



AEROSPACE MATERIAL SPECIFICATION

AMS4339™**REV. C**Issued 1994-03
Revised 2024-05

Superseding AMS4339B

Aluminum Alloy, Rolled or Cold Finished Bars and Rods
4.4Cu - 1.5Mg - 0.60Mn (2024-T851)
Solution Heat Treated, Cold Worked, and Artificially Aged
(Composition similar to UNS A92024)

RATIONALE

AMS4339C results from a Five-Year Review and update of this specification with changes to update shapes included in 3.3.1.1, update wording to prohibit unauthorized exceptions (see 3.3.1.2, 3.6, and 8.4), relocate Definitions (see 2.4), and update Applicable Documents (see Section 2) and Ordering Information (see 8.5).

1. SCOPE

1.1 Form

This specification covers an aluminum alloy in the form of rolled or cold finished bars and rods of the sizes specified in 3.3.1.1 (see 8.5).

1.2 Application

These products have been used typically for parts requiring higher yield strength than is afforded by naturally aged tempers of this alloy and whose fabrication does not involve welding, 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

AMS2772 Heat Treatment of Aluminum Alloy Raw Materials

AS7766 Terms Used in Aerospace Metals Specifications

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For more information on this standard, visit
<https://www.sae.org/standards/content/AMS4339C>

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 B594 Ultrasonic Inspection of Aluminum-Alloy Wrought Products
- 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 H35.2 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
Silicon	--	0.50
Iron	--	0.50
Copper	3.8	4.9
Manganese	0.30	0.9
Magnesium	1.2	1.8
Chromium	--	0.10
Zinc	--	0.25
Titanium	--	0.15
Other Impurities, each	--	0.05
Other Impurities, total	--	0.15
Aluminum	remainder	

3.2 Condition

The product shall be solution heat treated, cold worked, and artificially aged and shall be stress relieved by stretching or other means after heat treatment to produce a nominal permanent set of 1.5% but not less than 1% nor more than 3%. The heat treatment and aging shall be performed in accordance with AMS2772.

- 3.2.1 Bars and rods stress relieved by stretching shall receive no further straightening operations after stretching unless specifically authorized by the purchaser.

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 shown in Table 2 except as specified in 3.3.1.1.

Table 2 - Minimum tensile properties

Tensile Strength	66.0 ksi (455 MPa)
Yield Strength at 0.2% Offset	58.0 ksi (400 MPa)
Elongation in 2 Inches (50.8 mm) or 4D	5%

3.3.1.1 The requirements of 3.3.1 apply only to rod from 0.500 to 6.500 inches (12.70 to 165.10 mm), inclusive, in nominal diameter and to square, rectangular, hexagonal, or octagonal bar up to a maximum thickness of 4.000 inches (101.6 mm), inclusive, with a corresponding maximum width up to 6.000 inches (152.40 mm), inclusive, and a maximum cross-sectional area of 36 square inches (232 cm²).

3.3.1.2 Mechanical property requirements for product outside the size ranges of 3.3.1.1 shall be as agreed upon by the purchaser and producer and reported per 4.4.1 (see 8.5).

3.3.2 Electrical Conductivity

Shall be 35.0 to 42.5% IACS (International Annealed Copper Standard) (20.3 to 24.6 MS/m).

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 imperfections detrimental to usage of the product.

3.4.1 When specified, the product shall be subjected to ultrasonic inspection in accordance with ASTM B594. Standards for acceptance shall be agreed upon by the purchaser and supplier.

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

All technical requirements are acceptance tests and shall be performed on each lot.

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 the product conforms to the composition, showing the numerical results of tests on each inspection lot to determine conformance to the acceptance test requirements, and stating that the product conforms to any other technical requirements. This report shall include the purchase order number, inspection lot number, AMS4339C, size, and quantity. The report shall include the identity of the producer, the mill 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 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 AMS4339C(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 AMS4339(EXC).

5.2 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.

7. REJECTIONS

Product not conforming to this specification, or to modifications authorized by the purchaser, will be subject to rejection.

8. NOTES

8.1 Revision Indicator

A change bar (I) located in the left margin is for the convenience of the user in locating areas where technical revisions, not editorial changes, have been made to the previous issue of this document. An (R) symbol to the left of the document title indicates a complete revision of the document, including technical revisions. Change bars and (R) are not used in original publications, nor in documents that contain editorial changes only.

- 8.2 Dimensions and properties in inch/pound units and the Fahrenheit temperatures are primary; dimensions and properties in SI units and the Celsius temperatures are shown as the approximate equivalents of the primary units and are presented only for information.

- 8.3 Unless otherwise specified, the material producer shall work to the revision of this specification (AMS4339) in effect on the date of order placement. Unless otherwise specified, material manufactured and certified to the immediately previous revision of this specification (AMS4339) may be procured and used until inventory is depleted.