

AEROSPACE  
MATERIAL  
SPECIFICATION

**AMS 4375H**  
Superseding AMS 4375G

Issued 7-1-47  
Revised 4-1-84

MAGNESIUM ALLOY SHEET AND PLATE  
3.0Al - 1.0Zn (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: Primarily for low-strength parts requiring rigidity with low density.

2. APPLICABLE DOCUMENTS: The following publications form a part of this specification to the extent specified herein. The latest issue of Aerospace Material Specifications (AMS) 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

AMS 2350 - Standards and Test Methods

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

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

ASTM E9 - Compression Testing of Metallic Materials at Room Temperature

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

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# AMS 4375H

## 2.3.1 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:

	min	max
Aluminum	2.5	3.5
Zinc	0.7	1.3
Manganese	0.20	--
Silicon	--	0.05
Ø Copper	--	0.05
Calcium	--	0.04
Iron	--	0.005
Nickel	--	0.005
Residual Elements, each	--	0.10
Residual Elements, total	--	0.30
Magnesium		remainder

3.2 Condition: The product shall be supplied in the following condition:

3.2.1 Product 0.500 In. (12.50 mm) and Under in Nominal Thickness: Annealed, recrystallized, and pickled.

3.2.2 Product Over 0.500 In. (12.50 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 I and 3.3.1.1, determined in accordance with AMS 2355.

TABLE I

Nominal Thickness Inches	Tensile Strength psi	Yield Strength at 0.2% Offset psi, min	Elongation in 2 in. or 4D %, min
0.016 to 0.060, incl	32,000 - 40,000	18,000	12
Over 0.060 to 0.500, incl	32,000 - 40,000	15,000	12
Over 0.500 to 2.000, incl	32,000 - 40,000	15,000	10
Over 2.000 to 3.000, incl	32,000 - 40,000	15,000	9

TABLE I (SI)

Nominal Thickness Millimetres	Tensile Strength MPa	Yield Strength at 0.2% Offset MPa, min	Elongation in 50 mm or 4D %, min
0.40 to 1.50, incl	220 - 275	125	12
Over 1.50 to 12.50, incl	220 - 275	105	12
Over 12.50 to 50.00, incl	220 - 275	105	10
Over 50.00 to 75.00, incl	220 - 275	105	9

3.3.1.1 Tensile property requirements for product under 0.016 in. (0.40 mm) or over 3.000 in. (75.00 mm) in nominal thickness shall be as agreed upon by purchaser and vendor.

3.3.2 Compressive Properties: Shall be as specified in Table II and 3.3.2.1, determined in the longitudinal direction in accordance with ASTM E9.

TABLE II

Nominal Thickness Inches	Compressive Yield Strength at 0.2% Offset psi, min
0.063 to 0.250, incl	12,000
Over 0.250 to 2.000, incl	10,000
Over 2.000 to 3.000, incl	8,000

TABLE II (SI)

Nominal Thickness Millimetres	Compressive Yield Strength at 0.2% Offset MPa, min
1.60 to 6.25, incl	85
Over 6.25 to 50.00, incl	70
Over 50.00 to 75.00, incl	55

3.3.2.1 Compressive property requirements for product under 0.063 in. (1.60 mm) or over 3.000 in. (75.00 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 internal and external imperfections detrimental to usage of the product.

3.5 Tolerances: Unless otherwise specified, tolerances shall conform to all applicable requirements of AMS 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. 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 product 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 (3.3.1), and tolerances (3.5) are classified as acceptance tests and shall be performed on each lot.

4.2.2 Periodic Tests: Tests to determine conformance to requirements for compressive properties (3.3.2) 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 in accordance with AMS 2355.

## 4.4 Reports:

4.4.1 The vendor of the product shall furnish with each shipment a report stating that the product conforms to the chemical composition and other acceptance test requirements of this specification. This report shall include the purchase order number, lot number, AMS 4375H, 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 4375H, contractor or other direct supplier of material, part number, and quantity. When material for making parts is produced or purchased by the parts vendor, that vendor shall inspect each lot of material to determine conformance to the requirements of this specification and shall include in the report either a statement that the material 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.

## 5. PREPARATION FOR DELIVERY:

5.1 Identification: Each sheet and plate shall be marked on one face, in the respective location indicated below, with the alloy number and temper, AMS 4375 or applicable Federal specification designation, inspection lot number, manufacturer's identification, and nominal thickness. The characters shall be of such size as to be legible, shall be applied using a suitable marking fluid, and shall be sufficiently stable to withstand normal handling. The markings shall have no deleterious effect on the product or its performance.