

Aluminum Alloy, Sheet  
4.0Cu - 1.0Li - 0.40Mg - 0.35Ag - 0.13Zr (2195-T8)  
Solution Heat Treated, Cold Worked, and Artificially Aged  
(Composition similar to UNS A92195)

## RATIONALE

AMS4474 is a new material specification which covers aluminum-lithium alloy 2195-T8 in the form of sheet and plate.

### 1. SCOPE

#### 1.1 Form

This specification covers an aluminum alloy in the form of sheet and plate.

#### 1.2 Application

This product has been used for aircraft applications where it offers a combination of high strength and low density, 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 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

AS1990 Aluminum Alloy Tempers

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<http://www.sae.org/technical/standards/AMS4474>**

## 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 B 660 Packaging/Packing of Aluminum and Magnesium Products

ASTM B 666/B 666M Identification Marking of Aluminum and Magnesium Products

## 2.3 ANSI Publications

Available from American National Standards Institute, 25 West 43rd Street, New York, NY 10036, Tel: 212-642-4900, [www.ansi.org](http://www.ansi.org).

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 Table 1, determined in accordance with AMS2355.

TABLE 1 - COMPOSITION

| Element               | min       | max  |
|-----------------------|-----------|------|
| Silicon               | --        | 0.12 |
| Iron                  | --        | 0.15 |
| Copper                | 3.7       | 4.3  |
| Manganese             | --        | 0.25 |
| Magnesium             | 0.25      | 0.8  |
| Zinc                  | --        | 0.25 |
| Titanium              | --        | 0.10 |
| Zirconium             | 0.08      | 0.16 |
| Silver                | 0.25      | 0.6  |
| Lithium               | 0.8       | 1.2  |
| 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 Solution heat treated, cold worked and artificially aged to T8 temper (See AS1990).

### 3.3 Heat Treatment

Solution heat treatment and aging shall be performed in accordance with AMS2772.

### 3.4 Properties

The product shall conform to the following requirements determined in accordance with AMS2355 on the mill produced size.

### 3.4.1 Tensile Properties

Shall be as shown in Table 2.

TABLE 2A - MINIMUM TENSILE PROPERTIES, INCH/POUND UNITS

| Nominal Thickness<br>Inches | Specimen<br>Orientation | Tensile<br>Strength<br>ksi | Yield Strength<br>at 0.2% Offset<br>ksi | Elongation in<br>2 Inches or 4D<br>% |
|-----------------------------|-------------------------|----------------------------|-----------------------------------------|--------------------------------------|
| 0.125 to 0.375, incl        | Longitudinal            | 82.0                       | 78.0                                    | 6                                    |
|                             | Long-Trans.             | 80.0                       | 76.0                                    | 6                                    |

TABLE 2B - MINIMUM TENSILE PROPERTIES, SI UNITS

| Nominal Thickness<br>Millimeters | Specimen<br>Orientation | Tensile<br>Strength<br>MPa | Yield Strength<br>at 0.2% Offset<br>MPa | Elongation in<br>50.8 mm<br>% |
|----------------------------------|-------------------------|----------------------------|-----------------------------------------|-------------------------------|
| 3.20 to 9.50, incl               | Longitudinal            | 565                        | 538                                     | 6                             |
|                                  | Long-Trans.             | 552                        | 524                                     | 6                             |

### 3.5 Quality

The product, as received by purchaser, shall be uniform in quality and condition, sound, and free from foreign materials and from imperfections detrimental to usage of the product.

### 3.6 Tolerances

Shall conform to all applicable requirements of ANSI H35.2 or ANSI H35.2M.

## 4. QUALITY ASSURANCE PROVISIONS

### 4.1 Responsibility for Inspection

The vendor of the product shall supply all samples for vendor's tests and shall be responsible for the performance of all required tests. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the product conforms to specified requirements.

### 4.2 Classification of Tests

#### 4.2.1 Acceptance Tests

Composition (3.1), tensile properties (3.4.1), and tolerances (3.6) are acceptance tests, and except for composition, shall be performed on each inspection lot.

### 4.3 Sampling and Testing

Shall be in accordance with AMS2355.

### 4.4 Reports

The vendor of the product shall furnish with each shipment a report stating that the product conforms to the composition requirements and tolerances and showing the numerical results of tests to determine conformance to the other acceptance test requirements. This report shall include the purchase order number, inspection lot number(s), AMS4474, size, and quantity. The report shall also identify the producer, the product form, and the mill produced size.