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400 COMMONWEALTH DRIVE WARRENDALE PA 15096

AEROSPACE MATERIAL SPECIFICATION

AMS 4350K
Superseding AMS 4350J

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MAGNESIUM ALLOY EXTRUSIONS
6.5Al - 1.0Zn (AZ61A-F)
As Extruded

UNS M11610

1. SCOPE:

1.1 Form: This specification covers a magnesium alloy in the form of extruded bars, rods, wire, tubing, and shapes.

1.2 Application: Primarily for low-strength parts requiring rigidity and low density. Special care is necessary to prevent corrosion.

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 and MAM) shall apply. The applicable issue of other documents shall be as specified in AMS 2350.

2.1 SAE Publications: Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096.

2.1.1 Aerospace Material Specifications:

AMS 2205 - Tolerances, Aluminum Alloy and Magnesium Alloy Extrusions
MAM 2205 - Tolerances, Metric, Aluminum Alloy and Magnesium Alloy Extrusions
AMS 2350 - Standards and Test Methods
AMS 2355 - Quality Assurance Sampling and Testing of Aluminum-Base and Magnesium-Base Alloys, Wrought Products (Except Forgings and Forging Stock) and Flash Welded Rings

2.2 U.S. Government Publications: Available from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

2.2.1 Military Standards:

MIL-STD-649 - Aluminum and Magnesium Products, Preparation for Shipment and Storage

3. TECHNICAL REQUIREMENTS:

3.1 Composition: Shall conform to the following percentages by weight, determined in accordance with AMS 2355:

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	min	max
Aluminum	5.8	7.2
Zinc	0.40	1.5
Manganese	0.15	--
Silicon	--	0.05
Copper	--	0.05
Nickel	--	0.005
Iron	--	0.005
Residual Elements, each	--	0.10
Residual Elements, total	--	0.30
Magnesium	remainder	

3.2 Condition: As extruded.

3.2.1 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 the dimensional tolerances of 3.5.

3.3 Properties: Extrusions shall conform to the following requirements, determined in accordance with AMS 2355:

3.3.1 Tensile Properties: Shall be as specified in Table I.

TABLE I

Nominal Diameter or Least Thickness Inches	Tensile Strength psi, min	Yield Strength at 0.2% Offset psi, min	Elongation in 4D %, min
Solid Shapes			
Up to 0.250, excl	38,000	21,000	8
0.250 to 2.499, incl	40,000	24,000	9
Over 2.499 to 4.999, incl but not over 25 sq in. Cross-Sectional Area	40,000	22,000	7
Hollow and Semi-Hollow Shapes			
All Wall Thicknesses	36,000	16,000	7
Tubing			
0.028 to 0.750, incl, in Wall Thickness, 6.000 max OD	36,000	16,000	7

TABLE I (SI)

Nominal Diameter or Least Thickness Millimetres	Tensile Strength MPa, min	Yield Strength at 0.2% Offset MPa, min	Elongation in 4D %, min
Solid Shapes			
Up to 6.25, excl	260	145	8
6.25 to 62.50, incl	275	165	9
Over 62.50 to 125.00, incl but not over 160 cm^2 Cross-Sectional Area	275	150	7
Hollow and Semi-Hollow Shapes			
All Wall Thicknesses	250	110	7
Tubing			
0.70 to 18.75, incl, in Wall Thickness 150.00 max OD	250	110	7

3.3.2 Hardness: Should be not lower than 50 HB/10/500 or 57 HB/10/1000 but the Ø extrusions shall not be rejected on the basis of hardness if the tensile property requirements are met.

3.4 Quality: Extrusions, as received by purchaser, shall be uniform in quality and condition, sound, and free from foreign materials and from internal and external imperfections detrimental to usage of the extrusions.

3.5 Tolerances: Unless otherwise specified, tolerances shall conform to all applicable requirements of AMS 2205 or MAM 2205.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor of extrusions shall supply all samples for vendor's tests and shall be responsible for performing all Ø required tests. Results of such tests shall be reported to the purchaser as required by 4.4. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the extrusions conform to the requirements of this specification.

4.2 Classification of Tests:

4.2.1 Acceptance Tests: Tests to determine conformance to requirements for Ø composition (3.1), tensile properties (3.3.1), and tolerances (3.5) are classified as acceptance tests and shall be performed on each lot.

4.2.2 Periodic Tests: Tests to determine conformance to requirements for
Ø hardness (3.3.2) are classified as periodic tests and shall be performed at a frequency selected by the vendor unless frequency of testing is specified by purchaser.

4.3 Sampling: Shall be in accordance with AMS 2355.

4.4 Reports:

4.4.1 The vendor of extrusions shall furnish with each shipment a report stating that the extrusions conform to the chemical composition and other technical requirements of this specification. This report shall include the purchase order number, lot number, AMS 4350K, size or section identification number, and quantity.

4.4.2 The vendor of finished or semi-finished parts shall furnish with each shipment a report showing the purchase order number, AMS 4350K, contractor or other direct supplier of extrusions, part number, and quantity. When extrusions for making parts are produced or purchased by the parts vendor, that vendor shall inspect each lot of extrusions to determine conformance to the requirements of this specification and shall include in the report either a statement that the extrusions conform or copies of laboratory reports showing the results of tests to determine conformance.

4.5 Resampling and Retesting: Shall be in accordance with AMS 2355.

5. PREPARATION FOR DELIVERY:

5.1 Identification: Extrusions shall be identified as follows:

5.1.1 Each straight bar, rod, and tube 0.500 in. (12.50 mm) and over in nominal OD or least width of flat surface and each straight shape with configuration allowing access to a flat surface at least 0.500 in. (12.50 mm) wide recessed not more than 1/8 in. (3 mm) below the outline of the shape shall be marked in a row of characters recurring at intervals not greater than
Ø 3 ft (900 mm) with the alloy number and temper, AMS 4350 or applicable Federal specification designation, and manufacturer's identification. The inspection lot number shall be included in the row marking or shall be marked near one end. The characters shall be of such size as to be legible, shall be applied using a suitable marking fluid, and shall be sufficiently stable to withstand normal handling. The markings shall have no deleterious effect on the extrusions or their performance.

5.1.2 All straight extrusions other than those of 5.1.1 shall be securely bundled, boxed, or secured on lifts and identified by two durable tags
Ø marked with the information of 5.1.1, including the inspection lot number, and attached, not farther than 2 ft (600 mm) from each end, to the extrusions in each bundle, box, or lift.