



AEROSPACE MATERIAL SPECIFICATION

AMS4049™

REV. N

Issued	1951-10
Reaffirmed	2008-05
Revised	2022-08

Superseding AMS4049M

Aluminum Alloy, Sheet and Plate, Alclad
 5.6Zn - 2.5Mg - 1.6Cu - 0.23Cr (Alclad 7075; -T6 Sheet - T651 Plate)
 Solution and Precipitation Heat Treated
 (Composition similar to UNS A97075)

RATIONALE

AMS4049N results from a Five-Year Review and update of this specification with changes to prohibit unauthorized exceptions (3.3.5, 3.6, 4.4.1, 5.1.1, 8.5), add provisions for usage of AS6279 (Section 2, 3.7), update applicable documents (Section 2, 8.2), elongation values to show 50.8 mm or 4D and add missing values within AMS guidance (Table 3B), and ordering information (8.6), 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 sheet and plate with thickness from 0.008 to 4.000 inches (0.20 to 101.6 mm), inclusive, clad on two sides (see 8.6).

1.2 Application

These products have been used typically for structural use, including machined parts subject to excessive warpage during machining, 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.

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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
AS6279	Standard Practice for Production, Distribution, and Procurement of Metal Stock
AS7766	Terms Used in Aerospace Metals Specifications

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 Alloy Products

2.3 ANSI Accredited Publications

Copies of these documents are available online at <https://webstore.ansi.org/>.

ANSI H35.1/H35.1M	Alloy and Temper Designation Systems for Aluminum
ANSI H35.2	Dimensional Tolerances for Aluminum Mill Products
ANSI H35.2M	Dimensional Tolerances for Aluminum Mill Products (Metric)

3. TECHNICAL REQUIREMENTS

3.1 Composition

Shall conform to the percentages by weight shown in Tables 1 and 2, determined in accordance with AMS2355.

Table 1 - Composition, core (7075)

Element	Min	Max
Silicon	--	0.40
Iron	--	0.50
Copper	1.2	2.0
Manganese	--	0.30
Magnesium	2.1	2.9
Chromium	0.18	0.28
Zinc	5.1	6.1
Titanium	--	0.20
Other Elements, each	--	0.05
Other Elements, total	--	0.15
Aluminum	remainder	

Table 2 - Composition, cladding (7072)

Element	Min	Max
Silicon + Iron	--	0.7
Copper	--	0.10
Manganese	--	0.10
Magnesium	--	0.10
Zinc	0.8	1.3
Other Elements, each	--	0.05
Other Elements, total	--	0.15
Aluminum	remainder	

3.2 Product shall be supplied in the following condition; heat treatment shall be performed in accordance with AMS2772.

3.2.1 Sheet

Solution and precipitation heat treated to the T6 temper (refer to ANSI H35.1/H35.1M).

3.2.2 Plate

Solution heat treated, stretched to produce a nominal permanent set of 2%, but not less than 1-1/2%, nor more than 3%, and precipitation heat treated to the T651 temper (refer to ANSI H35.1/H35.1M).

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.

3.3.2 Tensile Properties

Shall be as shown in Table 3.

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

Nominal Thickness Inches	Tensile Strength ksi	Yield Strength at 0.2% Offset ksi	Elongation in 2 Inches or 4D %
0.008 to 0.011, incl	68.0	58.0	5
Over 0.011 to 0.039, incl	71.0	61.0	8
Over 0.039 to 0.062, incl	72.0	62.0	9
Over 0.062 to 0.187, incl	74.0	64.0	9
Over 0.187 to 0.249, incl	76.0	65.0	9
Over 0.249 to 0.499, incl	75.0	65.0	9
Over 0.499 to 1.000, incl	78.0	68.0	7
Over 1.000 to 2.000, incl	77.0	67.0	6
Over 2.000 to 2.500, incl	76.0	64.0	5
Over 2.500 to 3.000, incl	72.0	61.0	5
Over 3.000 to 3.500, incl	71.0	58.0	5
Over 3.500 to 4.000, incl	67.0	54.0	3