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

AMS 4389A

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MAGNESIUM ALLOY EXTRUSIONS
3Th - 1.5Mn (HM31A-T5)
Precipitation Heat Treated

1. ACKNOWLEDGMENT: A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.

Ø 2. FORM: Bars, rods, wire, and shapes.

3. APPLICATION: Primarily for components requiring weldability and good strength-to-weight ratio up to 600 F (315 C).

4. COMPOSITION:

Thorium	2.5 - 3.5
Manganese	1.2 min
Other Impurities, each	0.10 max
Other Impurities, total	0.30 max
Magnesium	remainder

5. CONDITION: Precipitation heat treated.

5.1 Unless otherwise specified, 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.

6. TECHNICAL REQUIREMENTS:

6.1 Longitudinal Tensile Properties:

Ø	Tensile Strength psi, min	Yield Strength at 0.2% Offset or at Extension Indicated (E = 6,500,000) psi, min	Extension Under Load in. in 2 in.	Elongation % in 2 in. or 4D min
Bars, Rods, Wire, and Solid Shapes Cross Sectional Area Up to 4 sq in., excl	37,000	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.

6.2 Compressive Properties: Except for wire, material having cross sectional area up to 4 sq in., excl, shall be capable of showing compressive yield strength of not ø less than 19,000 psi. Specimens shall be tested in the longitudinal direction and yield strength shall be measured at 0.2% offset in accordance with the issue of ASTM E9 listed in the latest issue of AMS 2350.

6.2.1 If sizes other than those shown are ordered, compressive properties shall be as ø 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 all applicable ø requirements of the latest issue of AMS 2205, except that straightness and twist tolerances do not apply to wire.

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:

10.1 Each straight bar and rod 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 ø of the shape shall be marked with the alloy number and temper or AMS 4389, and manufacturer's identification. The characters shall be of such size as to be clearly legible, and shall be applied recurring at intervals not greater than 3 ft using a suitable marking fluid, and shall be sufficiently stable to withstand normal handling.

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