



AEROSPACE MATERIAL SPECIFICATION

AMS4375™**REV. N**

Issued 1947-07
Reaffirmed 1995-05
Revised 2024-05

Superseding AMS4375M

Sheet and Plate, Magnesium Alloy
3.0Al - 1.0Zn - 0.20Mn (AZ31B-O)
Annealed and Recrystallized
(Composition similar to UNS M11311)

RATIONALE

AMS4375M results from a Five-Year Review and update of this specification with changes to update general agreement wording to prohibit unauthorized exceptions (see 3.3.3, 3.6, and 8.4), relocate Definitions (see 2.4), update Applicable Documents (see Section 2), and allow the use of the immediate prior specification revision (see 8.3).

1. SCOPE

1.1 Form

This specification covers a magnesium alloy in the form of sheet and plate from 0.016 to 3.000 inches (0.41 to 76.20 mm), inclusive, in thickness (see 8.5).

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 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.

2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (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

AS7766 Terms Used in Aerospace Metals Specifications

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For more information on this standard, visit
<https://www.sae.org/standards/content/AMS4375N/>

2.2 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 B660	Packaging/Packing of Aluminum and Magnesium Products
ASTM B666/B666M	Identification Marking of Aluminum and Magnesium Products
ASTM E9	Compression Testing of Metallic Materials at Room Temperature

2.3 ANSI Accredited Publications

Copies of these documents are available online at <https://webstore.ansi.org/>.

ANSI H35.2	Dimensional Tolerances for Aluminum Mill Products
ANSI H35.2M	Dimensional Tolerances for Aluminum Mill Products (Metric)

2.4 Definitions

Terms used in AMS are defined in AS7766.

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 (see 3.1.1)	--	0.10
Other Elements, total (see 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 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 AMS2355 on the mill-produced size.

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
0.016 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 units

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

3.3.2 Compressive Properties

Shall be as specified in Table 3 and 3.3.2.1, determined in the longitudinal direction in accordance with ASTM E9.

Table 3A - Compressive properties, inch/pound units

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 units

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

3.3.3 Mechanical property requirements for product outside the range covered by 1.1 shall be agreed upon between the purchaser and producer and reported per 4.4.1 (see 8.5).

3.4 Quality

The product, as received by the 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 ANSI H35.2/H35.2M.

3.6 Exceptions

Any exceptions shall be authorized by the purchaser and reported as in 4.4.1.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for Inspection

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

4.2 Classification of Tests

4.2.1 Acceptance Tests

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

4.2.2 Periodic Tests

Compressive properties (see 3.3.2) are periodic tests and shall be performed at a frequency selected by the producer, unless frequency of testing is specified by the purchaser.

4.3 Sampling and Testing

Shall be in accordance with AMS2355.

4.4 Reports

The producer 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, AMS4375N, size, and quantity. The report shall also identify the producer, the mill product form, and the mill-produced size.

4.4.1 When material produced to this specification is beyond the sizes allowed in the scope or tables, or other exceptions are taken to the technical requirements listed in Section 3 (see 5.1.1), the report shall contain a statement "This material is certified as AMS4375N(EXC) because of the following exceptions:" and the specific exceptions shall be listed.

4.5 Resampling and Retesting

Shall be in accordance with AMS2355.

5. PREPARATION FOR DELIVERY

5.1 Identification

Shall be in accordance with ASTM B666 or ASTM B666M.

5.1.1 When technical exceptions are taken (see 4.4.1), the material shall be marked with AMS4375N(EXC).

5.2 Protective Treatment

The product shall be protected from damage during storage and shipment by a method determined by the producer unless specified by the purchaser. Examples of typical methods include, but are not limited to, interleaving with paper or oiling of the surface.