AEROSPACE MATERIAL SPECIFICATION

AMS4017™	REV. M

Issued 1942-01
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Revised 2024-01

Superseding AMS4017L

Aluminum Alloy, Sheet and Plate
2.5Mg - 0.25Cr (5052-H34)
Strain-Hardened, Half-Hard, and Stabilized
(Composition similar to UNS A95052)

RATIONALE

AMS4017M results from a Five-Year Review and update of this specification with changes to update wording to prohibit unauthorized exceptions (see 3.3.1.1, 3.6, and 8.4), relocate Definitions (see 2.4), and update Applicable Documents (see Section 2).

1. SCOPE

1.1 Form

This specification covers an aluminum alloy in the form of sheet and plate 0.009 to 1.000 inch (0.23 to 25.40 mm), inclusive, in nominal thickness (see 8.5).

1.2 Application

These products have been used typically for parts requiring moderate forming and where good welding characteristics and resistance to corrosion are important, 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

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**

For more information on this standard, visit
https://www.sae.org/standards/content/AMS4017M

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

2.3 ANSI Accredited Publications

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

ANSI H35.1/H35.1M Standard Alloy and Temper Designation System For Aluminum

ANSI H35.2 Dimensional Tolerance 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
Silicon	--	0.25
Iron	--	0.40
Copper	--	0.10
Manganese	--	0.10
Magnesium	2.2	2.8
Chromium	0.15	0.35
Zinc	--	0.10
Other Elements, each	--	0.05
Other Elements, total	--	0.15
Aluminum	remainder	

3.2 Condition

Strain hardened, half-hard, and stabilized to the H34 temper (refer to ANSI H35.1/H35/1M).

3.3 Properties

The product shall conform to the following requirements, determined in accordance with AMS2355 on the mill produced size.

3.3.1 Tensile Properties

Shall be as specified in Table 2.

3.3.1.1 Tensile property requirements for sheet and plate outside the thickness range of 1.1 shall be as agreed upon by the purchaser and producer and reported per 4.4.1 (see 8.5).

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
0.009 to 0.019, incl	34.0-41.0	26.0	3
Over 0.019 to 0.050, incl	34.0-41.0	26.0	4
Over 0.050 to 0.113, incl	34.0-41.0	26.0	6
Over 0.113 to 0.249, incl	34.0-41.0	26.0	7
Over 0.249 to 1.000, incl	34.0-41.0	26.0	10

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
0.23 to 0.48, incl	234-283	179	3
Over 0.48 to 1.27, incl	234-283	179	4
Over 1.27 to 2.87, incl	234-283	179	6
Over 2.87 to 6.32, incl	234-283	179	7
Over 6.32 to 25.40, incl	234-283	179	10

3.3.2 Bending

Product 0.249 inch (6.32 mm) and under in nominal thickness shall withstand, without cracking, bending at room temperature through an angle of 180 degrees around a diameter equal to the bend factor shown in Table 3 times the nominal thickness of the product with axis of bend parallel to the direction of rolling.

Table 3 - Bending requirements

Nominal Thickness Inches	Nominal Thickness Millimeters	Bend Factor
Up to 0.019, incl	Up to 0.48, incl	1
Over 0.019 to 0.050, incl	Over 0.48 to 1.27, incl	2
Over 0.050 to 0.113, incl	Over 1.27 to 2.87, incl	3
Over 0.113 to 0.249, incl	Over 2.87 to 6.32, incl	4

3.4 Quality

The product, as received by the 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

Shall conform to all applicable requirements of ANSI H35.2 or ANSI 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 the 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, except for composition, shall be performed on each lot.

4.2.2 Periodic Tests

Bending (see 3.3.2) is a periodic test 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 composition and tolerances and showing the numerical results of tests on each inspection lot to determine conformance to the other acceptance test requirements. This report shall include the purchase order number, inspection lot number, AMS4017M, size, and quantity. The report shall also identify the producer, the product form, and the size of the mill product.

4.4.1 When material produced to this specification is beyond the sizes allowed in the scope of 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 AMS4017M(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/B666M.

5.1.1 When technical exceptions are taken (see 4.4.1), the material shall be marked with AMS4017(EXC).

5.2 Protective Treatment

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, interleafing with paper or oiling of the surface.

5.3 Packaging

The product shall be prepared for shipment in accordance with ASTM B660 and in compliance with applicable rules and regulations pertaining to the handling, packaging, and transportation of the product to ensure carrier acceptance and safe delivery.

6. ACKNOWLEDGMENT

A producer shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.