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INTERNATIONAL
400 Commonwealth Drive, Warrendale, PA 15096-0001

AEROSPACE MATERIAL SPECIFICATION

SAE AMS 4377G

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Reaffirmed MAY 1995

Submitted for recognition as an American National Standard

Superseding AMS 4377F

Sheet and Plate, Magnesium Alloy 3.0Al - 1.0Zn - 020Mn (AZ31B-H24) Cold Rolled, Partially Annealed

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 parts requiring a combination of moderate strength and rigidity with low density, but usage is not limited to such applications.

1.2.1 Special care is necessary to prevent corrosion.

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

QUESTIONS REGARDING THIS DOCUMENT: (724) 772-7154 FAX: (724) 776-0243
TO PLACE A DOCUMENT ORDER: (724) 776-4970 FAX: (724) 776-0790
SAE WEB ADDRESS: http://www.sae.org

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: Cold rolled, partialy annealed, and pickled.

3.2.2 Product Over 0.500 Inch (12.70 mm) in Nominal Thickness: Cold rolled and partially annealed.

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, min	Yield Strength at 0.2% Offset ksi, min	Elongation in 2 inches or 4D %, min
0.016 to 0.249, incl	39.0	29.0	6
Over 0.249 to 0.374, incl	38.0	26.0	8
Over 0.374 to 0.500, incl	37.0	24.0	8
Over 0.500 to 1.000, incl	36.0	22.0	8
Over 1.000 to 2.000, incl	34.0	20.0	8
Over 2.000 to 3.000, incl	34.0	18.0	8

TABLE 2B - Tensile Properties (SI)

Nominal Thickness Millimeters	Tensile Strength MPa, min	Yield Strength at 0.2% Offset MPa, min	Elongation in 50.8 mm or 4D %, min
0.41 to 6.32, incl	269	200	6
Over 6.32 to 9.50, incl	262	179	8
Over 9.50 to 12.70, incl	255	165	8
Over 12.70 to 25.40, incl	248	152	8
Over 25.40 to 50.80, incl	234	138	8
Over 50.80 to 76.20, incl	234	124	8

3.3.1.1 Tensile property requirements for product under 0.016 inch (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: Product 0.063 inch (1.60 mm) and over in nominal thickness shall meet the requirements of 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 0.249, incl	24.0
Over 0.249 to 0.374, incl	20.0
Over 0.374 to 0.500, incl	16.0
Over 0.500 to 1.000, incl	13.0
Over 1.000 to 2.000, incl	10.0
Over 2.000 to 3.000, incl	9.0

TABLE 3B - Compressive Properties (SI)

Nominal Thickness Millimeters	Compressive Yield Strength at 0.2% Offset MPa, min
1.60 to 6.32, incl	165
Over 6.32 to 9.50, incl	138
Over 9.50 to 12.70, incl	110
Over 12.70 to 25.40, incl	90
Over 25.40 to 50.80, incl	69
Over 50.80 to 76.20, incl	62

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 from imperfections detrimental to usage of the product.

3.5 Tolerances:

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