English-US

Last Revision Date: September, 2024

Supersedes: June, 2024

Technical Data Sheet

3M™ Scotch-Weld™ Epoxy Adhesive 1838 B/A Green

Product Details

Regulatory Info/SDS

Product Description

• 3M™Scotch-Weld™ Epoxy Adhesive 1838 B/A Green is a controlled flow product
• This epoxy adhesive is two-part, room temperature curing structural adhesive with high shear strengths and excellent environmental resistance.
• Excellent for bonding many metals, woods, and some plastics.
• Recognized as meeting UL 94 HB

Technical Information Note

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

Typical Uncured Physical Properties

Attribute Name	Value
Mix Ratio by Volume (B:A)	4:5
Mix Ratio by Weight (B:A)	1:1

Attribute Name	Temperature	Value
Base Color		White
Accelerator Color		Green
Base Resin		Modified Epoxy
Accelerator Resin		Polyamide
Base Net Weight		11.0 — 11.6 lb/gal
Accelerator Net Weight		8.9 — 9.3 lb/gal
Base Viscosity	27 °C (80 °F)	70,000-600,000 cP
Accelerator Viscosity	27 °C (80 °F)	300,000-1,000,000 cP

Typical Mixed Physical Properties

Attribute Name	Temperature	Value
Open Time		60 min [1]
Worklife, 100g mixed	23 °C (73 °F)	60 min
Time to Full Cure	23 °C (73 °F)	8 h [2]

[1] Max time allowed after applying adhesive to a substrate before bond must be closed and fixed. Cure times approximate and depend on adhesive temperature. Hotmelts: The approx. bonding range of a 3.2 mm (1/8 in) bead of molten adhesive on a non-metallic surface.

[2] The cure time is defined as that time required for the adhesive to achieve a minimum of 80% of the ultimate strength as measured by aluminum-aluminum OLS.

Typical Physical Properties

Attribute Name	Value
Cured Color	Green

Typical Cured Characteristics

Temperature: 23 °C (73 °F)

Attribute Name	Test Method	Value
Modulus		344,000 lb/in²
Shore D Hardness	ASTM D2240	82

Typical Performance Characteristics

T-Peel Adhesion

Substrate: Aluminum
Test Method: ASTM D1876

Temperature	Value
-55 °C (-67 °F)	2 lb/in width [1]
23 °C (73 °F)	4 lb/in width [1]
82 °C (180 °F)	4 lb/in width [1]

[1] T-Peel bonds were measured on 25 mm (1 in) wide specimens cut from two FPL etched 203 x 203 x 0.8 mm (8 x 8 x 0.032 in), 2024 T3 clad aluminum panels bonded together. The separation note of the testing jaws was 508 mm/min (20 in/min).

Attribute Name	Value
Elongation at Break	2 — 3 %
Tensile Strength at Break	4,290 lb/in²

Electrical and Thermal Properties

Attribute Name	Test Condition	Value
Glass Transition Temperature (Tg)	Mid-Point	55 °C (131 °F) [1]
Thermal Conductivity		0.169 (btu-ft)/(h-ft²-°F)

[1] Glass Transition Temperature (Tg) determined using DSC Analyzer with a heating rate of 20 °C (68 °F) per minute. Second heat values given.

Temperature: 23 °C (73 °F)

Attribute Name	Test Method	Test Condition	Value
Dielectric Constant	ASTM D150	1 KHz	6.06
Dissipation Factor	ASTM D150	1 KHz	0.012
Volume Resistivity	ASTM D257		1.5 x 10^{15} Ω-cm

Handling/Application 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 directly depends on the user's required bond strength and environmental aging resistance. For suggested surface preparations on common substrates, see the section on Surface Preparation.
2. These products consist of two parts. Mix thoroughly by weight or volume in proportions specified on product label or in Typical Uncured Physical Properties section below. Resulting color should be uniform. Properly reseal containers.
3. For maximum bond strength apply product evenly to both surfaces to be joined.
4. Application to the substrates should be made within 1 hour for 3M™ Scotch- Weld™ Epoxy Adhesives 1838 B/A Green and Tan and 90 minutes for Scotch- Weld 1838-L B/A adhesive. Larger quantities and/or higher temperatures will reduce this working time.
5. Join the adhesive coated surfaces and allow to cure until completely firm. Overnight curing @75°F (24°C) is usually sufficient. Heat, up to 200°F (100°C), will speed curing.
6. The following times and temperatures will result in handling strength for these products:
Temperature Time
RT 6-10 hrs.
150°F (65°C) 15-20 mins.
7. 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 (100°C) 30 minutes
8. Keep parts from moving during cure. Contact pressure 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:
1. Wipe free of dust with oil-free solvent such as Methyl Ethyl Ketone (MEK).*
2. Sandblast or abrade using clean fine grit abrasives.
3. Wipe again with solvents to remove loose particles.

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. Acid Etch – Place panels in the following solution for 10 minutes at 150°F ± 5°F (66°C ± 2°C).*
Sodium Dichromate 4.1 - 4.9 oz./gallon
Sulfuric Acid, 66° 38.5 - 41.5 oz./gallon 2024-T3 aluminum (dissolved) 0.2 oz./gallon minimum Tap Water as needed to balance
3. Rinse – Rinse panels in clear running tap water.

4. Dry – Air dry 15 minutes; force dry 10 minutes at 150°F ± 10°F (66°C ± 5°C).

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

Plastics:
1. Solvent wipe with Isopropyl Alcohol.*

2. Abrade using clean fine grit abrasives.

3. Solvent wipe with Isopropyl Alcohol.*

Rubbers:
1. Solvent wipe with MEK.*

2. Abrade using clean fine grit abrasives.

3. Solvent wipe with MEK.*

Glass:
1. Solvent wipe with acetone or MEK.*

For glass applications which will be subjected to high moisture/humidity conditions, EC-3901 primer or equivalent should be used to prime the glass.
*Note: When using solvents or chemicals, be sure to extinguish all ignition sources and follow the manufacturer's precautions and directions for use when handling such materials.

Application Equipment

These products may be applied with 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.

Industry Specifications

UL 94 HB

Storage and Shelf Life

Store under normal conditions of 16° to 27°C (60° to 80°F) and 40 to 60% relative humidity in the original, unopened packaging, out of direct sunlight. Lower temperatures cause increased viscosity of a temporary nature. For best performance, use this product within 24 months from date of manufacture.

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

Automotive Disclaimer

Select Automotive Applications:
This product is an industrial product and has not been designed or tested for use in certain automotive applications, such as automotive electric powertrain battery or high voltage applications, which may require the product to be manufactured in a IATF certified facility, meet a Ppk of 1.33 for all properties, undergo an automotive production part approval process (PPAP), or fully adhere to automotive design or quality system requirements (e.g., IATF 16949 or VDA 6.3). Customer assumes all responsibility and risk if customer chooses to use this product in these applications.

Information

Technical Information: The technical information, guidance, and other statements contained in this document or otherwise provided by 3M are based upon records, tests, or experience that 3M believes to be reliable, but the accuracy, completeness, and representative nature of such information is not guaranteed. Such information is intended for people with knowledge and technical skills sufficient to assess and apply their own informed judgment to the information. No license under any 3M or third party intellectual property rights is granted or implied with this information.

Product Selection and Use: Many factors beyond 3M's control and uniquely within user's knowledge and control can affect the use and performance of a 3M product in a particular application. As a result, customer is solely responsible for evaluating the product and determining whether it is appropriate and suitable for customer's application, including conducting a workplace hazard assessment and reviewing all applicable regulations and standards (e.g., OSHA, ANSI, etc.). Failure to properly evaluate, select, and use a 3M product and appropriate safety products, or to meet all applicable safety regulations, may result in injury, sickness, death, and/or harm to property.

Warranty, Limited Remedy, and Disclaimer: Unless a different warranty is specifically stated on the applicable 3M product packaging or product literature (in which case such warranty governs), 3M warrants that each 3M product meets the applicable 3M product specification at the time 3M ships the product. 3M MAKES NO OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR ARISING OUT OF A COURSE OF DEALING, CUSTOM, OR USAGE OF TRADE. If a 3M product does not conform to this warranty, then the sole and exclusive remedy is, at 3M's option, replacement of the 3M product or refund of the purchase price. Warranty claims must be made within one (1) year from the date of 3M's shipment.

Limitation of Liability: Except for the limited remedy stated above, and except to the extent prohibited by law, 3M will not be liable for any loss or damage arising from or related to the 3M product, whether direct, indirect, special, incidental, or consequential (including, but not limited to, lost profits or business opportunity), regardless of the legal or equitable theory asserted, including, but not limited to, warranty, contract, negligence, or strict liability.

Disclaimer: 3M industrial and occupational products are intended, labeled, and packaged for sale to trained industrial and occupational customers for workplace use. Unless specifically stated otherwise on the applicable product packaging or literature, these products are not intended, labeled, or packaged for sale to or use by consumers (e.g., for home, personal, primary or secondary school, recreational/sporting, or other uses not described in the applicable product packaging or literature), and must be selected and used in compliance with applicable health and safety regulations and standards (e.g., U.S. OSHA, ANSI), as well as all product literature, user instructions, warnings, and limitations, and the user must take any action required under any recall, field action or other product use notice. Misuse of 3M industrial and occupational products may result in injury, sickness, or death. For help with product selection and use, consult your on-site safety professional, industrial hygienist, or other subject matter expert. For additional product information, visit www.3M.com.

ISO Statement

This product was manufactured under a 3M quality system registered to ISO 9001 standards.

3M™ Industrial Adhesives and Tapes Division
3M Center, St. Paul, MN 55144-1000
3M.com/iatd