



AEROSPACE MATERIAL SPECIFICATION

AMS4344™

REV. F

Issued 1984-07

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Superseding AMS4344E

Aluminum Alloy, Extrusions
5.6Zn - 2.5Mg - 1.6Cu - 0.23Cr (7175-T73511)
Solution Heat Treated, Stress Relieved by Stretching, Straightened, and Overaged
(Composition similar to UNS A97175)

RATIONALE

AMS4344F results from a limited scope ballot to correct an inadvertent error in the marking paragraph introduced at the prior revision.

1. SCOPE

1.1 Form

This specification covers an aluminum alloy in the form of extruded bars, rods, and profiles 0.250 to 2.000 .inches (6.35 to 50.80 mm) in nominal thickness and up to 32 in² (206 cm²), inclusive, in cross-sectional area (see 8.5).

1.2 Application

These extrusions have been used typically for structural applications requiring a combination of high tensile properties, moderate fatigue strength, stress-corrosion resistance, and good fracture toughness, 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 +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

ARP1917 Clarification of Terms Used in Aerospace Materials Specifications

2.2 ANSI Accredited Publications

SAE Technical Standards Board Rules provide that: "This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."

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<http://standards.sae.org/AMS4344F>**

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 B666/B666M Identification Marking of Aluminum and Magnesium Products

ASTM E399 Linear-Elastic Plane-Strain Fracture Toughness K_{Ic} of Metallic Materials

ASTM G47 Determining Susceptibility to Stress-Corrosion Cracking of 2xxx and 7xxx Aluminum Alloys

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		0.15
Iron		0.20
Copper	1.2	2.0
Manganese		0.10
Magnesium	2.1	2.9
Chromium	0.18	0.28
Zinc	5.1	6.1
Titanium	--	0.10
Other Elements, each	--	0.05
Other Elements, total	--	0.15
Aluminum	remainder	

3.2 Condition

Extruded, solution heat treated, stress relieved by stretching to produce a nominal permanent set of 1.5%, but not less than 1% nor more than 3%, and overaged to the T73511 (refer to ANSI H35.1/H35.1M) temper.

3.2.1 Extrusions may receive minor straightening, after stretching, of an amount necessary to meet the requirements of 3.6.

3.2.2 Extrusions shall be supplied with an as-extruded surface finish; light polishing to remove minor surface imperfections is permissible provided such imperfections can be removed within specified dimensional tolerances.

3.3 Heat Treatment

Heat treatment shall be performed in accordance with AMS2772 except as noted:

3.3.1 Solution Heat Treatment

Solution heat treat at 870 °F ± 10 °F (466 °C ± 6 °C).

3.3.2 Overaging Heat Treatment

Recommended practice is 225 °F ± 10 °F (107 °C ± 6 °C) for 6 to 8 hours followed by 350 °F ± 10 °F (177 °C ± 6 °C) for 6 to 8 hours.

3.4 Properties

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

3.4.1 Tensile Properties

Shall be as specified in Table 2A or 2B, determined on specimens from extrusions 0.250 to 2.000 inches (6.35 to 50.80 mm) in nominal thickness and up to 32 in² (206 cm²), inclusive, in cross-sectional area.

Table 2

Table 2A - Minimum tensile strength, inch/pound units

Specimen Orientation	Tensile Strength ksi	Yield Strength at 0.2% Offset ksi	Elongation in 2 Inches or 4D %
Longitudinal	69.0	59.0	8
Long-Transverse	63.0	52.0	4

Table 2B - Minimum tensile strength, SI units

Specimen Orientation	Tensile Strength MPa	Yield Strength at 0.2% Offset MPa	Elongation in 50.8 mm or 5D %
Longitudinal	476	407	8
Long-Transverse	434	359	4

3.4.1.1 Mechanical property requirements for product outside of the range covered by 1.1 shall be agreed upon between purchaser and producer.

3.4.2 Fracture Toughness

When specified, plane strain fracture toughness (K_{Ic}) in accordance with ASTM E399 shall be not lower than the values shown in Table 3A or 3B.