AERONAUTICAL MATERIAL SPECIFICATIONS

SOCIETY OF AUTOMOTIVE ENGINEERS, Inc. 485 Lexington Ave., New York 17, N.Y.

AMS 4042E

Issued 11-1-41
Revised 8-15-58

ALUMINUM ALLOY SHEET AND PLATE, ALCLAD
4.5Cu - 1.5Mg - 0.6Mn (Alclad 2024-T36)

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 structural parts of good strength which are required to exhibit maximum corrosion resistance. This material, when resolution heat treated by the user may not have the tensile properties shown.

3. COMPOSITION:

Ø	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	Other Impurities, each	0.05 max
	Zinc	0.25 max	Other Impurities, total	0.15 max
	Chromium	0.10 max	Aluminum, by difference	99.30 min
	Other Impurities, each	0.05 max		
	Other Impurities, total	0.15 max		
	Aluminum	remainder		

4. CONDITION: Solution heat treated and cold worked.

5. TECHNICAL REQUIREMENTS:

5.1 Cladding Thickness: After rolling, the average cladding thickness shall be as shown. Routine measurements are not required.

Ø	Total Thickness of Composite Product Inch	Cladding Thickness Per Side % of Total Thickness, min
	0.062 and under	4.0
	Over 0.062 to 0.187, incl	2.0
	Over 0.187 to 0.499, incl	1.2

5.2 Tensile Properties: Test specimens shall conform to ASTM E8-54T, 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 (See 5.2.1) psi, min	Extension Under Load in. in 2 in.	Elongation % in 2 in. min
0.020 to 0.062, incl	62,000	48,000	0.0141	8
Over 0.062 to 0.187, incl	66,000	50,000	0.0140	9
Over 0.187 to 0.499, incl	67,000	51,000	0.0142	9

5.2.1 Extension under load is based upon the following values of E:

Nominal Thickness Inches	E
0.062 and under	9,500,000
Over 0.062 to 0.499, incl	10,000,000

5.2.2 When a dispute occurs between purchaser and vendor over the yield strength value, yield strength determined by the offset method shall apply.

5.3 Bending: Material shall be capable of withstanding, 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
0.020 to 0.040, incl	4
Over 0.040 to 0.062, incl	5
Over 0.062 to 0.124, incl	6
Over 0.124 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 imperfections 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 chemical composition and technical requirements of this specification. This report shall include the purchase order number, material specification number, thickness, size, and quantity.