AEROSPACE MATERIAL SPECIFICATION

AMS4124™	REV. G

Issued 1967-04
Revised 2025-01

Superseding AMS4124F

Aluminum Alloy, Rolled or Cold Finished Bars, Rods, and Wire, 5.6Zn - 2.5Mg - 1.6Cu - 0.23Cr (7075-T73, T7351), Solution Heat Treated, Stress Relieved by Stretching, and Overaged (Composition similar to UNS A97075)

RATIONALE

AMS4124G 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 3.3.1.3 and 8.5), relocate Definitions (see 2.4), and update Applicable Documents (see Section 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 up to 6.000 inches (152.40 mm) in nominal diameter or least nominal dimension (see 8.6).

1.2 Application

These products have been used typically for machined parts subject to excessive warpage during machining due to residual stresses and for parts requiring high strength and resistance to stress-corrosion cracking and whose fabrication does not involve forming or 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

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/AMS4124G/

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 B594 Ultrasonic Inspection of Aluminum-Alloy Wrought Products

ASTM B660 Packaging/Packing of Aluminum and Magnesium Products

ASTM B666/B666M Identification of Aluminum and Magnesium Alloy Products

ASTM E10 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
Titanium + Zirconium	--	0.25
Other Elements, each	--	0.05
Other Elements, total	--	0.15
Aluminum	remainder	--

3.2 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.

3.2.1.1 T73

Precipitation hardened to the T73 temper (refer to ANSI H35.1/H35.1M).

3.2.1.2 T7351

Stress relieved by stretching to produce a nominal permanent set of 1-1/2%, but not less than 1% nor more than 3%, then precipitation hardened to the T7351 temper (refer to ANSI H35.1/H35.1M).

3.2.1.3 When T73 product is specified, T7351 product may be supplied unless specifically prohibited by the purchaser.

3.2.1.4 All heat treatments shall be performed in accordance with AMS2772.

3.2.1.5 Product shall receive no further straightening operations after stretching, unless specifically authorized.

3.2.2 Wire

Rolled or cold finished, as ordered, and solution and precipitation heat treated to the T73 temper in accordance with AMS2772 (refer to ANSI H35.1/H35.1M).

3.3 Properties

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

3.3.1 Tensile Properties

Shall be as shown in Table 2 for product 4.000 inches (101.60 mm) and under in nominal diameter and squares, hexagons, octagons, and rectangles 4.000 inches (101.60 mm) and under in least nominal dimension.

Table 2 - Minimum tensile properties

Property	Value
Tensile Strength	68.0 ksi (469 MPa)
Yield Strength at 0.2% Offset	56.0 ksi (386 MPa)
Elongation in 2 Inches (50.8 mm) or 4D	10%

3.3.1.1 Shall be as shown in Table 3 for product over 4.000 to 5.000 inches (101.60 to 127.00 mm) in nominal diameter and squares, hexagons, octagons, and rectangles over 4.000 to 5.000 inches (101.60 to 127.00 mm) in least nominal dimension.

Table 3 - Minimum tensile properties

Property	Value
Tensile Strength	66.0 ksi (455 MPa)
Yield Strength at 0.2% Offset	55.0 ksi (379 MPa)
Elongation in 2 Inches (50.8 mm) or 4D	8%

3.3.1.2 Shall be as shown in Table 4 for product rounds over 5.000 to 6.000 inches (127.00 to 152.40 mm) in least nominal dimension.

Table 4 - Minimum tensile properties

Property	Value
Tensile Strength	64.0 ksi (441 MPa)
Yield Strength at 0.2% Offset	52.0 ksi (359 MPa)
Elongation in 2 Inches (50.8 mm) or 4D	8%

3.3.1.3 Mechanical property requirements for product outside the thickness range of 1.1 shall be as agreed upon by the purchaser and producer and reported per 4.4.1 (see 8.6).

3.3.2 Conductivity

Shall be as follows:

3.3.2.1 If the conductivity is 40% IACS (International Annealed Copper Standard) (23.2 MS/m) or higher and tensile properties meet specified requirements, the product is acceptable.

3.3.2.2 If the conductivity is 38.0 to 39.9% IACS (22.0 to 23.1 MS/m), if the tensile properties meet specified requirements, and if the yield strength does not exceed the specified minimum by more than 11.9 ksi (82 MPa), the product is acceptable.

3.3.2.3 If the conductivity is between 38.0 to 39.9% IACS (22.0 to 23.1 MS/m) and the yield strength exceeds the specified minimum value by more than 11.9 ksi (82 MPa), the product shall be given additional overaging heat treatment as in 3.2. If, after such treatment, the product meets the requirements of 3.3.1 and 3.3.2.1 or 3.3.2.2, the product is acceptable.

3.3.2.4 If the conductivity is below 38% IACS (22.0 MS/m), the product is not acceptable and must be reprocessed regardless of tensile property level.

3.3.3 Stress-Corrosion Cracking Resistance

Specimens, cut from product 0.750 inch (19.05 mm) and over in nominal thickness, shall show no evidence of stress-corrosion cracking when stressed in the short-transverse (perpendicular to grain flow) direction to 75% of the specified minimum longitudinal (parallel to grain flow) yield strength.

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 and shall meet Class A, unless otherwise specified.

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.

3.7 Production, distribution, and procurement of metal stock shall comply with AS6279. This requirement becomes effective 18 months after publication of AMS4124G.