English-US

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Technical Data Sheet

3M™ Scotch-Weld™ Epoxy Adhesive 2158 B/A

Regulatory Info/SDS

Product Description

3M™ Scotch-Weld™ Epoxy Adhesive 2158 B/A is a gray, two-part, high strength adhesive that chemically cures at room temperature. It has good adhesion to a variety of substrates including metals, many plastics, wood and concrete.

Product Features

- Equal mix ratio by weight or volume.
- Good adhesion to damp concrete.
- 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 Weight (B:A)	1:1
Mix Ratio by Volume (B:A)	1:1

Attribute Name	Temperature	Value
Base Color		White
Accelerator Color		Dark Gray
Base Resin		Modified Epoxy
Accelerator Resin		Synthetic Resin
Base Net Weight		13.0 ± 0.2 lb/gal
Accelerator Net Weight		12.8 ± 0.4 lb/gal
Base Viscosity	22 °C (72 °F)	250,000-450,000 cP [1]
Accelerator Viscosity	22 °C (72 °F)	200,000-800,000 cP [2]

[1] Viscosity obtained by Brookfield, DV-II, #7 Spindle, 20 rpm

[2] Viscosity obtained by Brookfield, DV-II, #7 Spindle, 20 rpm.

Typical Mixed Physical Properties

Attribute Name	Temperature	Value
Open Time		120 min [1]
Worklife, 100g mixed	22 °C (72 °F)	120 min
Time to Handling Strength	22 °C (72 °F)	8 — 12 h
Time to Full Cure	22 °C (72 °F)	7 d

[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 1/8" bead of molten adhesive on a non-metallic surface.

Typical Physical Properties

Attribute Name	Value
Cured Color	Gray

Typical Cured Characteristics

Temperature: 22 °C (72 °F)

Attribute Name	Test Method	Value
Shore D Hardness	ASTM D2240	85 [1]

[1] Tensile and Elongation. Samples were 51 mm (2") dumbbells with 3 mm (0.125") neck and 0.8 mm (0.03" sample thickness. Separation rate was 51 mm/min (2"/min)

Typical Performance Characteristics

Substrate: FPL Etched Aluminum
Temperature: 22 °C (72 °F)
Dwell Time: 7 d

Attribute Name	Test Method	Value
T-Peel Adhesion	ASTM D1876	3 lb/in width [1]

[1] 2 psi applied during dwell

Electrical and Thermal Properties

Attribute Name	Test Condition	Value
Coefficient of Thermal Expansion	-50 ~ 30°C	53 x 10^{-6} m/m/°C
Coefficient of Thermal Expansion	70°C ~ 130°C	135 x 10^{-6} m/m/°C
Thermal Conductivity		0.283 (btu-ft)/(h-ft^2-°F)
Glass Transition Temperature (Tg)	Mid-Point	52 °C [1]

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

Temperature: 22 °C (72 °F)

Attribute Name	Test Method	Test Condition	Value
Dielectric Constant	ASTM D150	1 KHz	5.6
Dissipation Factor	ASTM D150	1 KHz	0.019
Volume Resistivity	ASTM D257		1.4 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 depends on the required bond strength and the environmental aging resistance desired by user. For specific surface preparations on common substrates, see the section on surface preparation.
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 120 minutes. Larger 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. Heat, 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 (49°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 bond line will yield a coverage of 320 sqft/gallon.
*Note: When using solvents, extinguish all ignition sources, including pilot lights, and follow manufacturer's precautions and directions for use.

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.
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 ± 2°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
Note: Read and follow component supplier's environmental health and safety recommendations prior to preparation of this etch solution.
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. If primer is to be used, it should be applied within 4 hours after surface preparation.
Plastics/Rubbers:
1. Wipe with isopropyl alcohol.*
2. Abrade using fine grit abrasives.
3. Wipe 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) or 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, including pilot lights, and follow manufacturer's precautions and directions for use.

Application Equipment

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.

Industry Specifications

UL 94 HB

Storage and Shelf Life

Store under normal conditions of 16° to 27°C (60° to 80°F) in the original, unopened packaging, out of direct sunlight. For best performance, use this product within 12 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

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ISO Statement

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

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