

# AERONAUTICAL MATERIAL SPECIFICATIONS

# AMS 4054

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

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Revised

ALUMINUM ALLOY SHEET, ALUMINUM ALLOY CLAD  
0.6Mg - 0.35Si - 0.3Cu (No. 21 Brazing Sheet)

1. **ACKNOWLEDGMENT:** A vendor shall mention this specification number in all quotations and when acknowledging purchase orders.
2. **APPLICATION:** Primarily for brazed assemblies subject to heat treatment after joining.
3. **COMPOSITION:**

	Core		Cladding
Magnesium	0.40 - 0.8	Silicon	6.8 - 8.2
Silicon	0.20 - 0.50	Iron	0.8 max
Copper	0.15 - 0.40	Copper	0.25 max
Iron	0.8 max	Zinc	0.20 max
Zinc	0.20 max	Manganese	0.10 max
Manganese	0.10 max	Other Impurities,	
Other Impurities, each	0.05 max	each	0.05 max
Other Impurities, total	0.15 max	Other Impurities,	
Aluminum	remainder	total	0.15 max
		Aluminum	remainder

4. **CONDITION:** Annealed, unless otherwise specified.
5. **TECHNICAL REQUIREMENTS:**
  - 5.1 **Cladding:** Material shall be clad on one side only.
  - 5.2 **Cladding Thickness:** After rolling, the average cladding thickness shall be as shown. Routine measurements are not required.

Total Thickness of Composite Product Inch	Cladding Thickness % of Total Thickness, min
Under 0.091	8
0.091 and over	4

- 5.3 **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 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."

Nominal Thickness Inch	Tensile Strength psi, max	Elongation % in 2 in., min
0.010 to 0.020, incl	20,000	14
Over 0.020 to 0.030, incl	20,000	18
Over 0.030 to 0.050, incl	20,000	20
Over 0.050 to 0.250, excl	20,000	23

Note. The term "excl" is used to apply only to the higher figure of the specified range.

5.4 **Bending:** Material shall withstand, 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
0.128 and under	1
Over 0.128 to 0.250, excl	2

5.5 **Properties After Heat Treatment:** Material after proper solution and precipitation heat treatment shall conform to the following requirements.

5.5.1 **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.

Nominal Thickness Inch	Tensile Strength psi, min	Yield Strength at 0.2% Offset or at Extension Indicated (E = 9,900,000)		Elongation % in 2 in. min
		psi, min	Extension Under Load in. in 2 in.	
0.010 to 0.020, incl	35,000	30,000	0.0101	6
Over 0.020 to 0.250, excl	35,000	30,000	0.0101	8

5.5.2 **Bending:** Material shall withstand, 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
0.036 and under	3
Over 0.036 to 0.064, incl	4
Over 0.064 to 0.128, incl	5
Over 0.128 to 0.250, excl	6

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.