

AERONAUTICAL MATERIAL SPECIFICATIONS

AMS 4049c

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

Issued 10-1-51
Revised 8-15-58

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.
3. COMPOSITION:

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

4. CONDITION: Solution and precipitation heat treated.

5. TECHNICAL REQUIREMENTS:

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

Ø	Total Thickness of Composite Product Inches	Cladding Thickness Per Side % of Total Thickness	
		min	max
	0.062 and under	3.2	---
	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 sheet less than 3/4 in. wide, and shall be cut across the direction of rolling except from sheet less than 9 in. wide. Elongation requirements apply only to sheet 3/4 in. and over in width.

Section 7C 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 approving 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."

Yield Strength at 0.2% Offset
or at Extension Indicated
(See 5.2.1)

Ø	Nominal Thickness Inches	Tensile Strength psi, min	Extension Under Load		Elongation % in 2 in. min
			psi, min	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

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

Ø	Nominal Thickness Inches	E
	0.062 and under	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	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 0.499 in. and under in thickness 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.

Ø	Nominal Thickness Inch	Bend Factor
	0.020 and under	6
	Over 0.020 to 0.062, incl	7
	Over 0.062 to 0.089, incl	8
	Over 0.089 to 0.124, incl	9
	Over 0.124 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 the latest issue of AMS 2202 as applicable. Thickness tolerances shall conform to Table II.