

Tensile Lap-Shear LS-2

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Test Procedure

Lap shear strength of an adhesive is determined by bonding together 2 aluminum panels of 2024-T3 alloy with dimensions 1 inch x 6 inches x 0.0625 inch. The panels are acid etched* prior to bonding with the adhesive to be tested.

FPL Immersion Etch^{1*}

A) Degreased, solvent wipe or both. (Acetone can be used to remove gross contaminants. Perchloroethylene vapor is good for degreasing.)

B) Immerse for 10 minutes at 68°C in the following acid solution: 30 parts by weight (pbw) distilled water, 10 pbw sulfuric acid (sp.gr.1.84) and 1 pbw sodium dichromate ($\text{Na}_2\text{Cr}_2\text{O}_7\text{H}_2\text{O}$).

C) Rinse with water not over 65.5°C.

D) Air dry, dry in an oven, or use infrared lamps at not over 65.5°C.

The adhesive is applied between etched panels and clamped in place with .5 inch overlap, giving a bondline of .5 square inches. To control bondline thickness, two strands of .003 diameter glass fibers are used as spacers. The two fibers are placed in the adhesive between the panels. After curing, the cooled panels are pulled apart by an Instron tester (Model 3367) at a pull rate of 1 millimeter per minute.

Reference:

1) *American Society for Testing and Materials (ASTM), ASTM D 2651-79, Standard Recommended Practice for Preparation of Metal Surfaces for Adhesive Bonding, vol. 15.06, 1983 Annual Book of ASTM Standards.*

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