



AEROSPACE MATERIAL SPECIFICATION

AMS4461™

REV. B

Issued	2012-01
Revised	2018-04

Superseding AMS4461A

Aluminum Alloy, Sheet and Plate, Alclad
4.4Cu - 1.5Mg - 0.60Mn (Alclad 2024-O, Sheet and Plate)
Annealed; or when specified, "As Fabricated" (2024-F)
(Composition similar to UNS A82024)

RATIONALE

AMS4461B results from a limited scope ballot to correct an inadvertent error in the marking paragraph introduced at the prior revision.

1. SCOPE

1.1 Form

This specification covers an aluminum alloy in the form of sheet and plate 0.008 to 1.750 inch (0.203 to 44.450 mm) thick, supplied in the annealed (O) condition (see 8.4). When specified, product shall be supplied in the "as fabricated" (F) temper.

1.2 Application

These products have been used typically for formed structural parts which will be subsequently heat treated, 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 after heat treatment; 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.

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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
ARP823	Minimizing Stress-Corrosion Cracking in Wrought Heat-Treatable Aluminum Alloy Products
ARP1917	Clarification of Terms Used in Aerospace Metals Specifications

2.2 ANSI Accredited Publications

Copies of these documents are available online at <http://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 Products for Aerospace Applications
ASTM B660	Packaging/Packing of Aluminum and Magnesium Products
ASTM B666/B666M	Identification of Aluminum and Magnesium Alloy Products

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

3.2.1 Annealed to the O temper in accordance with AMS2772 (refer to ANSI H35.1/H35.1M).

3.2.2 When specified, material may be provided in the “as fabricated” (F) temper. Requirements of 3.3.1 do not apply to the F temper.

3.3 Properties

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

3.3.1 As Annealed (O Temper)

3.3.1.1 Tensile Properties (O Temper)

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

Table 3**Table 3A - Tensile properties in annealed condition, inch/pound units**

Nominal Thickness Inches	Tensile Strength ksi, Max	Yield Strength at 0.2% Offset ksi, Max	Elongation in 2 Inches or 4D %, Min
0.008 thru 0.009	30.0	14.0	10
0.010 thru 0.062	30.0	14.0	12
0.063 thru 0.499	32.0	14.0	12
0.500 thru 1.750	32.0	--	12

Table 3B - Tensile properties in annealed condition, SI units

Nominal Thickness Millimeters	Tensile Strength MPa, Max	Yield Strength at 0.2% Offset MPa, Max	Elongation in 50.8 mm or 4D %, Min
0.203 thru 0.229	207	97	10
0.254 thru 1.575	207	97	12
1.600 thru 12.67	221	97	12
12.70 thru 44.45	221	--	12