



AEROSPACE MATERIAL SPECIFICATION

AMS4467™**REV. C**Issued 2011-12
Revised 2024-04

Superseding AMS4467B

Aluminum Alloy, Sheet and Plate, Alclad,
4.4Cu - 1.5Mg - 0.60Mn (Alclad 2024, -T861 Sheet and Plate),
Solution Heat Treated, 6% Cold Worked and Artificially Aged
(Composition similar to UNS A82024)

RATIONALE

AMS4467C results from a Five-Year Review and update of this specification with changes to update wording to prohibit unauthorized exceptions (see 3.3.3, 3.8, 4.4.1, and 8.3), Applicable Documents (see Section 2), relocate Definitions (see 2.4) and note relating to the statistical analysis of properties (see 3.3.4), and allow use of the immediate prior specification revision (see 8.4).

1. SCOPE

1.1 Form

This specification covers an aluminum alloy in the form of alclad sheet and plate supplied in the -T861 temper.

1.1.1 This specification covers alclad sheet product from 0.020 to 0.249 inch (0.51 to 6.32 mm) in thickness and alclad plate product 0.250 to 0.500 inch (6.35 to 12.70 mm) in thickness (see 8.5).

1.2 Application

These products have been used typically for high strength parts requiring higher yield strength than is afforded by naturally aged tempers of this alloy 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

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<https://www.sae.org/standards/content/AMS4467C/>

AMS2772 Heat Treatment of Aluminum Alloy Raw Materials

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 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

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 artificially aged to the -T861 temper in accordance with AMS2772 (refer to ANSI H35.1/H35.1M). The recommended aging treatment is 365 to 385 °F (185 to 196 °C) for 8 hours.

3.2.2 Plate

Solution heat treated, cold worked approximately 6%, and artificially aged to the -T861 temper in accordance with AMS2772 (refer to ANSI H35.1/H35.1M). The recommended aging treatment is 365 to 385 °F (185 to 196 °C) for 8 hours.

3.2.2.1 Plate shall receive no further straightening operations after stretching.

3.3 Properties

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

3.3.2 Tensile Properties

Shall be as shown in Table 3 (see 3.3.4).

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 %
-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 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 %
-T861	0.508 to 1.575	441	400	3
	1.60 to 6.325	476	441	4
	6.35 to 12.675	469	427	4
	12.70	483	441	4

- 3.3.3 Mechanical property requirements for product outside the range covered by Table 3 shall be as agreed upon between the purchaser and producer and reported per 4.4.1 (see 8.5).
- 3.3.4 The tensile properties in Table 3 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 4.

Table 4 - Cladding thickness

Nominal Thickness Inches	Nominal Thickness Millimeters	Nominal Cladding Thickness per Side % of Thickness	Average Cladding Thickness per Side % of Thickness, Minimum
0.020 to 0.062	0.508 to 1.57	5	4
0.063 and above	1.60 and above	2.5	2

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 Ultrasonic Inspection

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.

3.7 Tolerances

Shall conform to all applicable requirements of ANSI H35.2 or H35.2M.

3.8 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 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

Composition (see 3.1), tensile properties (see 3.3.1), tolerances (see 3.7) and, when specified, ultrasonic inspection (see 3.6) are acceptance tests and, except for composition, shall be performed on each lot.