AEROSPACE MATERIAL SPECIFICATION

AMS4316™	REV. B

Issued 2005-07
Reaffirmed 2011-11
Revised 2019-09

Superseding AMS4316A

Aluminum Alloy, Alclad Sheet and Plate
5.6Zn - 2.5Mg - 1.6Cu - 0.23Cr
(7075; -T76 Sheet, -T7651 Plate)
Solution and Precipitation Heat Treated
(Composition similar to UNS R87075)

RATIONALE

AMS4316B prohibits unauthorized exceptions (3.6), revises condition (3.2), properties (3.3.1.1), classification of tests (4.2.1), reports (4.4), and identification (5.1.1), and is a Five-Year Review and update of this specification.

1. SCOPE

1.1 Form

This specification covers an aluminum alloy in the form of Alclad sheet and plate 0.040 to 1.000 inch, incl (1.02 to 25.40 mm, incl) in nominal thickness (see 8.4).

1.2 Application

This product has been used typically for applications requiring a high level of mechanical properties and good resistance to exfoliation corrosion, 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.

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**

SAE values your input. To provide feedback on this Technical Report, please visit
http://standards.sae.org/AMS4316B

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 Materials 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 Wrought Products

ASTM B660 Packaging/Packing of Aluminum and Magnesium Products

ASTM B666/B666M Identification of Aluminum and Magnesium Alloy Products

ASTM G34 Exfoliation Corrosion Susceptibility in 2XXX and 7XXX Series Aluminum Alloys (EXCO Test)

ASTM G47 Determining Susceptibility to Stress-Corrosion Cracking of High Strength Aluminum Alloy Products

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 Condition

The product shall be supplied in the following condition; heat treatments shall be performed in accordance with AMS2772.

3.2.1 Sheet

Solution and precipitation heat treated to the T76 temper (refer to ANSI H35.1/H35.1M).

3.2.2 Plate

Solution heat treated, stress-relieved by stretching 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 T7651 temper (refer to ANSI H35.1/H35.1M).

3.2.2.1 Plate shall receive no straightening operations after stretching.

3.3 Properties

Shall conform to the following requirements, determined in accordance with AMS2355 on the mill produced size (see 8.2):

3.3.1 Tensile Properties

Shall be as specified in Table 3. Tensile properties shall be determined in the long-transverse direction and, when specified, in the longitudinal direction (see 8.2).

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

Temper	Nominal Thickness Inch	Orientation	Tensile Strength ksi	Yield Strength at 2% Offset ksi	Elongation in 2 Inches or 4D %, min
T76	0.040 thru 0.062, incl	LT	67.0	56.0	8
		L	66.0	56.0	8
	0.063 thru 0.187, incl	LT	68.0	57.0	8
		L	67.0	57.0	8
	0.188 thru 0.249, incl	LT	70.0	59.0	8
		L	69.0	59.0	8
T7651	0.250 thru 0.499, incl	LT	69.0	58.0	8
		L	68.0	58.0	8
	0.500 thru 1.000, incl	LT	71.0	60.0	6
		L	68.0	57.0	6