



AEROSPACE MATERIAL SPECIFICATION

AMS 4041J

Superseding AMS 4041H

Society of Automotive Engineers, Inc.
TWO PENNSYLVANIA PLAZA, NEW YORK, N.Y. 1000

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ALUMINUM ALLOY SHEET AND PLATE, ALCLAD
4.4Cu - 1.5Mg - 0.60Mn (Alclad 2024 and 1-1/2% Alclad
2024-T3 Flat Sheet; 1-1/2% Alclad 2024-T351 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 formed structural parts of good strength which are required to exhibit maximum corrosion resistance. Plate is also suitable for structural machined parts where warpage during machining due to residual stresses must be kept to a minimum. 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)		Cladding (1230)	
	min	max	min	max
Copper	3.8	- 4.9	Iron + Silicon	-- 0.7
Magnesium	1.2	- 1.8	Copper	-- 0.10
Manganese	0.30	- 0.9	Zinc	-- 0.10
Iron	--	0.50	Manganese	-- 0.05
Silicon	--	0.50	Other Impurities, each	-- 0.05
Zinc	--	0.25	Aluminum, by difference	99.30 --
Chromium	--	0.10		
Other Impurities, each	--	0.05		
Other Impurities, total	--	0.15		
Aluminum	remainder			

4. **CONDITION:**

- 4.1 **Sheet:** Solution heat treated and cold worked.
- 4.2 **Plate:** Solution heat treated and stretched to produce a nominal set of 2% but not less than 1-1/2% nor more than 3%.
 - 4.2.1 Plate shall receive no further straightening operations after stretching.

5. **TECHNICAL REQUIREMENTS:** The product shall conform to the following requirements; tensile properties shall be determined in accordance with the latest issue of AMS 2355.

- 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
	0.008 to 0.062, incl	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

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5.2 Tensile Properties:

Nominal Thickness Inches	Tensile Strength psi, min	Yield Strength at 0.2% Offset or at Extension Indicated (See 5.2.1)		Elongation % in 2 in. or 4D, min
		psi, min	Extension Under Load in. in 2 in.	
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 0.187, incl	62,000	40,000	0.0120	15
Over 0.187 to 0.249, incl	63,000	41,000	0.0122	15
Over 0.249 to 0.499, incl	63,000	41,000	0.0122	12
Over 0.499 to 1.000, incl	63,000	42,000	0.0120	8
Over 1.000 to 1.500, incl	62,000	42,000	0.0120	7
Over 1.500 to 2.000, incl	62,000	42,000	0.0120	6
Over 2.000 to 3.000, incl	60,000	42,000	0.0120	4
Over 3.000 to 4.000, incl	57,000	41,000	0.0118	4

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

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

5.2.2 Tensile properties of plate greater than 4.000 in. in thickness shall be as agreed upon by purchaser and vendor.

5.2.3 When a dispute occurs between purchaser and vendor over the yield strength values, 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
0.008 to 0.040, incl	4
Over 0.040 to 0.128, incl	5
Over 0.128 to 0.249, incl	8
Over 0.249 to 0.499, incl	10

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.