AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
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AMS 4023

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Revised

ALUMINUM ALLOY SHEET, ALUMINUM ALLOY CLAD
1Mg - 0.6Si - 0.3Cu - 0.25Cr (Alo 61S-T6)

1. ACKNOWLEDGMENT: A vendor shall mention this specification number in all quotations and when acknowledging purchase orders.

2. APPLICATION: Primarily for formed medium strength structural parts not requiring heat treatment and which are required to exhibit maximum corrosion resistance and to match the color and appearance of other clad aluminum alloy parts.

3. COMPOSITION:

Core		Cladding	
Magnesium	0.8 - 1.2	Zinc	0.75 - 1.25
Silicon	0.4 - 0.8	Silicon + Iron	0.70 max
Copper	0.15 - 0.40	Copper	0.10 max
Chromium	0.15 - 0.35	Manganese	0.10 max
Iron	0.70 max	Other Impurities, each	0.05 max
Zinc	0.20 max	Other Impurities, total	0.15 max
Manganese	0.15 max	Aluminum	remainder
Titanium	0.15 max		
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:

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 composite sheet shall each have a thickness of not less than 4% of the total composite thickness for sheet having a finished thickness less than 0.064 in. and not less than 2.5% for sheet having a finished thickness of 0.064 in. and over.

5.1.2 Finished Product: After rolling, the average cladding thickness shall be not less than 80% of the values specified above.

5.2 Tensile Properties: Test specimens shall conform to ASTM E8 except from sheet less than 3/4 in. wide, and shall be cut parallel to the direction of rolling. Elongation requirements apply only to sheet 3/4 in. and over in width.

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Nominal Thickness, Inch	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.	
0.249 and under	38,000	32,000	0.0104	10

5.3 Bending: Sheet shall withstand, without cracking, bending at room temperature through an angle of 180 degrees around a diameter equal to the bend factor times the nominal thickness of the sheet, with axis of bend parallel to direction of rolling.

Nominal Thickness, Inch	Bend Factor
0.036 and under	3
Over 0.036 - 0.064, incl	4
Over 0.064 - 0.128, incl	5
Over 0.128 - 0.249, incl	6

6. QUALITY: Sheet 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 sheet shall furnish with each shipment three copies of a report stating that the chemical composition and tensile properties of the sheet conform to requirements specified. This report shall include the purchase order number, material specification number, 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, contractor or other direct supplier of sheet, part number, and quantity. When sheet for making parts is produced or purchased by the parts vendor, that vendor shall inspect each lot of sheet to determine conformance to the requirements of this specification, and shall include in the report a statement that the sheet conforms, or shall include copies of laboratory reports showing the results of tests to determine conformance.

9. IDENTIFICATION: Unless otherwise specified, each sheet shall be marked, in the respective location indicated below, with the manufacturer's identification, and, in addition, the alloy name or number and temper, or AMS 4023, and nominal thickness in inches. The characters shall be not less that 3/8 in. in height, shall be applied using a suitable marking fluid, and shall not be obliterated by normal handling or heat treatment.