AEROSPACE
MATERIAL SPECIFICATIONS

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

AMS 4034A

Issued 6-30-60
Revised 1-31-64

ALUMINUM ALLOY PLATE, ALCLAD
4.5Cu - 1.5Mg - 0.6Mn (Alclad 2024-T351)
Stress-Relief Stretched

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 machined parts subject to excessive warpage during machining due to residual stresses, and for structural parts of good strength which are required to exhibit maximum corrosion resistance. Certain design and processing procedures may cause this material to be susceptible to stress corrosion cracking; ARP 823 recommends practices to minimize such conditions.

3. COMPOSITION:

	Core (2024)	min	max
	Copper	3.8	4.9
	Magnesium	1.2	1.8
Ø	Manganese	0.30	0.9
	Iron	--	0.50
	Silicon	--	0.50
	Zinc	--	0.25
	Chromium	--	0.10
	Other Impurities, each	--	0.05
	Other Impurities, total	--	0.15
	Aluminum	remainder	

	Cladding (1230)	min	max
	Iron + Silicon	--	0.7
	Copper	--	0.10
	Zinc	--	0.10
	Manganese	--	0.05
	Other Impurities, each	--	0.05
	Aluminum, by difference	99.30	--

4. CONDITION: Solution heat treated and stress-relieved by stretching.

4.1 Material shall be stretched in the solution heat treated condition to produce a nominal permanent set of 2%, but not less than 1-1/2% nor more than 3%.

4.2 Material shall receive no further straightening operations after stretching.

5. TECHNICAL REQUIREMENTS: When ASTM methods are specified for determining Ø conformance to the following requirements, tests shall be conducted in accordance with the issue of the ASTM method listed in the latest issue of AMS 2350.

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

Total Thickness of Composite Product Inches	Cladding Thickness Per Side % of Total Thickness	
	min	max
0.250 to 0.499, incl	1.2	---
Over 0.499	1.2	3.0

5.2 Tensile Properties: Test specimens shall conform to ASTM E8 and shall be taken across the direction of rolling from widths 9 in. and over and parallel to the direction of rolling from widths less than 9 inches. Sheet type specimens shall be used for material less than 0.5 in. thick and 0.75 in. and over in width. Round specimens shall be used for material 0.5 in. and over in thickness and 0.75 in. and over in width. Material under 0.75 in. wide and under 0.5 in. thick may be tested in either full section or by use of round specimens; for such sizes, elongation requirements apply only when round specimens are used.

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. or 4D, min
0.250 to 0.499, incl	63,000	40,000	0.0118	12
Over 0.499 to 1.000, incl	62,000	41,000	0.0118	8
Over 1.000 to 1.500, incl	62,000	41,000	0.0118	7
Over 1.500 to 2.000, incl	61,000	41,000	0.0118	6
Over 2.000 to 3.000, incl	60,000	41,000	0.0118	4
Over 3.000 to 4.000, incl	56,000	40,000	0.0116	4

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

Nominal Thickness Inches	E
0.250 to 0.499, incl	10,200,000
Over 0.499	10,500,000

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.

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 all applicable requirements of the latest issue of AMS 2202.