cleaned aluminum by any substance which will hinder the wetting action of Scotch-Weld 3901.

Review and follow safety and precautionary recommendations from chemical supplier prior to preparing this etch solution.

Primer Application:

Scotch-Weld 3901 has been successfully applied by spraying and brushing. The following spray equipment is suggested to obtain optimum results:

Spray Gun	DeVilbiss JGA
Air Cap	No. 78
Needle-Nozzle	AV-15-FX
Line Pressure	60-80 psi (4.1-5.5 bar)
Pot Pressure	1-2 psi (.07-.14 bar)
Distance from Panel	14 ± 3 inches (36 ± 8 cm)
Primer Thickness (dry)	Less than .0001 inch (2.5 micron)

(**Note:** Only a micro-molecular layer of primer is required.)

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Surface Preparation
*(continued)***Primer Dry:**

The following dry cycle is suggested for 3M™ Scotch-Weld™ Metal Primer 3901:

Air Dry: Air dry at 75-85°F (24-33°C) for a minimum of one hour.

Force Dry: Circulating air oven 190°F (88°C) for 30 minutes.

Air dry cycles for periods as short as 1/2 hour have been used successfully with the force dry cycle. Humidity contributes greatly to satisfactory use of this primer. Relative humidity of 25% or lower may cause difficulties and should be thoroughly evaluated in the customer's application.

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. Bonding should be completed within 7 days.

Primer Cleanup:

Excess primer and equipment may be cleaned up with ketone-type solvents.*

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

Storage

Store product at 60-80°F (16-27°C) for maximum storage life. Higher temperatures reduce normal storage life.

Shelf Life

This product has a shelf life of 15 months from the date of shipment when stored in the unopened original container at room temperature.

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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.

Technical Information

The technical information, recommendations and other statements contained in this document are based upon tests or experience that 3M believes are reliable, but the accuracy or completeness of such information is not guaranteed.

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ISO 9001:2008

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