AEROSPACE MATERIAL SPECIFICATION

AMS4477™	REV. B
Issued 2014-05 Revised 2023-05 Superseding AMS4477A	

Aluminum Alloy, Coiled Sheet
4.4Cu - 1.5Mg - 0.60Mn (2024-T4)
Solution Treated
(Composition similar to UNS A82024)

RATIONALE

AMS4477B results from a Five-Year Review and update of this specification with changes to correct elongation headings to show 50.8 mm (Tables 2B, 3B, and 4B), relocate the note regarding properties (3.3.5), update wording to prohibit unauthorized exceptions (3.3.4, 3.7, and 8.4), relocate definitions (2.4), update applicable documents (Section 2), and allow the use of the immediate prior specification revision (8.3).

1. SCOPE

1.1 Form

This specification covers an aluminum alloy in the form of coiled sheet 0.010 to 0.249 inch (0.25 to 6.32 mm), inclusive, in thickness, supplied in the -T4 temper (see 8.5).

1.2 Application

These products have been used typically for medium strength parts requiring formability and whose fabrication does not involve welding, but usage is not limited to such applications.

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.

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/AMS4477B/

ARP823 Minimizing Stress-Corrosion Cracking in Wrought, High-Strength Aluminum Alloy Products

AS7766 Terms Used in Aerospace Metals Specifications

2.2 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)

2.3 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 of Aluminum and Magnesium Alloy Products

2.4 Definitions

Terms used in AMS are defined in AS7766.

3. TECHNICAL REQUIREMENTS

3.1 Composition

Shall conform to the percentages by weight as 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 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 Coiled sheet

Solution heat treated and naturally aged to the T4 temper in accordance with AMS2772 (refer to ANSI H35.1/H35.1).

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 (T4 Temper)

Shall be as shown in Table 2 (see 3.3.5).

Table 2A - Tensile properties, inch/pound units

Temper	Nominal Thickness Inches	Tensile Strength ksi	Minimum Yield Strength at 0.2% Offset ksi	Minimum Elongation in 2 Inches or 4D %
-T4	0.010 thru 0.020	62.0	40.0	12
	0.021 thru 0.249	62.0	40.0	15

Table 2B - Tensile properties, SI units

Temper	Nominal Thickness Millimeters	Tensile Strength MPa	Minimum Yield Strength at 0.2% Offset MPa	Minimum Elongation in 50.8 mm or 4D %
-T4	0.25 thru 0.51	427	276	12
	0.53 thru 6.32	427	276	15

3.3.2 Response to Temper Conversion (-T62)

When specified, product in the T4 temper, after precipitation heat treatment to the T62 temper (refer to ANSI H35.1/H35.1M) in accordance with AMS2772, shall have the properties shown in Table 3 (see 3.3.5).

Table 3A - Tensile properties, inch/pound units

Temper	Nominal Thickness Inches	Tensile Strength ksi	Minimum Yield Strength at 0.2% Offset ksi	Minimum Elongation in 2 Inches or 4D %
-T62	0.010 thru 0.249	64.0	50.0	5

Table 3B - Tensile properties, SI units

Temper	Nominal Thickness Millimeters	Tensile Strength MPa	Minimum Yield Strength at 0.2% Offset MPa	Minimum Elongation in 50.8 mm or 4D %
-T62	0.25 thru 6.32	441	345	5

3.3.3 Response to Temper Conversion (-T72)

When specified, product in the T4 temper, after precipitation heat treatment to the T72 temper (refer to ANSI H35.1/H35.1M) in accordance with AMS2772, shall have the properties shown in Table 4 (see 3.3.5).

Table 4A - Tensile properties, inch/pound units

Temper	Nominal Thickness Inches	Tensile Strength ksi	Minimum Yield Strength at 0.2% Offset ksi	Minimum Elongation in 2 Inches or 4D %
-T72	0.010 thru 0.249	60.0	46.0	5

Table 4B - Tensile properties, SI units

Temper	Nominal Thickness Millimeters	Tensile Strength MPa	Minimum Yield Strength at 0.2% Offset MPa	Minimum Elongation in 50.8 mm or 4D %
-T72	0.25 thru 6.32	414	317	5

3.3.4 Mechanical property requirements for product outside the range covered by 1.1 shall be agreed upon between the purchaser and producer and reported per 4.4.1 (see 8.5).

3.3.5 The tensile properties in Tables 2, 3, and 4 were taken directly from QQ-A-250/4E Amendment 2 (AMS QQ-A-250/4A) and have not been independently verified by AMS statistical procedures.

3.4 Bending

Product as received by the purchaser 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 5 times the nominal thickness of the product with axis of bend parallel to the direction of rolling.

Table 5 - Bending parameters

Nominal Thickness Inches	Nominal Thickness Millimeters	Bend Factor
0.010 to 0.020, incl	0.25 to 0.51, incl	4
Over 0.020 to 0.051, incl	Over 0.51 to 1.30, incl	5
Over 0.051 to 0.128, incl	Over 1.30 to 3.25, incl	6
Over 0.128 to 0.249, incl	Over 3.25 to 6.32, incl	8

3.5 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.

3.6 Tolerances

Shall conform to the applicable requirements of ANSI H35.2/H35.2M.

3.7 Exceptions

Any exceptions shall be authorized by the purchaser and reported as in 4.4.1.