

AEROSPACE MATERIAL SPECIFICATIONS

AMS 4049D

SOCIETY OF AUTOMOTIVE ENGINEERS, Inc.

485 Lexington Ave., New York, N.Y. 10017

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ALUMINUM ALLOY SHEET AND PLATE, ALCLAD 5.6Zn - 2.5Mg - 1.6Cu - 0.25Cr (Alclad 7075-T6)

- 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 machine tapered 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 (7075)		Cladding (7072)	
	min	max	min	max
Zinc	5.1	6.1	Zinc	0.8 - 1.3
Magnesium	2.1	2.9	Silicon + Iron	-- 0.7
Copper	1.2	2.0	Magnesium	-- 0.10
Chromium	0.18	0.40	Copper	-- 0.10
Iron	--	0.7	Manganese	-- 0.10
Silicon	--	0.50	Other Impurities, each	-- 0.05
Manganese	--	0.30	Other Impurities, total	-- 0.15
Titanium	--	0.20	Aluminum	remainder
Other Impurities, each	--	0.05		
Other Impurities, total	--	0.15		
Aluminum		remainder		

- 4. CONDITION:** Solution and precipitation heat treated.
- 5. TECHNICAL REQUIREMENTS:** When ASTM methods are specified for determining 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
Up to 0.062, incl	3.2	---
Over 0.062 to 0.187, incl	2.0	---
Over 0.187 to 0.499, incl	1.2	---
Over 0.499 to 4.000, incl	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.

Section 8.3 of the SAE Technical Board rules provides that: "All technical reports, including standards approved and practices recommended, are advisory only. Their use by anyone engaged in industry or trade is entirely voluntary. There is no obligation to adhere to any SAE standard or recommended practice, and no commitment to conform to or be guided by any technical report. In formulating and applying technical reports, the Board and its Committees will not investigate or consider patents which may apply to the subject matter. Prospective users of the report are responsible for protecting themselves against liability for infringement of patents."

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 0.011, incl	68,000	58,000	0.0162	5
Over 0.011 to 0.039, incl	70,000	60,000	0.0166	7
Over 0.039 to 0.062, incl	72,000	62,000	0.0171	8
Over 0.062 to 0.187, incl	73,000	63,000	0.0169	8
Over 0.187 to 0.499, incl	75,000	64,000	0.0168	8
Over 0.499 to 1.000, incl	77,000	66,000	0.0168	6
Over 1.000 to 2.000, incl	77,000	66,000	0.0168	4
Over 2.000 to 2.500, incl	73,000	62,000	0.0160	3
Over 2.500 to 3.000, incl	70,000	60,000	0.0156	3
Over 3.000 to 3.500, incl	70,000	57,000	0.0151	3
Over 3.500 to 4.000, incl	67,000	53,000	0.0143	2

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

Nominal Thickness Inches	E
Up to 0.062, incl	9,500,000
Over 0.062 to 0.187, incl	9,800,000
Over 0.187 to 0.499, incl	10,000,000
Over 0.499 to 4.000, incl	10,300,000

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
0.008 to 0.020, incl	6
Over 0.020 to 0.063, incl	7
Over 0.063 to 0.091, incl	8
Over 0.091 to 0.125, incl	9
Over 0.125 to 0.249, incl	10
Over 0.249 to 0.499, incl	12

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.