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

AMS 4041E
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ALUMINUM ALLOY SHEET AND PLATE, ALCLAD
4.5Cu - 1.5Mg - 0.6Mn (Alc 2024; -T3 Sheet, -T4 Plate)

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 ø to exhibit maximum corrosion resistance.

3. COMPOSITION:

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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:

ø4.1 Sheet: Solution heat treated and stretcher leveled (0.249 in. and under).

ø4.2 Plate: Solution heat treated (over 0.249 in.).

5. TECHNICAL REQUIREMENTS:

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

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Total Thickness of Composite Product Inches	Cladding Thickness Per Side % of Total Thickness	
	min	max
0.062 and under	4.0	--
Over 0.062 to 0.187, incl	2.0	--
Over 0.187 to 0.499, incl	1.2	--
Over 0.499	1.2	3.0

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.

Ø Nominal Thickness Inches	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
0.008 to 0.009, incl	58,000	39,000	0.0122	10
Over 0.009 to 0.020, incl	59,000	39,000	0.0122	12
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 0.187, incl	62,000	40,000	0.0120	13
Over 0.187 to 0.249, incl	63,000	41,000	0.0122	15
Over 0.249 to 0.499, incl	63,000	40,000	0.0120	11
Over 0.499 to 1.000, incl	62,000	40,000	0.0116	8
Over 1.000 to 1.500, incl	60,000	40,000	0.0116	7
Over 1.500 to 2.000, incl	60,000	40,000	0.0116	6
Over 2.000 to 3.000, incl	56,000	40,000	0.0116	4

5.2.1 Extension under load is based upon the following values of E:
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Nominal Thickness Inches	E
0.062 and under	9,500,000
Over 0.062 to 0.499, incl	10,000,000
Over 0.499	10,600,000

5.2.2 When a dispute occurs between purchaser and vendor over the yield strength Ø 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 Ø 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 0.124, incl	5
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.