AEROSPACE MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
29 West 39th Street
New York City

AMS 4041D

Issued 11-1-41
Revised 3-1-55

ALUMINUM ALLOY SHEET, ALUMINUM COVERED
4.5Cu - 1.5Mg - 0.6Mn (Alc 2024-T3)

1. ACKNOWLEDGMENT: A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.

2. APPLICATION: Primarily for formed structural parts of good strength which are required to exhibit maximum corrosion resistance and to match the color and appearance of other clad aluminum alloy parts.

3. COMPOSITION:

	Core		Cladding	
	Copper	3.8 - 4.9	Iron + Silicon	0.7 max
	Magnesium	1.2 - 1.8	Copper	0.10 max
	Manganese	0.30 - 0.9	Zinc	0.10 max
	Iron	0.50 max	Manganese	0.05 max
	Silicon	0.50 max	Aluminum, by difference	99.3 min
ø	Zinc	0.25 max		
	Chromium	0.10 max		
	Other Impurities, each	0.05 max		
	Other Impurities, total	0.15 max		
	Aluminum	remainder		

3.1 When the analysis is made on a sample milled from the material representative of the entire cross section, the percentage of the various elements as determined by analysis, except aluminum, shall be increased by 11% for thicknesses under 0.063 in. and 5% for thicknesses 0.063 in. and over, and these figures shall be taken as the composition of the base metal.

4. CONDITION: Solution heat treated and stretcher leveled.

5. TECHNICAL REQUIREMENTS:

5.1 Cladding Thickness:

5.1.1 Prior to Rolling: Aluminum plates which are bonded to the alloy ingot or slab preparatory to rolling to the specified thickness of the composite material shall each have a thickness of not less than 5% of the total composite thickness for material having a finished thickness less than 0.063 in. and not less than 2.5% for material having a finished thickness of 0.063 in. and over.

5.1.2 Finished Product: After rolling, the average cladding thickness shall be not less than 80% of the values specified above.

5.2 Tensile Properties: Test specimens shall conform to ASTM E8, except from material less than 3/4 in. wide, and shall be cut across the direction of rolling, except from material less than 9 in. wide. Elongation requirements apply only to material 3/4 in. and over in width.

Nominal Thickness Inch	Tensile Strength psi, min	Yield Strength at 0.2% Offset or at Extension Indicated		Elongation % in 2 in. min
		psi, min	Extension Under Load in. in 2 in.	
0.010 to 0.020, incl	59,000	39,000	0.0122	12
ø Over 0.020 to 0.062, incl	59,000	39,000	0.0122	15
Over 0.062 to 0.128, incl	62,000	40,000	0.0120	15
Over 0.128 to 0.249, incl	62,000	40,000	0.0120	13

5.2.1 Extension under load is based on E = 9,500,000 for material 0.062 in. and ø under in thickness and on E = 10,000,000 for material over 0.062 to 0.249 in. thick.

5.3 Bending: Material shall withstand, without cracking, bending at room temperature through an angle of 180 deg around a diameter equal to the bend factor times the nominal thickness of the material, with axis of bend parallel to direction of rolling.

Nominal Thickness Inch	Bend Factor
0.010 to 0.040, incl	4
Over 0.040 to 0.128, incl	5
Over 0.128 to 0.249, incl	8

6. QUALITY: Material shall be uniform in quality and condition, clean, sound, and free from foreign materials and from internal and external defects detrimental to fabrication or to performance of parts.

7. TOLERANCES: Unless otherwise specified, tolerances shall conform to the latest issue of AMS 2202 as applicable. Thickness tolerances shall conform to Table II.

8. REPORTS:

8.1 Unless otherwise specified, the vendor of the product shall furnish with each shipment three copies of a report stating that the product conforms to the ø chemical composition and technical requirements of this specification. This report shall include the purchase order number, material specification number, thickness, size, and quantity.

8.2 Unless otherwise specified, the vendor of finished or semi-finished parts shall furnish with each shipment three copies of a report showing the purchase order number, material specification number, contractor or other direct supplier of material, part number, and quantity. When material for making parts is produced or purchased by the parts vendor, that vendor shall inspect each lot of material to determine conformance to the requirements of this specification, and shall include in the report a statement that the material conforms, or shall include copies of laboratory reports showing the results of tests to determine conformance.