



400 Commonwealth Dr., Warrendale, PA 15096

AEROSPACE MATERIAL SPECIFICATION

Submitted for recognition as an American National Standard

AMS 4055C

Issued 9-15-57
Revised 1-1-87

Superseding AMS 4055B

ALUMINUM ALLOY SHEET, CLAD TWO SIDES
0.6Mg - 0.35Si - 0.28Cu (No. 22-0 Brazing Sheet)
Annealed

This specification has been declared "NONCURRENT" by the Aerospace Materials Division, SAE, as of April 11, 1986. It is recommended that this specification not be specified for new designs.

This cover sheet should be attached to the "C" revision of the subject specification.

This specification is under the jurisdiction of AMS Committee "D".

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1. SCOPE:

1.1 Form: This specification covers an aluminum alloy in the form of sheet.

1.2 Application: Primarily for brazed assemblies which are subjected to heat treatment after joining.

2. APPLICABLE DOCUMENTS: The following publications form a part of this specification to the extent specified herein. The latest issue of Aerospace Material Specifications shall apply. The applicable issue of other documents shall be as specified in AMS 2350.

2.1 SAE Publications: Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096.

2.1.1 Aerospace Material Specifications:

AMS 2202 - Tolerances, Aluminum Alloy and Magnesium Alloy Sheet and Plate

MAM 2202 - Tolerances, Metric, Aluminum Alloy and Magnesium Alloy Sheet and Plate

AMS 2770 - Heat Treatment of Wrought Aluminum Alloy Parts

AMS 2350 - Standards and Test Methods

AMS 2355 - Quality Assurance Sampling and Testing of Aluminum Alloys and Magnesium Alloys, Wrought Products (Except Forging Stock) and Flash Welded Rings

MAM 2355 - Quality Assurance Sampling and Testing of Aluminum Alloys and Magnesium Alloys, Wrought Products (Except Forging Stock) and Flash Welded Rings, Metric (SI) Units

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2.2 U.S. Government Publications: Available from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

2.2.1 Military Specifications:

MIL-H-6088 - Heat Treatment of Aluminum Alloys

2.2.2 Military Standards:

MIL-STD-649 - Aluminum and Magnesium Products, Preparation for Shipment and Storage

3. TECHNICAL REQUIREMENTS:

3.1 Composition: Shall conform to the following percentages by weight, determined in accordance with AMS 2355 or MAM 2355:

	Core (6951)		Cladding (4343)	
	min	max	min	max
Magnesium	0.40	0.8	Silicon	6.8 - 8.2
Silicon	0.20	0.50	Iron	-- 0.8
Copper	0.15	0.40	Copper	-- 0.25
Iron	--	0.8	Zinc	-- 0.20
Zinc	--	0.20	Manganese	-- 0.10
Manganese	--	0.10	Other Impurities, each	-- 0.05
Other Impurities, each	--	0.05	Other Impurities, total	-- 0.15
Other Impurities, total	--	0.15	Aluminum	remainder
Aluminum	remainder			

3.2 Condition: Annealed.

3.3 Heat Treatment: Sheet shall be annealed by heating to 760°F + 25 (405°C + 15), holding at heat for 2 - 3 hr, furnace cooling at 50 F (28 C) deg per hr to 500°F (260°C) or below, and air cooling. Furnace surveys and calibration of temperature controllers and recorders shall be in accordance with MIL-H-6088.

3.4 Cladding: Shall be applied to both faces of the core.

3.4.1 Cladding Thickness: After rolling, the average cladding thickness shall be as follows:

<u>Total Thickness of Composite Product</u>		Cladding Thickness per Side % of Total Thickness min avg
Inch	Millimetres	
0.010 to 0.091, excl	0.25 to 2.30, excl	8
0.091 to 0.249, incl	2.30 to 6.25, incl	4

3.5 Properties: Sheet shall conform to the following requirements, determined in accordance with AMS 2355 or MAM 2355:

3.5.1 As Annealed:

3.5.1.1 Tensile Properties: Shall be as shown in Table I.

TABLE I

Nominal Thickness Inch	Tensile Strength psi, min	Elongation in 2 in. %, min
0.010 to 0.020, excl	20,000	14
0.020 to 0.031, incl	20,000	18
Over 0.031 to 0.050, incl	20,000	20
Over 0.050 to 0.249, incl	20,000	23

TABLE I (SI)

Nominal Thickness Millimetres	Tensile Strength MPa, max	Elongation in 50 mm %, min
0.25 to 0.50, excl	140	14
0.50 to 0.75, incl	140	18
Over 0.75 to 1.25, incl	140	20
Over 1.25 to 6.25, incl	140	23

3.5.1.2 Bending: Sheet 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 sheet with axis of bend parallel to the direction of rolling.

Nominal Thickness		Bend Factor
Inch	Millimetres	
0.010 to 0.128, incl	0.25 to 3.25, incl	1
Over 0.128 to 0.249, incl	Over 3.25 to 6.25, incl	2

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3.5.2 After Solution and Precipitation Heat Treatment: Sheet, after solution and precipitation heat treatment in accordance with AMS 2770, shall meet the following requirements:

3.5.2.1 Tensile Properties:

TABLE II

Nominal Thickness Inch	Tensile Strength psi, min	Yield Strength at 0.2% Offset psi, min	Elongation in 2 in. %, min
0.010 to 0.020, incl	35,000	30,000	6
Over 0.020 to 0.249, incl	35,000	30,000	8

TABLE II (SI)

Nominal Thickness Millimetres	Tensile Strength MPa, min	Yield Strength at 0.2% Offset MPa, min	Elongation in 50 mm %, min
0.25 to 0.50, incl	240	205	6
Over 0.50 to 6.25, incl	240	205	8

3.5.2.2 Bending: Sheet 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 sheet with axis of bend parallel to the direction of rolling.

Nominal Thickness		Bend Factor
Inch	Millimetres	
0.010 to 0.036, incl	0.25 to 0.90, incl	3
Over 0.036 to 0.064, incl	Over 0.90 to 1.60, incl	4
Over 0.064 to 0.128, incl	Over 1.60 to 3.20, incl	5
Over 0.128 to 0.249, incl	Over 3.20 to 6.25, incl	6

3.6 Quality: Sheet, as received by purchaser, shall be uniform in quality and condition, sound, and free from foreign materials and from imperfections detrimental to usage of the sheet.

3.7 Tolerances: Shall conform to all applicable requirements of AMS 2202 or MAM 2202.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor of sheet shall supply all samples for vendor's tests and shall be responsible for performing all required tests. Results of such tests shall be reported to the purchaser as required by 4.4. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the sheet conforms to the requirements of this specification.

4.2 Classification of Tests:

4.2.1 Acceptance Tests: Tests to determine conformance to requirements for composition (3.1), tensile properties as annealed (3.5.1.1), and tolerances (3.7) are classified as acceptance tests and shall be performed on each lot.

4.2.2 Periodic Tests: Tests to determine conformance to requirements for cladding thickness (3.4.1), tensile properties after solution and precipitation heat treatment (3.5.2.1), and bending (3.5.1.2 and 3.5.2.2) are classified as periodic tests and shall be performed at a frequency selected by the vendor unless frequency of testing is specified by purchaser.

4.3 Sampling: Shall be as follows:

4.3.1 For Acceptance Tests: In accordance with AMS 2355 or MAM 2355 and as follows:

4.3.1.1 Composition: At least one sample shall be taken by the producer from each group of ingots poured simultaneously from the same source of molten metal. Complete ingot analysis records shall be available at the producer's facility.

4.3.1.1.1 Unless compliance with 4.3.1.1 is established, an analysis shall be made for each 6000 lb (2700 kg) or less of metal comprising the lot.

4.3.2 For Periodic Tests: As agreed upon by purchaser and vendor.

4.4 Reports:

4.4.1 The vendor of sheet shall furnish with each shipment a report stating that the sheet conforms to the chemical composition and other technical requirements of this specification. This report shall include the purchase order number, AMS 4055C, size, and quantity.