



<b>AEROSPACE MATERIAL SPECIFICATION</b>	<b>AMS4140</b>	<b>REV. K</b>
	Issued 1942-01 Revised 2001-06 Reaffirmed 2006-04 Noncurrent 2009-08 Stabilized 2014-12	
Superseding AMS4140J		
Aluminum Alloy Die Forgings 4.0Cu - 2.0Ni - 0.68Mg (2018-T61) Solution and Precipitation Heat Treated (Composition similar to UNS A92018)		

#### RATIONALE

AMS4140K stabilizes this document because it contains mature technology that is not expected to change and thus no further revisions are anticipated.

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## 1. SCOPE:

### 1.1 Form:

This specification covers an aluminum alloy in the form of die forgings and forging stock.

### 1.2 Application:

This product has been used typically for small, forged parts for aircraft engines, 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 canceled and no superseding document has been specified, the last published issue of that document shall apply.

### 2.1 SAE Publications:

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001 or <http://www.sae.org>.

AMS 2355	Quality Assurance Sampling and Testing, Aluminum Alloys and Magnesium Alloys, Wrought Products, Except Forging Stock, and Rolled, Forged, or Flash Welded Rings
MAM 2355	Quality Assurance Sampling and Testing, Aluminum Alloys and Magnesium Alloys, Wrought Products, Except Forging Stock, and Rolled, Forged, or Flash Welded Rings, Metric (SI) Units
AMS 2772	Heat Treatment of Aluminum Alloy Raw Materials
AMS 2808	Identification, Forgings
ARP823	Minimizing Stress Corrosion Cracking in Wrought Heat Treatable Aluminum Alloy Products

## 2.2 ASTM Publications:

Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

ASTM B 594 Ultrasonic Inspection of Aluminum-Alloy Products for Aerospace Applications  
 ASTM B 660 Packaging/Packing of Aluminum and Magnesium Products  
 ASTM E 1417 Liquid Penetrant Examination

## 2.3 ANSI Publications:

Available from ANSI, 11 West 42nd Street, New York, NY 10036-8002.

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 AMS 2355 or MAM 2355.

TABLE 1 - Composition

Element	min	max
Silicon	--	0.9
Iron	--	1.0
Copper	3.5	4.5
Manganese	--	0.20
Magnesium	0.45	0.9
Chromium	--	0.10
Nickel	1.7	2.3
Zinc	--	0.25
Other Elements, each	--	0.05
Other Elements, total	--	0.15
Aluminum	remainder	

### 3.2 Condition:

The product shall be supplied in the following condition:

3.2.1 Forgings: Solution and precipitation heat treated in accordance with AMS 2772 to the T61 temper.