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400 COMMONWEALTH DRIVE, WARRENDALE, PA 15096

AEROSPACE MATERIAL SPECIFICATION

Submitted for recognition as an American National Standard

AMS 4243

Issued 10-1-88

ALUMINUM ALLOY SHEET, ALCLAD
6.2Zn - 2.3Cu - 2.2Mg - 0.12Zr (Alclad 7050-T76)
Solution Heat Treated and Overaged

1. SCOPE:

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

1.2 Application: Primarily for applications requiring a high level of mechanical properties and good resistance to exfoliation corrosion.

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 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

2.2 ASTM Publications: Available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

ASTM B660 - Packaging/Packing of Aluminum and Magnesium Products
ASTM G34 - Exfoliation Corrosion Susceptibility in 2XXX and 7XXX Series Aluminum Alloys (EXCO Test)

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

2.3.1 Military Specifications:

MIL-H-6088 - Heat Treatment of Aluminum Alloys

3. TECHNICAL REQUIREMENTS:

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

Core (7050)	min	max	Cladding (7072)	min	max
Zinc	5.7	6.7	Zinc	0.8	1.3
Copper	2.0	2.6	Silicon + Iron	--	0.7
Magnesium	1.9	2.6	Copper	--	0.10
Zirconium	0.08	0.15	Magnesium	--	0.10
Iron	--	0.15	Manganese	--	0.10
Silicon	--	0.12	Residual Elements,		
Manganese	--	0.10	Each	--	0.15
Titanium	--	0.06	Total	--	0.15
Chromium	--	0.04	Aluminum	remainder	
Residual Elements,					
Each	--	0.05			
Total	--	0.15			
Aluminum	remainder				

3.2 Condition: Solution heat treated and overaged (See 8.1). Heat treatment shall be performed using furnaces surveys and temperature controllers and recorders calibrated in accordance with MIL-H-6088.

3.3 Properties: Shall conform to the following requirements, determined in accordance with AMS 2355 or MAM 2355:

3.3.1 Tensile Properties: Shall be as specified in Table I.

TABLE I

Nominal Thickness Inches	Specimen Orientation	Tensile Strength psi, min	Yield Strength at 0.2% Offset psi, minimum	Elongation in 2 Inches or 4D %, minimum
0.040 to 0.062, incl	Longitudinal	69,000	64,000	--
	Long-Trans.	72,000	61,000	7
Over 0.062 to 0.126, incl	Longitudinal	71,000	66,000	--
	Long-Trans.	73,000	66,000	7
Over 0.126 to 0.187, incl	Longitudinal	75,000	69,000	--
	Long-Trans.	75,000	68,000	7

TABLE I (SI)

Nominal Thickness Millimetres	Specimen Orientation	Tensile Strength MPa, min	Yield Strength at 0.2% Offset MPa, minimum	Elongation in 50.8 mm or 4D %, minimum
1.02 to 1.57, incl	Longitudinal	476	441	--
	Long-Trans.	496	421	7
Over 1.57 to 3.20, incl	Longitudinal	490	455	--
	Long-Trans.	503	455	7
Over 3.20 to 4.75, incl	Longitudinal	517	476	--
	Long-Trans.	517	469	7

3.3.2 Exfoliation Corrosion Resistance: Sheet shall show exfoliation corrosion not greater than EB at any plane after removal of the cladding when tested in accordance with ASTM G34.

3.3.3 Cladding Thickness: After rolling, the average cladding thickness per side shall be as follows:

Total Thickness of Composite Product		Cladding Thickness Per Side % Total Thickness	
Inches	Millimetres	Minimum	Nominal
0.040 - 0.063, excl	1.02 - 1.60, excl	3.2	4
0.063 - 0.188, excl	1.60 - 4.78, excl	2	2.5

3.4 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.

3.5 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), long-transverse tensile properties (3.3.1), tolerances (3.5), and, when specified, longitudinal tensile properties (3.3.1) are classified as acceptance tests and shall be performed on each lot.

4.2.2 Periodic Tests: Tests to determine conformance to requirements for exfoliation corrosion resistance (3.3.2) and cladding thickness (3.3.3) 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 in accordance with AMS 2355 or MAM 2355.

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, showing the results of tests on each inspection lot to determine conformance to the other acceptance test requirements, and stating that the sheet conforms to the other technical requirements of this specification. This report shall include the purchase order number, inspection lot number, AMS 4243, size, and quantity.

4.4.2 The vendor of finished or semi-finished parts shall furnish with each shipment a report showing the purchase order number, AMS 4243, 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 either a statement that the sheet conforms or copies of laboratory reports showing the results of tests to determine conformance.

4.5 Resampling and Retesting: Shall be in accordance with AMS 2355 or MAM 2355.