

AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
29 West 39th Street
New York City

AMS 4049

Issued 10-1-51

Revised

ALUMINUM ALLOY SHEET AND PLATE, ALUMINUM ALLOY COATED 5.6Zn - 2.5Mg - 1.6Cu - 0.25Cr (Alc. 75S-T6)

- 1. ACKNOWLEDGMENT:** A vendor shall mention this specification number in all quotations and when acknowledging purchase orders.
- 2. APPLICATION:** Primarily for structural use, including machine tapered parts.
- 3. COMPOSITION:**

- 3.1** The compositions of the core and cladding materials shall conform to the following requirements:

Core		Cladding	
Zinc	5.1 - 6.1	Zinc	0.75 - 1.25
Magnesium	2.1 - 2.9	Magnesium	0.10 max
Copper	1.2 - 2.0	Copper	0.10 max
Chromium	0.18 - 0.40	Manganese	0.10 max
Iron	0.70 max	Silicon + Iron	0.70 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		

- 3.2** When analysis is made on a sample milled from material representative of the entire cross section of the material, the percentages of the various elements, except aluminum, shall be multiplied by 1.08 for thicknesses up to 0.188 in. and by 1.03 for thicknesses 0.188 in. and over. These values shall be taken as the composition of the core material.

- 4. CONDITION:** Solution and precipitation heat treated.

- 5. TECHNICAL REQUIREMENTS:**

- 5.1 Cladding Thickness:**

- 5.1.1 Prior to Rolling:** Aluminum alloy plates which are bonded to the alloy ingot or slab preparatory to rolling to the specified thickness of the material shall each have a thickness of not less than 4% of the total composite thickness for sheet having a finished thickness less than 0.188 in. and not less than 1.5% for sheet or plate having a finished thickness of 0.188 in and over.

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 is no agreement to adhere to any SAE standard or recommendation. The SAE standard or recommendation is not intended to conform to or be guided by any technical report in formulating and issuing technical specifications and its Committee is not responsible or liable for infringement of patents. Prospective users of the report are responsible for protecting themselves against liability for infringement of patents."

AMS 4049

- 2 -

5.1.2 Finished Product: After rolling, the average cladding thickness shall not be less than 3-1/4% of the total composite thickness for sheet less than 0.188 in. thick and not less than 1% nor more than 2% for sheet or plate 0.188 in. thick or over.

5.2 Tensile Properties: Material shall conform to the following requirements. Test specimens shall conform to ASTM E8 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.

Nominal Thickness Inches	Tensile Strength psi, min	Yield Strength at 0.2% Offset or at Extension Indicated		Elongation % in 2 in., min
		psi, min	Extension Under Load, inch in 2 in.	
0.039 and under	70,000	60,000	0.0156	7
Over 0.039 - 0.187, incl	72,000	62,000	0.0159	8
Over 0.187 - 0.500, incl	75,000	64,000	0.0164	8
Over 0.500 - 1.000, incl	77,000	66,000	0.0168	6
Over 1.000 - 2.000, incl	77,000	66,000	0.0168	4
Over 2.000 - 2.500, incl	73,000	62,000	0.0159	3
Over 2.500 - 3.000, incl	70,000	60,000	0.0156	3
Over 3.000	As agreed upon by purchaser and vendor			

5.3 Bending: Material 0.500 in. and under in thickness shall withstand, without cracking, bending at room temperature through an angle of 180 degrees around a diameter equal to the bend factor shown below times the nominal thickness of the material, with axis of bend parallel to direction of rolling.

Nominal Thickness Inches	Bend Factor
0.020 and under	7
Over 0.020 - 0.063, incl	8
Over 0.063 - 0.091, incl	9
Over 0.091 - 0.125, incl	10
Over 0.125 - 0.249, incl	11
Over 0.249 - 0.500, incl	14

6. QUALITY: Material shall be uniform in quality and condition, clean, sound, smooth, and free from foreign materials and from internal and external defects 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.

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 meets all the requirements of this specification. This report shall include the purchase order number, material specification number, thickness, size, and quantity.