AEROSPACE MATERIAL SPECIFICATION

AMS4472™	REV. B
Issued 2011-06 Revised 2022-10 Superseding AMS4472A	

Aluminum Alloy, Plate
4.0Cu - 1.0Li - 0.40Mg - 0.35Ag - 0.13Zr (2195-T34)
Solution Heat Treated and Stress Relieved
(Composition similar to UNS A92195)

RATIONALE

AMS4472B results from a Five-Year Review and update of this specification with changes to prohibit unauthorized exceptions (3.3.3, 3.6, 4.4.1, 5.1.1, 8.5), update applicable documents (Section 2), update elongation header (Table 2B), and allow the use of the immediate prior specification revision (8.4).

1. SCOPE

1.1 Form

This specification covers an aluminum alloy in the form of plate 0.500 to 2.250 inches (12.70 to 57.15 mm), inclusive, in nominal thickness (see 8.6).

1.2 Application

This plate has been used typically for aerospace structural parts requiring strength similar to that of 7475-T7351 but having 4% lower nominal density, but usage is not limited to such applications. Material is delivered in T34 temper and precipitation heat treated to obtain T82 temper by the end user.

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

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/AMS4472B/

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
ASTM G47	Determining Susceptibility to Stress Corrosion Cracking of 2XXX and 7XXX Aluminum Alloy 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 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	--	0.12
Iron	--	0.15
Copper	3.7	4.3
Manganese	--	0.25
Magnesium	0.25	0.8
Zinc	--	0.25
Titanium	--	0.10
Zirconium	0.08	0.16
Silver	0.25	0.6
Lithium	0.8	1.2
Other Elements, each	--	0.05
Other Elements, total	--	0.15
Aluminum	remainder	

3.2 Condition

3.2.1 As Received (T34 Temper (refer to ANSI H35.1/H35.1M))

Solution heat treated in accordance with AMS2772 and stretched to produce a permanent set of at least 3%, but not more than 4%.

3.3 Properties

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

3.3.1 As Solution Heat Treated and Stretched (T34 Temper (refer to ANSI H35.1/H35.1M))

3.3.1.1 Tensile Properties shall be as shown in Table 2.

Table 2A - Minimum tensile properties in T34 temper, inch/pound units

Nominal Thickness Inches	Specimen Orientation	Tensile Strength ksi	Yield Strength at 0.2% Offset ksi	Elongation in 2 Inches or 4D %
0.500 to 2.250	Long-Trans.	52.0	36.0	14

Table 2B - Minimum tensile properties in T34 temper, SI units

Nominal Thickness Millimeters	Specimen Orientation	Tensile Strength MPa	Yield Strength at 0.2% Offset MPa	Elongation in 50.8 mm or 4D %
12.70 to 57.15	Long-Trans.	360	250	14

3.3.2 Response to Heat Treatment (T82 Temper (refer to ANSI H35.1/H35.1M))

3.3.2.1 The material, as received by purchaser, shall have the following properties after precipitation heat treatment to the T82 temper in accordance with AMS2772. Based on thickness, Table 3 properties can be achieved by aging in the temperature range of 300 to 320 °F (149 to 160 °C), with aging times of 24 to 40 hours. Tensile properties shall be as shown in Table 3.

Table 3A - Minimum tensile properties in T82 temper, inch/pound units

Nominal Thickness Inches	Specimen Orientation	Tensile Strength ksi	Yield Strength at 0.2% Offset ksi	Elongation in 2 Inches or 4D %
0.500 to 1.499, incl	Longitudinal	80.0	75.0	6
	Long-Trans.	82.0	76.0	5
1.500 to 2.250, incl	Longitudinal	77.0	73.0	6
	Long-Trans.	80.0	72.0	5
	Short-Trans.	81.0	69.0	2

Table 3B - Minimum tensile properties in T82 temper, SI units

Nominal Thickness Millimeters	Specimen Orientation	Tensile Strength MPa	Yield Strength at 0.2% Offset MPa	Elongation in 50.8 mm or 4D %
12.70 to 38.07, incl	Longitudinal	552	517	6
	Long-Trans.	565	524	5
Over 38.07 to 57.15, incl	Longitudinal	531	503	6
	Long-Trans.	552	496	5
	Short-Trans.	559	476	2

3.3.2.2 Stress-Corrosion Resistance

Specimens machined and tested in accordance with ASTM G47 from plate 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 direction at 45.0 ksi (310 MPa) for 30 days.

3.3.3 Mechanical property requirements for product outside of the range covered by 1.1 and the tables shall be agreed upon between purchaser and producer and reported per 4.4.1 (see 8.6).

3.4 Quality

The product, as received by 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 Each plate shall be ultrasonically inspected in accordance with ASTM B594 and shall meet ultrasonic Class B requirements.

3.5 Tolerance

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

4.2 Classification of Tests

4.2.1 Acceptance Tests

Composition (3.1), tensile properties in the as-shipped T34 temper (3.3.1.1), tensile properties after precipitation heat treatment to T82 (3.3.2.1), stress-corrosion resistance in T82 temper (3.3.2.2), ultrasonic soundness (3.4.1), and dimensional tolerances (3.5) are acceptance tests and, except for composition, 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 that the plate conforms to the chemical composition, tolerances and ultrasonic inspection, 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(s), AMS4472B, 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 or tables, or other exceptions are taken to the technical requirements listed in Section 3, the report shall contain a statement "This material is certified as AMS4472B(EXC) because of the following exceptions:" and the specific exceptions shall be listed (also see 5.1.1).

4.5 Resampling and Retesting

Shall be in accordance with AMS2355.