

AEROSPACE MATERIAL SPECIFICATION

Submitted for recognition as an American National Standard



AMS 4375J

Issued JUL 1947
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Reaffirmed MAY 1995

Superseding AMS 4375H

Sheet and Plate, Magnesium Alloy
3.0Al - 1.0Zn - 0.20Mn (AZ31B-0)
Annealed and Recrystallized

UNS M11311

1. SCOPE:

1.1 Form:

This specification covers a magnesium alloy in the form of sheet and plate.

1.2 Application:

This product has been used typically for low-strength parts requiring rigidity with low density, 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 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
AMS 2811	Identification, Aluminum and Magnesium Alloy Wrought Products

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2.2 ASTM Publications:

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

ASTM B 660 Packaging/Packing of Aluminum and Magnesium Products
 ASTM E 9 Compression Testing of Metallic Materials at Room Temperature

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
Aluminum	2.5	3.5
Zinc	0.7	1.3
Manganese	0.20	--
Silicon	-	0.05
Copper	--	0.05
Calcium	-	0.04
Iron	--	0.005
Nickel	--	0.005
Other Impurities, each (3.1.1)	--	0.10
Other Impurities, total (3.1.1)	--	0.30
Magnesium	remainder	

3.1.1 Determination not required for routine acceptance.

3.2 Condition:

The product shall be supplied in the following condition:

3.2.1 Product 0.500 Inch (12.70 mm) and Under in Nominal Thickness: Annealed, recrystallized, and pickled.

3.2.2 Product Over 0.500 Inch (12.70 mm) in Nominal Thickness: Annealed and recrystallized.

3.3 Properties:

The product shall conform to the following requirements:

- 3.3.1 Tensile Properties: Shall be as specified in Table 2 and 3.3.1.1, determined in accordance with AMS 2355 or MAM 2355.

TABLE 2A - Tensile Properties

Nominal Thickness Inches	Tensile Strength ksi	Yield Strength at 0.2% Offset ksi, min	Elongation in 2 inches or 4D %, min
0.016 to 0.060, incl	32.0 - 40.0	18.0	12
Over 0.060 to 0.500, incl	32.0 - 40.0	15.0	12
Over 0.500 to 2.000, incl	32.0 - 40.0	15.0	10
Over 2.000 to 3.000, incl	32.0 - 40.0	15.0	9

TABLE 2B - Tensile Properties (SI)

Nominal Thickness Millimeters	Tensile Strength MPa	Yield Strength at 0.2% Offset MPa, min	Elongation in 50.8 mm or 4D %, min
0.41 to 1.52, incl	221 - 276	124	12
Over 1.52 to 12.70, incl	221 - 276	103	12
Over 12.70 to 50.80, incl	221 - 276	103	10
Over 50.80 to 76.20, incl	221 - 276	103	9

- 3.3.1.1 Tensile property requirements for product under 0.016 inches (0.41 mm) or over 3.000 inches (76.20 mm) in nominal thickness shall be as agreed upon by purchaser and vendor.
- 3.3.2 Compressive Properties: Shall be as specified in Table 3 and 3.3.2.1, determined in the longitudinal direction in accordance with ASTM E 9.

TABLE 3A - Compressive Properties

Nominal Thickness Inches	Compressive Yield Strength at 0.2% Offset ksi, min
0.063 to 0.250, incl	12.0
Over 0.250 to 2.000, incl	10.0
Over 2.000 to 3.000, incl	8.0

TABLE 3B - Compressive Properties (SI)

Nominal Thickness Millimeters	Compressive Yield Strength at 0.2% Offset MPa, min
1.60 to 6.35, incl	83
Over 6.35 to 50.80, incl	69
Over 50.80 to 76.20, incl	55

3.3.2.1 Compressive property requirements for product under 0.063 inch (1.60 mm) or over 3.000 inches (76.20 mm) in nominal thickness shall be as agreed upon by purchaser and vendor.

3.4 Quality:

The product, as received by purchaser, shall be uniform in quality and condition, sound, and free from foreign materials and 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.