

AERONAUTICAL MATERIAL SPECIFICATIONS

AMS 4387

SOCIETY OF AUTOMOTIVE ENGINEERS, Inc. 485 Lexington Ave., New York 17, N.Y.

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Revised

MAGNESIUM ALLOY EXTRUSIONS 2.3Zn - 0.6Zr (ZK21A-F)

1. **ACKNOWLEDGMENT:** A vendor shall mention this specification number in all quotations and when acknowledging purchase orders.
2. **FORM:** Bars, rods, tubes, and shapes.
3. **APPLICATION:** Primarily for parts requiring good weldability and moderate strength and which do not require stress relief after welding.
4. **COMPOSITION:**

Zinc	2.0 - 2.6
Zirconium	0.45 - 0.8
Other Impurities, total	0.30 max
Magnesium	remainder

5. **CONDITION:** Unless otherwise specified, extrusions shall be furnished in the as-fabricated condition with an as-extruded finish; light polishing to remove minor surface imperfections is permissible provided such imperfections can be removed within the dimensional tolerances.
6. **TECHNICAL REQUIREMENTS:**

6.1 Tensile Properties:

	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 in. in 2 in.	
Bars, Rods, and Solid Shapes; Cross Sectional Area under 5 sq in.	38,000	28,000	0.0126	4
Tubes 3.000 in. and under in OD, and Hollow Shapes	34,000	26,000	0.0120	4

- 6.1.1 When a dispute occurs between purchaser and vendor over the yield strength value, yield strength determined by the offset method shall apply.
- 6.1.2 If sizes other than those shown are ordered, tensile property requirements shall be as agreed upon by purchaser and vendor.

Section 8.3 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 attempt 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 applying 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 infringement of patents."

6.2 Compressive Properties: Material shall be capable of meeting the following requirements. Specimens shall be tested in the longitudinal direction in accordance with ASTM E9-59T.

	Bars, Rods, and Solid Shapes	Tubes 3.000 in.
	Cross Sectional Area	and under in OD,
	5 sq in. and under	and Hollow Shapes
Yield Strength	20,000 min	14,000 min
at 0.2% Offset, psi		

6.2.1 If sizes other than those shown are ordered, compressive properties shall be as agreed upon by purchaser and vendor.

7. QUALITY: Material shall be uniform in quality and condition, clean, sound, smooth, and free from segregation and foreign materials, and from internal and external imperfections detrimental to fabrication or to performance of parts.

8. TOLERANCES: Unless otherwise specified, tolerances shall conform to the latest issue of AMS 2205 as applicable.

9. REPORTS:

9.1 Unless otherwise specified, the vendor of the product shall furnish with each shipment three copies of a report stating that the product conforms to the chemical composition and technical requirements of this specification. This report shall include the purchase order number, material specification number, size or section identification number, and quantity.

9.2 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.

10. IDENTIFICATION: Unless otherwise specified, the product shall be identified as follows:

10.1 Each straight bar, rod, and tube 0.500 in. and over in diameter or distance between parallel sides and each straight shape with configuration allowing access to a flat surface at least 1/2 in. wide recessed not more than 1 in. below the outline of the shape shall be marked with the alloy number and temper, or AMS 4387, and manufacturer's identification. The characters shall be of such size as to be clearly legible, shall be applied recurring at intervals not greater than 3 ft using a suitable marking fluid, and shall not be obliterated by normal handling.

10.2 All straight extrusions other than those of 10.1 shall be bundled, boxed, or secured on lifts and identified by 2 tags marked with the information of 10.1 and attached, not farther than 2 ft from each end, to the product in each bundle, box, or lift.