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INTERNATIONAL
400 Commonwealth Drive, Warrendale, PA 15096-0001

AEROSPACE MATERIAL SPECIFICATION

SAE AMS 4016J

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Superseding AMS 4016H

Submitted for recognition as an American National Standard

ALUMINUM ALLOY, SHEET AND PLATE
2.5Mg - 0.25Cr (5052-H32)
Strain Hardened, Quarter-Hard, and Stabilized

UNS A95052

1. SCOPE:

1.1 Form:

This specification covers an aluminum alloy in the form of sheet and plate.

1.2 Application:

These products have been used typically for parts requiring moderate strength, good formability, good welding and resistance spot welding characteristics, and good resistance to corrosion, but usage is not limited to such applications.

2. APPLICABLE DOCUMENTS:

The following publications form a part of this specification to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order.

2.1 SAE Publications:

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

AMS 2202	Tolerances, Aluminum Alloy and Magnesium Alloy Sheet and Plate
MAM 2202	Tolerances, Metric, Aluminum Alloy and Magnesium Alloy Sheet and Plate
AMS 2355	Quality Assurance Sampling and Testing, Aluminum Alloys and Magnesium Alloys, Wrought Products, Except Forging Stock, and Rolled, Forged, or Flash Welded Rings
MAM 2355	Quality Assurance Sampling and Testing, Aluminum Alloys and Magnesium Alloys, Wrought Products, Except Forging Stock, and Rolled, Forged, or Flash Welded Rings, Metric (SI) Units
ASTM 2811	Identification, Aluminum and Magnesium Alloy Wrought Products

2.2 ASTM Publications:

Available from ASTM, 1916 Race Street, Philadelphia, PA 19103-1187.

ASTM B 660 Packaging/Packing of Aluminum and Magnesium Products

3. TECHNICAL REQUIREMENTS:

3.1 Composition:

Shall conform to the percentages by weight shown in Table 1, determined in accordance with AMS 2355 or MAM 2355.

TABLE 1 - Composition

Element	min	max
Magnesium	2.2	2.8
Chromium	0.15	0.35
Iron	--	0.40
Silicon	--	0.25
Zinc	--	0.10
Manganese	--	0.10
Copper	--	0.10
Other Impurities, each	--	0.05
Other Impurities, total	--	0.15
Aluminum	remainder	

3.2 Condition:

Strain hardened, quarter-hard, and stabilized (See 8.2).

3.3 Properties:

The product 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 2.

TABLE 2A - Tensile Properties, Inch/Pound Units

Nominal Thickness Inches	Tensile Strength ksi	Yield Strength at 0.2% Offset ksi, min	Elongation in 2 Inches or 4D %, min
0.017 to 0.019, incl	31.0 to 38.0	23.0	4
Over 0.019 to 0.050, incl	31.0 to 38.0	23.0	5
Over 0.050 to 0.113, incl	31.0 to 38.0	23.0	7
Over 0.113 to 0.249, incl	31.0 to 38.0	23.0	9
Over 0.249 to 0.499, incl	31.0 to 38.0	23.0	11
Over 0.499 to 2.000, incl	31.0 to 38.0	23.0	12

TABLE 2B - Tensile Properties, SI Units

Nominal Thickness Millimeters	Tensile Strength MPa	Yield Strength at 0.2% Offset MPa, min	Elongation in 50.8 mm or 4D %, min
0.43 to 0.48, incl	214 to 262	159	4
Over 0.48 to 1.27, incl	214 to 262	159	5
Over 1.27 to 2.87, incl	214 to 262	159	7
Over 2.87 to 6.32, incl	214 to 262	159	9
Over 6.32 to 12.67, incl	214 to 262	159	11
Over 12.67 to 50.80, incl	214 to 262	159	12

3.3.2 Bending: Product shall withstand, without cracking, bending at room temperature through an angle of 180 degrees around a diameter equal to the bend factor shown in Table 3 times the nominal thickness of the product with axis of bend parallel to the direction of rolling.

TABLE 3 - Bending Parameters

Nominal Thickness Inch	Nominal Thickness Millimeters	Bend Factor
Up to 0.019, incl	Up to 0.48, incl	0
Over 0.019 to 0.050, incl	Over 0.48 to 1.27, incl	1
Over 0.050 to 0.113, incl	Over 1.27 to 2.87, incl	2
Over 0.113 to 0.249, incl	Over 2.87 to 6.32, incl	3

3.4 Quality:

The product, 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 product.

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 the product shall supply all samples for vendor's tests and shall be responsible for performing all required tests. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the product conforms to the requirements of this specification.

4.2 Classification of Tests:

4.2.1 (R) Acceptance Tests: Tests for composition (3.1), tensile properties (3.3.1), and tolerances (3.5) are acceptance tests and, except for composition, shall be performed on each lot.

4.2.2 Periodic Tests: Tests for bending (3.3.2) are periodic tests and shall be performed at a frequency selected by the vendor unless frequency of testing is specified by purchaser.

4.3 (R) Sampling and Testing:

Shall be in accordance with AMS 2355 or MAM 2355.

4.4 (R) Reports:

The vendor of the product shall furnish with each shipment a report stating that the product conforms to the chemical composition and showing the results of tests on each lot to determine conformance to the tensile properties and, when performed, to the periodic test requirements. This report shall include the purchase order number, lot number, AMS 4016J, size, and quantity.

4.5 Resampling and Retesting:

Shall be in accordance with AMS 2355 or MAM 2355.

5. PREPARATION FOR DELIVERY:

5.1 (R) Identification:

Shall be in accordance with AMS 2811.

5.2 Packaging:

5.2.1 Flat sheet, plate, and circles 12 inches (305 mm) or over in nominal diameter shall be protected, during shipment and storage, by interleaving with paper sheets. Circles under 12 inches (305 mm) in nominal diameter shall be protected as agreed upon by purchaser and vendor.

5.2.2 (R) The product shall be prepared for shipment in accordance with commercial practice and in compliance with applicable rules and regulations pertaining to the handling, packaging, and transportation of the product to ensure carrier acceptance and safe delivery.

5.2.3 For direct U.S. Military procurement, packaging shall be in accordance with ASTM B 660, Level C, unless Level A is specified in the request for procurement.