



AEROSPACE MATERIAL SPECIFICATION

AMS4600™**REV. B**Issued 2011-07
Revised 2024-03

Superseding AMS4600A

Aluminum Alloy, Sheet and Plate,
6.3Cu - 0.30Mn - 0.06Ti - 0.10V - 0.18Zr,
Solution Heat Treated, Cold Worked (8%) and Naturally Aged (2219 -T37)
(Composition similar to UNS A92219)

RATIONALE

AMS4600B results from a Five-Year Review and update of this specification with changes to update general agreement wording to prohibit unauthorized exceptions (see 3.3.3 and 8.4), relocate Definitions (see 2.4) and note regarding statistical analysis of properties (see 3.3.4), and update Applicable Documents (see Section 2) and Ordering Information (see 8.5).

1. SCOPE

1.1 Form

This specification covers an aluminum alloy in the form of sheet and plate 0.020 to 5.000 inches (0.51 to 127.00 mm) in nominal thickness (see 8.5).

1.2 Application

This product form has been used typically for structural parts requiring high strength up to 500 °F (260 °C) after proper precipitation heat treatment and which may require forming or welding during fabrication, 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.

SAE Executive Standards Committee Rules provide that: "This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."

SAE reviews each technical report at least every five years at which time it may be revised, reaffirmed, stabilized, or cancelled. SAE invites your written comments and suggestions.

Copyright © 2024 SAE International

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of SAE.

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
http://www.sae.org

SAE WEB ADDRESS:

Full document details: SAE AMS4600B

For more information on this standard, visit
<https://www.sae.org/standards/content/AMS4600B/>

Documents

Document Sharing Hub

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
AMS2770	Heat Treatment of Wrought Aluminum Alloy Parts
AMS2772	Heat Treatment of Aluminum Alloy Raw Materials
ARP823	Minimizing Stress-Corrosion Cracking in Wrought, High-Strength Aluminum Alloy Products
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 B666/B666M	Identification Marking of Aluminum Products
ASTM G47	Determining Susceptibility to Stress-Corrosion Cracking of 2XXX and 7XXX Aluminum Alloy Products

2.3 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)

2.4 Definitions

Terms used in AMS are defined in AS7766.

3. TECHNICAL REQUIREMENTS

3.1 Composition

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

Table 1 - Composition

Element	Min	Max
Silicon	--	0.20
Iron	--	0.30
Copper	5.8	6.8
Manganese	0.20	0.40
Magnesium	--	0.02
Zinc	--	0.10
Titanium	0.02	0.10
Vanadium	0.05	0.15
Zirconium	0.10	0.25
Other Elements, each	--	0.05
Other Elements, total	--	0.15
Aluminum	remainder	

3.2 Condition

Product shall be supplied in the following condition:

3.2.1 Sheet and Plate

Solution heat treated, cold worked to produce a nominal permanent set of 8%, and naturally aged to temper T37 (refer to ANSI H35.1/H35.1M).

3.2.1.1 Plate shall receive no further straightening operations after stretching.

3.3 Properties

Product shall conform to the following requirements, determined on the mill produced size in accordance with AMS2355. In addition, test specimens in the T37 condition shall not be required to be tested within 4 days after completion of the solution heat treatment. If the manufacturer so elects, samples may be tested after less than 4 days of natural aging, but if they fail to show the specified properties, the test samples may be discarded and additional specimens may be tested after 4 days of natural aging. These specimens shall be taken from the same locations in the production lot or sample from which the prior specimens were taken.

3.3.1 As Received

3.3.1.1 Tensile Properties

Shall be as shown in Table 2 (see 3.3.4). All values are minimum, unless otherwise specified.

Table 2A - 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 %
T37	0.020 to 0.039, incl	49.0	38.0	6
	Over 0.039 to 2.500, incl	49.0	37.0	6
	Over 2.500 to 3.000, incl	47.0	36.0	6
	Over 3.000 to 4.000, incl	45.0	35.0	5
	Over 4.000 to 5.000, incl	43.0	34.0	4