

AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
29 West 39th Street
New York City

AMS 4350D

Issued 1-22-40

Revised 12-1-51

MAGNESIUM ALLOY EXTRUSIONS AZ61A

1. ACKNOWLEDGMENT: A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.
2. FORM: Bars, rods, and shapes.
3. COMPOSITION:

Aluminum	5.8	- 7.2
Zinc	0.40	- 1.5
Manganese	0.15	min
Silicon	0.30	max
Copper	0.05	max
Nickel	0.005	max
Iron	0.005	max
Other Impurities, total	0.30	max
Magnesium		remainder

4. CONDITION: As extruded.

- 4.1 Unless otherwise specified, extrusions shall be supplied with an as-extruded surface finish.

5. TECHNICAL REQUIREMENTS:

- 5.1 Tensile Properties:

Nominal Diameter or Least Thickness Inches	Tensile Strength psi, min	Yield Strength at 0.2% Offset or at Extension Indicated (E = 6,500,000)		Elongation % in 2 in. min
		psi, min	Extension Under Load inch in 2 in.	
Under 0.250	38,000	20,000	0.0102	8
0.250 to 2.499, incl	40,000	24,000	0.0114	10
Over 2.500 to 4.499, incl, but not over 25 sq in.				
Cross Sectional Area	38,000	22,000	0.0108	5
Hollow Shapes of				
All Wall Thicknesses	36,000	16,000	0.0089	7

Section 7C of the SAE Technical Board rules provides that: "All technical reports, including standards approved and practices recommended, are advisory only. Their use by anyone engaged in industry or trade is entirely voluntary. There is no agreement to adhere to any SAE standard or recommended practice, and no commitment to conform to or be guided by any technical report. In formulating and approving technical reports, the Board and its Committees will not investigate or consider patents which may apply to the subject matter. Prospective users of the report are responsible for protecting themselves against liability for infringement of patents."

- 5.2 **Hardness:** Material should have hardness not lower than Brinell 50 using 500 kg load and 10 mm ball or 1000 kg load and 9/16 in. ball, or not lower than Brinell 57 using 1000 kg load and 10 mm ball, but shall not be rejected on the basis of hardness if the tensile property requirements are met.
6. **QUALITY:** Material shall be uniform in quality and condition, clean, sound, smooth, and free from foreign materials and from internal and external defects detrimental to fabrication or to performance of parts.
7. **TOLERANCES:** Unless otherwise specified, tolerances shall conform to the latest issue of AMS 2205 as applicable.
8. **REPORTS:**
- 8.1 Unless otherwise specified, the vendor of the product shall furnish with each shipment three copies of a report stating that the chemical composition and tensile properties conform to the requirements specified. This report shall include the purchase order number, material specification number, size or section identification number, and quantity. When material is Government source inspected, reports will not be required.
- 8.2 Unless otherwise specified, the vendor of finished or semi-finished parts shall furnish with each shipment three copies of a report showing the purchase order number, material specification number, contractor or other direct supplier of material, part number, and quantity. When material for making parts is produced or purchased by the parts vendor, that vendor shall inspect each lot of material to determine conformance to the requirements of this specification, and shall include in the report a statement that the material conforms, or shall include copies of laboratory reports showing the results of tests to determine conformance.
9. **IDENTIFICATION:**
- 9.1 Unless otherwise specified, each extrusion 0.062 in. or more in diameter or equivalent, or which has at least one substantially flat unobstructed surface 0.50 in. or greater in width shall be marked with the manufacturer's identification, and, in addition, the alloy name or number, or AMS 4350. The characters shall be of such size as to be clearly legible, shall be applied recurring at intervals not to exceed 2 ft using a suitable marking fluid, and shall not be obliterated by normal handling or heat treatment.
- 9.2 Extrusions less than 0.062 in. in diameter or equivalent, or having no substantially flat unobstructed surface 0.50 in. or greater in width shall be identified as agreed upon by purchaser and vendor.
10. **PROTECTIVE TREATMENT:** Unless otherwise specified, extrusions shall be given a chrome pickle treatment to protect against corrosion during shipment and storage before machining. Finished and semi-finished parts shall be treated as specified on drawing or purchase order.