



AEROSPACE MATERIAL SPECIFICATION

AMS4413™

REV. C

Issued 2007-10
Revised 2023-12

Superseding AMS4413B

Aluminum Alloy, Plate
3.5Cu - 1.0Li - 0.40Mg - 0.35Mn - 0.45Ag - 0.12Zr (2050-T84)
Solution Heat Treated, Stress Relieved, and Artificially Aged
(Composition similar to UNS A92050)

RATIONALE

AMS4413C results from an update of this specification with changes to increase the maximum product thickness to 8.000 inches (203.20 mm) (see 1.1, Table 2, and Table 3), update SI unit elongation values for consistency with AMS editorial guidelines (see Table 2B), remove S-L fracture toughness from 0.50- to 1.500-inch (12.50- to 38.20-mm), inclusive, thick product because the specimen is not supported (see Table 3), update wording to prohibit unauthorized exceptions (see 3.3.4, 4.4.1, and 8.3), Applicable Documents (see Section 2), Ordering Information (see 8.5), and relocate Definitions (see 2.4).

1. SCOPE

1.1 Form

This specification covers an aluminum-lithium alloy in the form of plate 0.500 to 8.000 inches (12.70 to 203.20 mm), inclusive, in thickness (see 8.5).

1.2 Application

This plate has been used typically for parts where low density is needed in combination with a high level of mechanical properties and very good resistance to stress-corrosion cracking, 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.

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 © 2023 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:

For more information on this standard, visit
<https://www.sae.org/standards/content/AMS4413C/>

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

AS7766 Terms used in Aerospace Metal specification.

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 Packing/Packaging of Aluminum and Magnesium Products

ASTM B666/B666M Identification Marking of Aluminum and Magnesium Products

ASTM E399 Linear-Elastic Plane-Strain Fracture Toughness of Metallic Materials

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

Table 1 - Composition

Element	Min	Max
Silicon	--	0.08
Iron	--	0.10
Copper	3.2	3.9
Manganese	0.20	0.50
Magnesium	0.20	0.60
Chromium	--	0.05
Zinc	--	0.25
Titanium	--	0.10
Zirconium	0.06	0.14
Silver	0.20	0.70
Lithium	0.7	1.3
Other Elements, each	--	0.05
Other Elements, total	--	0.15
Aluminum	remainder	

3.2 Condition

Solution heat treated, stretched to produce a nominal permanent set of 3.5% but not less than 3.0% nor more than 4.5%, and precipitation heat treated to the T84 temper (refer to ANSI H35.1/H35.1M). Solution and precipitation heat treatment shall be performed in accordance with AMS2772. Actual solution heat-treatment temperatures and aging time/temperatures are proprietary.

3.2.1 Plate shall receive no further straightening operations after stretching.

3.3 Properties

Plate shall conform to the following requirements, determined in accordance with AMS2355 on the mill produced size and as specified herein:

3.3.1 Tensile Properties

Shall be as specified in Table 2.