



AEROSPACE MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
TWO PENNSYLVANIA PLAZA, NEW YORK, N.Y. 10001

AMS 4109

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Revised

ALUMINUM ALLOY HAND FORGINGS 5.6Zn - 2.5Mg - 1.6Cu - 0.24Cr (7175-T736)

1. SCOPE:

- 1.1 Form: This specification covers an aluminum-base alloy in the form of hand forgings and forging stock.
- 1.2 Application: Primarily for parts requiring a high level of mechanical properties and good resistance to stress-corrosion cracking.

2. APPLICABLE DOCUMENTS: The following publications form a part of this specification to the extent specified herein. The latest issue of Aerospace Material Specifications (AMS) shall apply. The applicable issue of other documents shall be as specified in AMS 2350.

- 2.1 SAE Publications: Available from Society of Automotive Engineers, Inc., Two Pennsylvania Plaza, New York, New York 10001.

2.1.1 Aerospace Material Specifications:

AMS 2201 - Tolerances, Aluminum and Aluminum Alloy Bar, Rod,
Wire, and Forging Stock, Rolled or Drawn
AMS 2350 - Standards and Test Methods
AMS 2375 - Approval and Control of Critical Forgings
AMS 2630 - Ultrasonic Inspection
AMS 2808 - Identification, Forgings

- 2.2 ASTM Publications: Available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103.

ASTM B342 - Electrical Conductivity by Use of Eddy Currents
ASTM B557 - Tension Testing Wrought and Cast Aluminum and Magnesium
Alloy Products
ASTM E10 - Brinell Hardness of Metallic Materials
ASTM E34 - Chemical Analysis of Aluminum and Aluminum-Base Alloys

- 2.3 Government Publications: Available from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, Pennsylvania 19120.

2.3.1 Federal Standards:

Federal Test Method Standard No. 151 - Metals; Test Methods

2.3.2 Military Specifications:

MIL-I-8950 - Inspection, Ultrasonic, Wrought Metals, Process for

3. TECHNICAL REQUIREMENTS:

- 3.1 Composition: Shall conform to the following percentages by weight, determined by wet chemical methods in accordance with ASTM E34, by spectrographic methods in accordance with Federal Test Method Standard No. 151, Method 112, or by other approved analytical methods:

	min	max
Zinc	5.1	6.1
Magnesium	2.1	2.9
Copper	1.2	2.0
Chromium	0.18	0.30
Iron	--	0.20
Silicon	--	0.15
Manganese	--	0.10
Titanium	--	0.10
Other Impurities, each	--	0.05
Other Impurities, total	--	0.15
Aluminum	remainder	

3.2 Condition: The product shall be supplied in the following condition:

3.2.1 Hand Forgings: Solution and precipitation heat treated to develop the required mechanical properties and resistance to stress-corrosion cracking.

3.2.2 Forging Stock: As ordered by the forging manufacturer.

3.3 Properties: The product shall conform to the following requirements:

3.3.1 Hand Forgings:

3.3.1.1 Tensile Properties: Test specimens, machined from hand forgings having an essentially rectangular or square cross section not exceeding 156 sq in. (1007 cm²) in area and heat treated in the indicated thickness, shall conform to the requirements shown in Table I provided the as-forged thickness does not exceed 6 in. (152 mm), determined in accordance with ASTM B557:

TABLE I

Nominal Thickness At Time of Heat Treatment Inches	Test Direction	Tensile Strength psi, min	Yield Strength at 0.2% Offset psi, min	Elongation in 2 in. or 4D %, min
Up to 3, incl	Longitudinal	73,000	63,000	9
	Long Trans.	71,000	60,000	5
	Short Trans.	69,000	60,000	4
Over 3 to 4, incl	Longitudinal	71,000	61,000	9
	Long Trans.	70,000	58,000	5
	Short Trans.	68,000	57,000	4
Over 4 to 5, incl	Longitudinal	68,000	57,000	8
	Long Trans.	67,000	56,000	5
	Short Trans.	66,000	55,000	4
Over 5 to 6, incl	Longitudinal	65,000	54,000	8
	Long Trans.	64,000	52,000	5
	Short Trans.	63,000	52,000	4