AEROSPACE MATERIAL SPECIFICATION

AMS4336™	REV. C

Issued 2002-03
Reaffirmed 2013-12
Revised 2020-12

Superseding AMS4336B

Aluminum Alloy, Extruded Rod, Bar, and Profiles (7055-T76511)
8.0Zn - 2.3Cu - 2.0Mg - 0.16Zr
Solution Heat Treated, Stress-Relieved, and Overaged
(Composition similar to UNS A97055)

RATIONALE

AMS4336C includes new data that increases the allowable size of the product (1.1, Table 2, Table 3) and is the result of a limited scope ballot that authorizes the action.

1. SCOPE

1.1 Form

This specification covers an aluminum alloy procured in the form of extruded bars, rods, and profiles (shapes) with nominal thickness up to 3.000 inch (76.20 mm), inclusive, and having a cross-sectional area of 26.3 square inches (170 cm^2) maximum and circle size of 15.3 inches (389 mm) maximum (see 8.7).

1.2 Application

These extrusions have been used typically for structural applications requiring a combination of high tensile and compressive strength and good exfoliation corrosion resistance, 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 Metals Specifications

TO PLACE A DOCUMENT ORDER: **Tel: 877-606-7323 (inside USA and Canada)**
Tel: +1 724-776-4970 (outside USA)
Fax: 724-776-0790
Email: CustomerService@sae.org
SAE WEB ADDRESS: **http://www.sae.org**

For more information on this standard, visit
https://www.sae.org/standards/content/AMS4336C/

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.

ASTM B660 Packaging/Packing of Aluminum and Magnesium Products

ASTM B666/B666M Identification Marking of Aluminum and Magnesium Products

ASTM E1004 Electromagnetic (Eddy Current) Measurements of Electrical Conductivity

ASTM G34 Exfoliation Corrosion Susceptibility in 2xxx and 7xxx Series Aluminum Alloys (EXCO Test)

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	--	0.10
Iron	--	0.15
Copper	2.0	2.6
Manganese	--	0.05
Magnesium	1.8	2.3
Chromium	--	0.04
Zinc	7.6	8.4
Titanium	--	0.06
Zirconium	0.08	0.25
Other Elements, each	--	0.05
Other Elements, total	--	0.15
Aluminum	remainder	

3.2 Condition

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 -T76511 temper (refer to ANSI H35.1/H35.1M).

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

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

3.3 Heat Treatment

Shall be performed in accordance with AMS2772 except as follows:

3.3.1 Overaging Heat Treatment

Heat to 240 to 250 °F (116 to 121 °C), hold at temperature for a time of 4 to 6 hours, then heat to 310 to 320 °F (154 to 160 °C), hold at temperature for a time of 6.5 to 7.5 hours, and air cool.

3.4 Properties

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

3.4.1 Tensile Properties

Longitudinal tensile properties of extrusions shall be as shown in Table 2.

Table 2A - Minimum longitudinal tensile properties, inch/pound units

Nominal Thickness Inches	Tensile Strength ksi	Yield Strength at 0.2% Offset ksi	Elongation in 2 Inches or 4D %
Up to 0.249, incl[1]	89.0	85.0	7
Over 0.249 to 0.499, incl[1]	90.0	85.0	9
Over 0.499 to 3.000, incl[2]	91.0	86.0	9

[1] Maximum cross sectional area of 12 square inches and maximum circle size of 10 inches maximum.
[2] Maximum cross section area of 26.3 square inches and maximum circle size of 15.3 inches maximum (see 8.7).

Table 2B - Minimum longitudinal tensile properties, SI units

Nominal Thickness Millimeters	Tensile Strength MPa	Yield Strength at 0.2% Offset MPa	Elongation in 50.8 mm or 4D %
Up to 6.34, incl[1]	614	586	7
Over 6.34 to 12.68, incl[1]	621	586	9
Over 12.68 to 76.20, incl[2]	627	593	9

[1] Maximum cross sectional area of 77 cm^2 and maximum circle size of 254 mm maximum.
[2] Maximum cross section area of 170 cm^2 and maximum circle size of 389 mm maximum (see 8.7).

3.4.2 Compressive Yield Strength

Longitudinal compressive yield strength shall be as shown in Table 3.

Table 3A - Minimum longitudinal compressive yield strength, inch/pound units

Nominal Diameter or Least Thickness (Bars, Rods, Profiles) Inches	Longitudinal Compressive Yield Strength ksi
Over 0.499 to 3.000, incl[1]	87.0

[1] Maximum cross section area of 26.3 square inches and maximum circle size of 15.3 inches maximum (see 8.7).

Table 3B - Minimum longitudinal compressive yield strength, SI units

Nominal Diameter or Least Thickness (Bars, Rods, Profiles) Millimeters	Longitudinal Compressive Yield Strength MPa
Over 12.68 to 76.20, incl[1]	600

[1] Maximum cross section area of 170 cm^2 and maximum circle size of 389 mm maximum (see 8.7).

3.4.3 Electrical Conductivity (EC)

Shall be not lower than 35.0% IACS (International Annealed Copper Standard) (20.9 MS/m), in accordance with ASTM E1004, determined on the surface of the test coupon prior to turning.

3.4.4 Exfoliation Corrosion Resistance

When tested in accordance with ASTM G34, specimens cut from extrusions shall not exhibit exfoliation corrosion at a T/10 plane greater than that illustrated by Photograph B, Figure 2, of ASTM G34.

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

3.5 Quality

Product, as received by purchaser, shall be uniform in quality and condition, sound, and free from foreign materials and imperfections detrimental to usage of the extrusions.

3.5.1 Intergranular Attack

No intergranular attack is permitted on sections up to 0.450 inch (11.43 mm) thick. Intergranular attack, if found during visual inspection, shall be removed by suitable means (machining, sanding, etc.) (see 8.2).

3.6 Tolerances

Shall conform to all applicable requirements of ANSI H35.2 or ANSI H35.2M.

3.7 Exceptions

Any exceptions shall be authorized by purchaser and reported as in 4.4.1.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for Inspection

The producer of the product shall supply all samples for producer's tests and shall be responsible for the performance of all required tests. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the products conform to specified requirements.

4.2 Classification of Tests

4.2.1 Acceptance Tests

Composition (3.1), tensile properties (3.4.1), electrical conductivity (3.4.3), and tolerances (3.6) are acceptance tests and, except for composition, shall be performed on each inspection lot.