



Scotch-Weld™

Structural Adhesive 7838 B/A

Product Data Sheet

Updated : March 1996

Supersedes : July 1995

Product Description

7838 B/A is a thixotropic two-part epoxy based adhesive with the following advantages:

Room temperature curing. The cure rate may be accelerated by the application of mild heat.

Cured adhesive bonds exhibit excellent flexibility and high adhesion to metals, plastics and glass.

Cured adhesive bonds exhibit good strength retention after ageing in hostile environments.

Excellent peel strength.

Convenient 1:1 mix ratio.

Mixed adhesive is non-sag for ease of application.

Physical Properties

Not for specification purposes

	BASE	ACCELERATOR
Base	Modified Epoxy Resin	Modified Amine
Specific Gravity	1.45	1.20
Mix Ratio	100 by weight 100 by volume	100 by weight 120 by volume
Consistency	Thixotropic Paste	Thixotropic Paste
Colour	Off-White	Light Brown
Work Life	at 23°C (100 grams mixed) Approx 2 hours.	
Standard 3M Shelf Life	24 months from date of despatch by 3M when stored in the original carton at 21°C (70°F) & 50 % Relative Humidity	

Performance

Characteristics

Not for specification purposes

The following product performance data was obtained in the 3M Laboratory under the conditions specified.

General application methods and bonding procedures are described later.

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Performance Characteristics (Cont...)

Not for specification purposes

Overlap Shear Strength:

Overlap shear specimens were made according to A.E.C.M.A. test method EN2243-1 using 1.6mm thick 2024 T3 clad

aluminium with the surface prepared by the optimised FPL etch method described below.

Testing was done at a jaw separation rate of 2.5mm/min.

Glue line thickness : 100 to 200 microns.

Cure Cycles

All values in MPa

Test Conditions	7 Days at RT	2 hours at 65°C
-55°C	20.6	25.9
23°C	26.5	23.8
82°C	7.2	7.8

T-Peel Strength:

T-Peel specimens were made using 2024 T3 clad aluminium. Bonded specimens were cut from 210mm x 210mm x 0.08mm sheets.

Surface Preparation:

Optimised FLP etch.

Glue line thickness:

100 to 200 microns.

Jaw Separation rate:

500mm/min.

Cure Cycle

All values in N/25mm

Test Conditions	7 days at 23°C	2 hours at 65°C
RT	130	122

Environmental Resistance

Typical results obtained on etched 1.6mm thick 2024 T3 clad aluminium.

Overlap shear specimens were made according to A.E.C.M.A. test method EN2243-1 and exposed to the wet poultice test at 70°C

Testing, after ageing was done at room temperature at a jaw separation rate of 2.5mm/min. Results in MPa.

Duration of Test	Cure Cycle		Failure Mode
	7 days at 23°C	2 hours at 65°C	
Initial Value	26.5	23.8	100% Cohesive
7 days	20.5	23.0	100% Cohesive
14 days	20.8	21.0	100% Cohesive
21 days	19.1	17.8	100% Cohesive

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Directions for Use

Application/Curing:

Proper adhesive application is as important as proper bond design and adhesive choice to obtain maximum joint properties.

Improper adhesive application techniques can result in partial or complete failure of an assembly.

Scotch-Weld Structural Adhesive 7838 B/A will give excellent properties under many application conditions. The product performance data reported in the previous section was developed using the following recommended procedures. Variations from these recommended procedures should be fully evaluated to ensure bond properties are sufficient to meet the requirements of a particular assembly.

Surface Preparation:

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 preparation techniques should be fully evaluated with the adhesive if resistance to specific environments is required.

Recommended cleaning procedures for aluminium:

Alkaline degrease - Oakite 164 water solution (10%) at 85 +/- 5°C for 10-20 minutes. Rinse immediately and thoroughly in cold running water.

Acid etch - place panels in the following solution for 10 minutes at 65 +/- 3°C.

Optimised FPL Etch (to make 1 litre)

Concentrated Sulphuric Acid: 332g.
Sodium Dichromate: 44.8g.
Distilled Water: adjust to 1 litre.
2024 T3 aluminium grease free/drill chips* 1.5g.

Caution: Use adequate ventilation and skin protection when using etch solutions:

* Allow aluminium drill chips to dissolve before using the etch.

It is advisable to prime or bond the freshly cleaned surfaces within four hours after surface preparation.

Mixing and Spreading of Adhesive

Carefully read the caution statements that apply to this product.

Be sure to thoroughly mix the adhesive until it attains a uniform colour. Thorough mixing is important in achieving the ultimate properties of this material.

Mixing Ratio	By Weight	By Volume
Parts base B (off-white)	100	100
Parts hardener A (light brown)	100	120

Storage Conditions

Store the product at 23°C or lower maximum storage life. Rotate stock on a "first in - first out" basis.

Upon request, your 3M Specialty Tapes & Adhesives Sales Representative will be pleased to advise the anticipated shelf life of this

product under the applicable storage conditions.

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Directions for Use (Cont...)

Work Life:

The work life of mixed 7838 B/A structural adhesive is approximately 120 minutes in a mass of 100 grams at an ambient temperature of 23°C. The work life if the mixed adhesive will be lengthened by reducing the temperature or the amount of adhesive and will be shortened by higher temperatures or larger amounts of adhesive.

Spreading:

The mixed adhesive may be applied by means of a spatula, notched trowel, or by suitable extrusion equipment.

Clean Up:

Excessive adhesive and equipment may be cleaned up, prior to curing with Ketone* type solvent. * When using solvent extinguish all sources of ignition in the area and observe proper precautionary measures for handling such materials.

Cure Cycle: Bonding Pressure:

The only pressure needed during the cure of 7838 B/A structural adhesive is that required to keep the parts in alignment to ensure squeeze out of the adhesive to cover the area to be

bonded, and to overcome distortion and thermal expansion of the adherents. The data reported in the Product Performance section was developed using a bond pressure of 10 to 20 KPa.

Cure Time and Temperature:

The following cure times and temperatures are required to get the typical values listed under product performance.

7 days at 23 +/- 2°C

2 hours at 65 +/- 5°C

Precautionary Information

Refer to product label and Material Safety Data Sheet for health and safety information before using the product.

For information please contact your local 3M Office.

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Important Notice

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Values presented have been determined by standard test methods and are average values not to be used for specification purposes. Our recommendations on the use of our products are based on tests believed to be reliable but we would ask that you conduct your own tests to determine their suitability for your applications.

This is because 3M cannot accept any responsibility or liability direct or consequential for loss or damage caused as a result of our recommendations.

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