



# AEROSPACE MATERIAL SPECIFICATION

AMS4413™

REV. B

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Superseding AMS4413A

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

AMS4413B prohibits unauthorized exceptions (3.6), revises condition (3.2), properties (3.3.4), reports (4.4.1) and identification (5.1.1), and results from a Five-Year Review and update of this specification.

### 1. SCOPE

#### 1.1 Form

This specification covers an aluminum-lithium alloy in the form of plate 0.500 to 6.500 inch (12.70 to 165.10 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.

#### 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](http://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

ARP1917 Clarification of Terms used in Aerospace Metal specification.

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## 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](http://www.astm.org).

|                 |  |
|-----------------|--|
| ASTM B594       | Ultrasonic Inspection of Aluminum-Alloy Products for Aerospace Applications                      |
| 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 $K_{Ic}$ 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 <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) |

## 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.