SAE Aerospace
An SAE International Group

AEROSPACE MATERIAL SPECIFICATION

SAE AMS4376 REV. H

Issued 1950-06
Revised 2011-09

Superseding AMS4376G

Plate, Magnesium Alloy
3.0Al - 1.0Zn - 0.20Mn (AZ31B-H26)
Cold Rolled and Partially Annealed

(Composition similar to UNS M11311)

RATIONALE

AMS4376H revises Composition (3.1, Table 1) and results from a Five Year Review and update of this specification.

1. SCOPE

1.1 Form

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

1.2 Application

This product has been used typically for moderate-strength parts requiring rigidity with low density, but usage is not restricted to such applications.

2. APPLICABLE DOCUMENTS

2.1 The issue of the following documents in effect on the date of the purchase order forms a part of this specification to the extent specified herein. The supplier may work to a subsequent revision of a document unless a specific document issue is specified. When the referenced document has been cancelled and no superseding document has been specified, the last published issue of that document shall apply.

2.2 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

AMS2355 Quality Assurance, Sampling and Testing, Aluminum Alloys and Magnesium Alloy, Wrought Products (Except Forging Stock), and Rolled, Forged, or Flash Welded Rings

TO PLACE A DOCUMENT ORDER: **Tel: 877-606-7323 (inside USA and Canada)**
Tel: +1 724-776-4970 (outside USA)
Fax: 724-776-0790
Email: CustomerService@sae.org
SAE WEB ADDRESS: **http://www.sae.org**

2.3 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM B 660 Packaging/Packing of Aluminum and Magnesium Products

ASTM B 666/B 666M Identification Marking of Aluminum and Magnesium Products

ASTM E 9 Compression Testing of Metallic Materials at Room Temperature

2.4 ANSI Publications

Available from American National Standards Institute, 25 West 43rd Street, New York, NY 10036-8002, Tel: 212-642-4900, www.ansi.org.

ANSI H 35.2 Dimensional Tolerances for Aluminum Mill Products

ANSI H 35.2M Dimensional Tolerances for Aluminum Mill Products (Metric)

3. TECHNICAL REQUIREMENTS

3.1 Composition

Shall conform to the percentages by weight shown in Table 1, determined in accordance with AMS2355.

TABLE 1 - COMPOSITION

Element	min	max
Aluminum	2.5	3.5
Zinc	0.7	1.3
Manganese	0.20	1.0
Silicon	--	0.05
Copper	--	0.05
Calcium	--	0.04
Iron	--	0.005
Nickel	--	0.005
Other Elements, each (3.1.1)	--	0.10
Other Elements, 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 Plate 0.500 Inch (12.70 mm) and Under in Nominal Thickness

Cold rolled, partially annealed, and pickled.

3.2.2 Plate Over 0.500 Inch (12.70 mm) in Nominal Thickness

Cold rolled and partially annealed.

3.3 Properties

The plate shall conform to the following requirements:

3.3.1 Tensile Properties

Shall be as specified in Table 2, determined in accordance with AMS2355 on the mill produced size.

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
0.250 to 0.375, incl	39.0	27.0	6
Over 0.375 to 0.500, incl	38.0	26.0	6
Over 0.500 to 0.750, incl	37.0	25.0	6
Over 0.750 to 1.000, incl	37.0	23.0	6
Over 1.000 to 1.500, incl	35.0	22.0	6
Over 1.500 to 2.000, incl	35.0	21.0	6

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
6.35 to 9.52, incl	269	186	6
Over 9.52 to 12.70, incl	262	179	6
Over 12.70 to 19.05, incl	255	172	6
Over 19.05 to 25.40, incl	255	159	6
Over 25.40 to 38.10, incl	241	152	6
Over 38.10 to 50.80, incl	241	145	6

3.3.2 Compressive Properties

Shall be as specified in Table 3, determined in the longitudinal direction in accordance with ASTM E 9.

TABLE 3A - COMPRESSIVE YIELD STRENGTH

Nominal Thickness Inches	Compressive Yield Strength at 0.2% Offset ksi, min
0.250 to 0.375, incl	22.0
Over 0.375 to 0.438, incl	21.0
Over 0.438 to 0.500, incl	18.0
Over 0.500 to 0.750, incl	17.0
Over 0.750 to 1.000, incl	16.0
Over 1.000 to 1.500, incl	15.0
Over 1.500 to 2.000, incl	14.0

TABLE 3B - COMPRESSIVE YIELD STRENGTH (SI)

Nominal Thickness Millimeters	Compressive Yield Strength at 0.2% Offset MPa, min
6.35 to 9.52, incl	152
Over 9.52 to 11.12, incl	145
Over 11.12 to 12.70, incl	124
Over 12.70 to 19.05, incl	117
Over 19.05 to 25.40, incl	110
Over 25.40 to 38.10, incl	103
Over 38.10 to 50.80, incl	97

3.4 Quality

Plate, 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 plate.

3.5 Tolerances

Shall conform to all applicable requirements of ANSI H35.2/H35.2M.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for Inspection

The vendor of plate shall supply all samples for vendor's tests and shall be responsible for the performance of all required tests. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the plate conforms to specified requirements.

4.2 Classification of Tests

4.2.1 Acceptance Tests

Composition (3.1), tensile properties (3.3.1), and tolerances (3.5) are acceptance tests and shall be performed on each lot:

4.2.2 Periodic Tests

Compressive properties (3.3.2) is a periodic test and shall be performed at a frequency selected by the vendor unless frequency of testing is specified by purchaser.

4.3 Sampling and Testing

Shall be in accordance with AMS2355.

4.4 Reports

The vendor of the product shall furnish with each shipment a report stating that the product conforms to the chemical composition and tolerances showing the numerical results of tests on each inspection lot to determine conformance to the other acceptance test requirements and stating that the product conforms to the other specified requirements. This report shall include the purchase order number, inspection lot number(s), AMS4376H, size and quantity. The report shall also identify the producer, the mill product form, and the mill produced size.