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

AEROSPACE MATERIAL SPECIFICATION

AMS 4021C
Superseding AMS 4021B
Issued 10-1-51
Revised 11-1-68

ALUMINUM ALLOY SHEET AND PLATE, ALCLAD
1.0Mg - 0.6Si - 0.30Cu - 0.25Cr (Alclad 6061-0)

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 formed structural parts which will be subsequently heat treated and which are required to exhibit maximum corrosion resistance and to approximate the color and appearance of other clad aluminum alloy parts.

3. COMPOSITION:

Core (6061)	min	max
Magnesium	0.8	1.2
Silicon	0.40	0.8
Copper	0.15	0.40
Chromium	0.15	0.35
Iron	--	0.7
Zinc	--	0.25
Manganese	--	0.15
Titanium	--	0.15
Other Impurities, each	--	0.05
Other Impurities, total	--	0.15
Aluminum	remainder	

Cladding (7072)	min	max
Zinc	0.8	1.3
Silicon + Iron	--	0.7
Magnesium	--	0.10
Copper	--	0.10
Manganese	--	0.10
Other Impurities, each	--	0.05
Other Impurities, total	--	0.15
Aluminum	remainder	

4. CONDITION: Annealed.

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 per side shall be not less than 4% of the total composite thickness. Routine measurements are not required.

5.2 Properties as Annealed:

5.2.1 Tensile Properties:

Nominal Thickness Inch	Tensile Strength psi, max	Yield Strength at 0.2% Offset psi, max	Elongation % in 2 in. or 4D, min
0.010 to 0.020, incl	20,000	12,000	14
Over 0.020 to 0.128, incl	20,000	12,000	16
Over 0.128 to 0.499, incl	20,000	12,000	18
Over 0.499 to 1.000, incl	22,000	----	18
Over 1.000 to 3.000, incl	22,000	----	16

5.2.1.1 Tensile properties of plate over 3.000 in. in thickness shall be as agreed upon by purchaser and vendor.

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5.2.1.2 When a dispute occurs between purchaser and vendor over the yield strength values, yield strength determined by the offset method shall apply.

5.2.2 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
0.010 to 0.128, incl	1
Over 0.028 to 0.249, incl	2
Over 0.249 to 0.499, incl	4

5.3 Properties After Solution and Precipitation Heat Treatment: Material after proper solution and precipitation heat treatment shall be capable of meeting the following requirements:

5.3.1 Tensile Properties:

Nominal Thickness Inches	Tensile Strength psi, min	Yield Strength at 0.2% Offset or at Extension Indicated (E = 9,900,000)		Elongation % in 2 in. or 4D, min
		psi, min	Extension Under Load in. in 2 in.	
0.010 to 0.020, incl	38,000	32,000	0.0105	8
Over 0.020 to 0.499, incl	38,000	32,000	0.0105	10
Over 0.499 to 1.000, incl	42,000	35,000	0.0111	9
Over 1.000 to 2.000, incl	42,000	35,000	0.0111	8
Over 2.000 to 3.000, incl	42,000	35,000	0.0111	6

5.3.1.1 Tensile properties of plate over 3.000 in. in thickness shall be as agreed upon by purchaser and vendor.

5.3.1.2 When a dispute occurs between purchaser and vendor over the yield strength values, yield strength determined by the offset method shall apply.

5.3.2 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
0.010 to 0.036, incl	3
Over 0.036 to 0.064, incl	4
Over 0.064 to 0.128, incl	5
Over 0.128 to 0.249, incl	6
Over 0.249 to 0.499, incl	10

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.