AEROSPACE MATERIAL SPECIFICATION

AMS4134™	REV. G

Issued 1945-10
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Superseding AMS4134F

Aluminum Alloy, Die Forgings
4.4Cu - 0.85Si - 0.80Mn - 0.50Mg (2014-T4)
Solution Heat and Naturally Aged
(Composition similar to UNS A92014)

RATIONALE

AMS4134G introduces Exceptions (3.6), revises Title, Condition (3.2.1), Properties (3.3.1.3), and Reports (4.4), 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 die forgings 4 inches (102 mm) and under in nominal thickness, and forging stock of any size (see 8.6).

1.2 Application

These forgings have been used typically for parts, requiring strength similar to that of parts machined from AMS4118 bars, but usage is not limited to such applications. Higher strength can be obtained by precipitation hardening to the T6 temper.

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.

TO PLACE A DOCUMENT ORDER: **Tel: 877-606-7323 (inside USA and Canada)**
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http://standards.sae.org/AMS4134G

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

AMS2808 Identification, Forgings

AMS4118 Aluminum Alloy, Rolled or Cold Finished Bars, Rods, and Wire, 4.0Cu - 0.70Mn - 0.60Mg - 0.50Si (2017; -T4, -T451), Solution Heat Treated

ARP1917 Clarification of Terms Used in Aerospace Metals Specifications

2.2 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)

2.3 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 Packaging/Packing of Aluminum and Magnesium Products

ASTM E10 Brinell Hardness of Metallic Materials

ASTM E1417/E1417M Liquid Penetrant Testing

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	0.50	1.2
Iron	--	0.7
Copper	3.9	5.0
Manganese	0.40	1.2
Magnesium	0.20	0.8
Chromium	--	0.10
Zinc	--	0.25
Titanium	--	0.15
Other Elements, each	--	0.05
Other Elements, total	--	0.15
Aluminum	remainder	

3.2 Condition

Shall be as follows:

3.2.1 Forgings

Solution heat treated to the T4 temper (refer to ANSI H35.1/H35.1M) in accordance with AMS2772.

3.2.2 Forging Stock

Composition shall be in accordance with Table 1 and shall be free of discontinuities that are unacceptable in the final forged product (see 3.4).

3.3 Properties

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

3.3.1 Forgings

3.3.1.1 Tensile Properties (-T4 Temper)

Shall be as follows:

3.3.1.1.1 Test Specimens

Specimens, machined from separately-forged coupons or from forging stock representing the forgings and, in either case, heat treated with the forgings or machined from prolongations on heat treated forgings, shall have the properties shown in Table 2.

Table 2 - T4 minimum tensile properties

Property	Value
Tensile Strength	55.0 ksi (379 MPa)
Yield Strength at 0.2% Offset	30.0 ksi (207 MPa)
Elongation in 2 Inches (50.8 mm) or 4D	16%

3.3.1.1.2 Forgings, with Grain Flow

Specimens, machined from forgings 4 inches (102 mm) and under in nominal thickness, with axis of the specimen in area of gage length varying not more than 15 degrees from parallel to forging flow lines, shall have properties shown in Table 2 except that elongation may be as low as 11%.

3.3.1.2 Response to Temper Conversion (-T62 Temper)

Forgings in the T4 temper , after precipitation heat treatment to the T62 temper (refer to ANSI H35.1/H35.1M) in accordance with AMS2772, shall have the properties shown in Tables 3 and 4.

3.3.1.2.1 Test Specimens

Specimens, machined from separately-forged coupons or from forging stock representing the forgings and, in either case, heat treated with the forgings or machined from prolongations on heat treated forgings, shall have the properties shown in Table 3.

Table 3 - T62 minimum tensile properties

Property	Value
Tensile Strength	65.0 ksi (448 MPa)
Yield Strength at 0.2% Offset	55.0 ksi (379 MPa)
Elongation in 2 Inches (50.8 mm) or 4D	10%