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AEROSPACE MATERIAL SPECIFICATION

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

AMS 4036D

Superseding AMS 4036C

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ALUMINUM ALLOY SHEET AND PLATE, ALCLAD ONE SIDE
4.4Cu - 1.5Mg - 0.60Mn (Alclad One Side 2024; T3 Sheet, - 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 structural use including chemically milled parts. 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:

- Ø 4.1 Sheet: Solution heat treated and cold worked.
- 4.2 Plate: Solution heat treated and stretched to produce a nominal permanent set of 2% but not less than 1-1/2% nor more than 3%.
- Ø 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 on the clad side shall be as shown. Routine measurements are not required.

Total Thickness of Composite Product Inch	Cladding Thickness % of Total Thickness, min
Up to 0.062, incl	4.0
Over 0.062 to 0.187, incl	2.0
Over 0.187 to 0.499, incl	1.2

5.2 Tensile Properties:

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Nominal Thickness Inch	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.	
0.010 to 0.020, incl	61,000	40,000	0.0124	12
Over 0.020 to 0.062, incl	61,000	40,000	0.0124	15
Over 0.062 to 0.187, incl	63,000	41,000	0.0122	15
Over 0.187 to 0.249, incl	63,000	41,000	0.0122	12
Over 0.249 to 0.499, incl	63,000	41,000	0.0122	12

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

Nominal Thickness Inch	E
Up to 0.062, incl	9,500,000
Over 0.062 to 0.499, incl	10,000,000

Ø 5.2.2 Tensile properties of plate thicker than 0.499 in. 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. The bare (unclad) surface shall be on the outside of the bend.

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 all applicable requirements of the latest issue of AMS 2202.

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 and its revision letter, 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 and its revision letter, 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.