Scotch-Weld™
Epoxy Adhesive
1751 B/A

Technical Data **December, 2009**

Product Description

3M™ Scotch-Weld™ Epoxy Adhesive 1751 B/A is a gray, aluminum filled, two-part, room temperature curing structural adhesive.

Features

- Excellent adhesion to metals
- Good void filling properties
- Ideal for repairing holes, dents and cracks in metal

Typical Uncured 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	**Base (B)** **Accelerator (A)**	Gray Amber
Base	**Base (B)** **Accelerator (A)**	Modified Epoxy Modified Epoxy
Net Weight (lbs/gal)	**Base (B)** **Accelerator (A)**	10.8 7.9
Viscosity (Approx.) **Time to deliver** **20 gms @ 50 psi** **thru a 0.104" orifice**	**Base (B)** **Accelerator (A)**	145 seconds 125 seconds
Mix Ratio **(By Weight)**	**Base (B)** **Accelerator (A)**	2 parts 1 part
Mix Ratio **(By Volume)**	**Base (B)** **Accelerator (A)**	3 parts 2 parts
Work Life **100 gram Qty. @ 75°F (24°C)** **(Approx. Time)**	**Base (B)** **Accelerator (A)**	45 minutes 45 minutes

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Typical Cured Properties

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Physical

Color	Gray
Shore D Hardness ASTM D-2240	75-80
Time to Handling Strength at 75°F (24°C)	8-12 hours
Time to Full Cure at 75°F (24°C)	7 days

Thermal

Thermal Conductivity	0.2229 BTU/Hr/Ft^2/°F/Ft @ 96°F (36°C)

Handling/Curing Information

Directions For Use

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 depends on the required bond strength and the environmental aging resistance desired by user. See surface preparation section.
2. Use gloves to minimize skin contact with adhesive.
3. This product consists of two parts. Mix thoroughly by weight or volume in the proportions specified in the Uncured Properties Section. Mix approximately 15 seconds after a uniform color is obtained.
4. For maximum bond strength, apply product evenly to both surfaces to be joined.
5. Application to the substrates should be made within 45 minutes. Large quantities and/or higher temperatures will reduce this working time.
6. Join the adhesive coated surfaces and allow to cure at 60°F (16°C) or above until firm. Up to 200°F (93°C), will speed curing.
7. The following times and temperatures will result in a full cure:

Cure Temperature	Time
75°F (24°C)	7 days
150°F (67°C)	120 minutes
200°F (93°C)	30 minutes

8. Keep parts from moving until handling strength is reached. Contact pressure is necessary. Maximum shear strength is obtained with a 3-5 mil bond line.
9. Excess uncured adhesive can be cleaned up with ketone type solvents.*

Adhesive coverage: A 0.005 in. thick bondline will yield a coverage of 320 sq. ft./gallon.

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

Application and Equipment Suggestions

These products may be applied by spatula, trowel or flow equipment.

Two-part mixing/proportioning/dispensing equipment is available for intermittent or production line use. These systems are ideal because of their variable shot size and flow rate characteristics and are adaptable to most applications. For more information, contact your local 3M sales representative.

Surface Preparation

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 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.
4. If a primer is used, it should be applied within 4 hours after surface preparation.

***Note:** Read and follow component supplier's environmental, health and safety recommendations prior to preparing this etch solution.

Aluminum:

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 ± 3°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	

4. Rinse: Rinse panels in clean running tap water.
5. Dry: Air dry 15 minutes; force dry 10 minutes at 190°F (88°C) ± 10°F (5°C).
6. If primer is to be used, it should be applied within 4 hours after surface preparation.

Surface Preparation *(continued)*

Plastics/Rubber

1. Wipe with isopropyl alcohol.*
2. Abrade using fine grit abrasives.
3. Wipe again 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.

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

Typical Adhesive Performance Characteristics

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

1. Overlap Shear (psi) ASTM D-1002-72

Test Temperature	Aluminum FPL Etch	Steel Solvent Wipe
-67°F (-55°C)	1400	1500
75°F (24°C)	2000	2400
180°F (82°C)	500	200

Overlap Shear Strength (psi) on various substrates.

Steel to Aluminum	2160
Steel to Steel	2440
Steel to Copper	2245
Aluminum to Copper	2570
Maple to Polyester	690

Typical Adhesive Performance Characteristics *(continued)*

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2. T-Peel Strength (piw) ASTM D-1876-61T

Test Temperature	Aluminum FPL Etch	Steel Solvent Wipe
75°F (24°C)	4	5

3. Environmental Aging

Overlap Shear Strength (psi) after environmental aging, aluminum to aluminum (ASTM D-1002-72).

300°F (149°C) Aged 8 days	Hyd Oil 30 days @ 75°F (24°C)	Tap Water 30 days @ 75°F (24°C)	20% Salt Spray 30 days @ 95°F (35°C)	JP-4 Fuel 30 days @ 75°F (24°C)
2200	2000	2000	2000	2000

Note: All data developed using a 7 day @ 75°F (24°C), 2 psi cure.

Storage

Store products at 60-80°F (15-27°C) for maximum storage life.

Shelf Life

Rotate stock on a “first in-first out” basis. 3M™ Scotch-Weld™ Epoxy Adhesive 1751 B/A has a storage life of two years in unopened containers.

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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 9001:2000

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