AEROSPACE MATERIAL SPECIFICATION

AMS4466™	REV. B
Issued 2011-12 Revised 2022-11 Superseding AMS4466A	

Aluminum Alloy, Sheet and Plate, Alclad
4.4Cu - 1.5Mg - 0.60Mn (Alclad 2024, -T361 Sheet and Plate)
Solution Heat Treated, 6% Cold Worked, and Naturally Aged
(Composition similar to UNS A82024)

RATIONALE

AMS4466B results from a Five-Year Review and update of this specification specification with changes to update wording to prohibit unauthorized exceptions (3.3.3, 3.8, 8.4), update applicable documents (Section 2), relocate statement regarding properties and statistical analysis (3.3.4), 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 alclad sheet and plate 0.020 to 0.500 inch (0.508 to 12.70 mm), inclusive, in thickness, supplied in the -T361 temper (see 8.5).

1.2 Application

These products have been used typically for moderate strength parts requiring higher yield strength and maximum corrosion resistance 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

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/AMS4466B/

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 H 35.2 Dimensional Tolerances for Aluminum Mill Products

ANSI H 35.2M 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 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 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 Tables 1 and 2, determined in accordance with AMS2355.

Table 1 - Composition, core (2024)

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	

Table 2 - Composition, cladding (1230)

Element	Min	Max
Iron + Silicon	--	0.70
Copper	--	0.10
Manganese	--	0.05
Magnesium	--	0.05
Zinc	--	0.10
Titanium	--	0.03
Vanadium	--	0.05
Other Elements, each	--	0.03
Aluminum	99.30	--

3.2 Condition

The product shall be supplied in the following condition:

3.2.1 Sheet

Solution heat treated, cold worked approximately 6%, and naturally aged to the T361 temper in accordance with AMS2772 (refer to ANSI H35.1/H35.1M).

3.2.2 Plate

Solution heat treated, cold worked approximately 6%, stretched to produce a nominal permanent set of 2%, but not less than 1-1/2% nor more than 3%, and naturally aged to the T361 temper in accordance with AMS2772 (refer to ANSI H35.1/H35.1M).

3.2.2.1 Plate shall receive no further straightening operations after stretching.

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 (T361)

Shall be as shown in Table 3 (see 8.5).

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

Temper	Nominal Thickness, Inches	Tensile Strength, ksi	Yield Strength at 0.2% Offset, ksi	Elongation in 2 Inches or 4D, %
-T361	0.020 to 0.062	61.0	47.0	8
	0.063 to 0.499	64.0	48.0	9
	0.500	66.0	49.0	10

Table 3B - Minimum tensile properties, SI units

Temper	Nominal Thickness, Millimeters	Tensile Strength, MPa	Yield Strength at 0.2% Offset, MPa	Elongation in 50.8 mm or 4D, %
-T361	0.508 to 1.575	421	324	8
	1.600 to 12.67	441	331	9
	12.70	455	338	10

3.3.2 Response to Temper Conversion (-T861)

When specified, product in the T361 temper, after precipitation heat treatment to the T861 temper (refer to ANSI H35.1/H35.1M) in accordance with AMS2772, shall have the properties shown in Table 4 (see 8.5).

Table 4A - Minimum tensile properties, inch/pound units

Temper	Nominal Thickness, Inches	Tensile Strength, ksi	Yield Strength at 0.2% Offset, ksi	Elongation in 2 Inches or 4D, %
-T861	0.020 to 0.062	64.0	58.0	3
	0.063 to 0.249	69.0	64.0	4
	0.250 to 0.499	68.0	62.0	4
	0.500	70.0	64.0	4

Table 4B - Minimum tensile properties, SI units

Temper	Nominal Thickness, Millimeters	Tensile Strength, MPa	Yield Strength at 0.2% Offset, MPa	Elongation in 50.8 mm or 4D, %
-T861	0.508 to 1.575, incl	441	400	3
	1.600 to 6.325	476	441	4
	6.35 to 12.67	469	427	4
	12.70	483	441	4

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

3.3.4 The tensile properties in Tables 3 and 4 were taken directly from QQ-A-250/5F Amendment 2 (AMS-QQ-A-250/5A) and have not been independently verified by AMS statistical procedures.

3.4 Cladding Thickness

3.4.1 Thickness of Cladding Plates

The aluminum alloy plates that are bonded to the two sides of the aluminum alloy (2024) ingot or slab, to form a composite that is to be rolled, shall each have a thickness as specified in Table 5.

Table 5 - Cladding thickness

Nominal Thickness, Inches	Nominal Thickness, mm	Nominal Cladding Thickness per Side, % of Thickness	Average Cladding Thickness per Side, % of Thickness; Minimum
0.020 to 0.062	0.508 to 1.575, incl	5	4
0.063 and above	1.600 and above	2.5	2

3.5 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.

3.6 Ultrasonic Inspection

3.6.1 When specified, each 0.500 inch (12.70 mm) plate shall be ultrasonically inspected in accordance with ASTM B594 and shall meet the requirements for ultrasonic class B.