



AEROSPACE MATERIAL SPECIFICATION

AMS4122™**REV. N**Issued 1945-10
Revised 2025-01

Superseding AMS4122M

Aluminum Alloy Bars, Rods, and Wire Rolled or Cold Finished, and Rings,
5.6Zn - 2.5Mg - 1.6Cu - 0.23Cr (7075-T6, 7075-T651),
Solution and Precipitation Heat Treated
(Composition similar to UNS A97075)

RATIONALE

AMS4122N results from a Five-Year Review and update of this specification with changes to add provisions for AS6279 (see 3.7), update wording to prohibit unauthorized exceptions (see 3.3.1 and 8.5), relocate Definitions (see 2.4), and update Applicable Documents (see Section 2), Bar and Rod (see 3.2.1), temper information (see 3.2.1.1), authorizing entity for product supplied in the T6 temper (see 3.2.1.2), Hardness (see 8.2), and Ordering Information (see 8.6).

1. SCOPE

1.1 Form

This specification covers an aluminum alloy in the form of rolled or cold-finished bars, rods, and wire and of flash-welded rings conforming to the dimensions listed in Table 2 (see 8.6).

1.2 Application

These products have been used typically for parts requiring high strength where limited formability is acceptable.

1.2.1 Certain design and processing procedures may cause these products to become susceptible to stress-corrosion cracking; ARP823 recommends practices to minimize such conditions.

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.

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<https://www.sae.org/standards/content/AMS4122N/>

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
AMS4186	Aluminum Alloy Bars, Rods, and Wire, Rolled or Cold Finished, 5.6Zn - 2.5Mg - 1.6Cu - 0.23Cr (7075-F), As Fabricated, or When Specified, Annealed (7075-O)
AMS7488	Rings, Flash Welded, Aluminum and Aluminum Alloys
ARP823	Minimizing Stress-Corrosion Cracking in Wrought High-Strength Aluminum Alloy Products
AS6279	Standard Practice for Production, Distribution, and Procurement of Metal Stock
AS7766	Terms Used in Aerospace Metals Specifications

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 E10	Standard Test Method for Brinell Hardness of Metallic Materials

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 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	--	0.40
Iron	--	0.50
Copper	1.2	2.0
Manganese	--	0.30
Magnesium	2.1	2.9
Chromium	0.18	0.28
Zinc	5.1	6.1
Titanium	--	0.20
Other Elements, each	--	0.05
Other Elements, total	--	0.15
Aluminum	remainder	

3.2 Condition

The product shall be supplied in the following condition:

3.2.1 Bar and Rod

Rolled or cold finished, followed by solution heat treating and subsequent processing as in 3.2.1.1 or 3.2.1.2. Heat treatments shall be performed in accordance with AMS2772.

3.2.1.1 For the T651 temper, product shall be stress relieved by stretching to produce a nominal permanent set of 1-1/2%, but not less than 1% nor more than 3%, and precipitation hardened to the T651 temper (refer to ANSI H35.1/H35.1M). Bars and rods stress relieved by stretching shall receive no further straightening operations after stretching unless specifically authorized by the purchaser.

3.2.1.2 When T6 is specified, precipitation hardened to the T6 temper (refer to ANSI H35.1/H35.1M) (see 8.6).

3.2.1.3 When T6 is specified, T651 product may be supplied unless specifically prohibited by the purchaser.

3.2.2 Wire

Rolled or cold finished, as ordered, and solution and precipitation heat treated to the T6 temper in accordance with AMS2772 (refer to ANSI H35.1/H35.1M).

3.2.3 Flash-Welded Rings

Shall be manufactured in accordance with AMS7488 and solution and precipitation heat treated in accordance with AMS2772 from stock conforming to AMS4186, as ordered (see 8.6).

3.3 Properties

Products shall conform to the size requirements in Table 2 and to the requirements presented in Table 3, determined on the mill-produced size in accordance with AMS2355. Flash-welded ring stock may be of any size.

Table 2 - Applicable size ranges

Product Form	Max Thickness or Diameter	Max Width or Height
Rods	4.000 inches (102.00 mm)	N/A
Square, Hexagon, Octagon	3.500 inches (89.00 mm)	N/A
Rectangular Bar	3.000 inches (76.00 mm)	10.000 inches (152.00 mm)
Flash-Welded Rings	4.000 inches (76.00 mm) in radial thickness	N/A

Table 3 - Minimum tensile properties

Property	Value
Tensile Strength	77.0 ksi (531 MPa)
Yield Strength at 0.2% Offset	66.0 ksi (455 MPa)
Elongation in 4D	7%

3.3.1 Mechanical property requirements for product outside the thickness ranges of 3.3 shall be as agreed upon by the purchaser and producer and reported per 4.4.1 (see 8.6).

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.

3.5 Tolerances

Bars, rods, and wire 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.

3.7 Production, distribution, and procurement of metal stock shall comply with AS6279. This requirement becomes effective 18 months after publication of AMS4122N.

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

The following requirements are acceptance tests and, except for composition, shall be performed on each lot:

4.2.1.1 Composition (see 3.1) of each heat.

4.2.1.2 Tensile properties (see 3.3) of each lot of bars, rods, wire, and flash-welded rings.

4.2.1.3 Tolerances (see 3.5) of bars, rods, and wire.

4.2.2 Periodic Tests

Tests of stock for flash-welded rings to determine the ability to develop required properties (see 3.3) 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.