



# AEROSPACE MATERIAL SPECIFICATION

AMS4161™

REV. J

Issued	1960-01
Reaffirmed	2010-05
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Superseding AMS4161H

Aluminum Alloy, Extrusions  
1.0Mg - 0.60Si - 0.28Cu - 0.20Cr (6061-T4)  
Solution Heat Treated and Naturally Aged  
(Composition similar to UNS A96061)

## RATIONALE

AMS4161J prohibits unauthorized exceptions (3.6), revises Condition (3.2), Response to Heat Treatment (3.3.2), 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 alloy in the form of extruded bars, rods, wire, shapes, profiles, and tubing.

##### 1.1.1 Tubing

Tubing shall be additionally classified as follows:

Type I - Seamless tubing extruded from hollow billets using die and mandrel

Type II - Tubing extruded from solid billets using porthole or spider die or similar tooling

When no Type is specified, Type I shall apply.

#### 1.2 Application

These products have been used typically for parts requiring moderate strength, especially where such parts require brazing or welding during fabrication, but usage is not limited to such applications. Brazed or welded parts may require additional heat treating to restore properties depending on application.

### 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.

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<https://www.sae.org/standards/content/AMS4161J/>

## 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 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](http://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 Marking of Aluminum and Magnesium Products

ASTM B807/B807M Extrusion Press Solution Heat Treatment for Aluminum Alloys

ASTM E10 Brinell Hardness of Metallic Materials

## 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

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

**Table 1 - Composition**

Element	Min	Max
Silicon	0.40	0.8
Iron	--	0.7
Copper	0.15	0.40
Manganese	--	0.15
Magnesium	0.8	1.2
Chromium	0.04	0.35
Zinc	--	0.25
Titanium	--	0.15
Other Elements, each	--	0.05
Other Elements, total	--	0.15
Aluminum	remainder	