SAE Aerospace
An SAE International Group

AEROSPACE MATERIAL SPECIFICATION

AMS 4388F

Issued JAN 1959
Reaffirmed APR 1994
Noncurrent FEB 1996
Cancelled JUN 2006

Superseding AMS 4388E

Magnesium Alloy Extrusions
3.0Th - 1.5Mn (HM31A-F)
As Extruded

CANCELLATION NOTICE

This specification has been declared “CANCELLED” by the Aerospace Materials Division, SAE, as of June, 2006. By this action, this document will remain listed in the Numerical Section of the Index of Aerospace Material Specifications indicating that it has been “CANCELLED”.

Cancelled specifications are available from SAE.

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

1. SCOPE:

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

1.2 Application: Primarily for components requiring weldability and good strength-to-weight ratio up to 600°F (316°C).

1.3 Precautions: Alloy covered by this specification is radioactive. All applicable rules and regulations, including those of the Nuclear Regulatory Agency, pertaining to handling of radioactive material and all licensing provisions for use of such material should be observed.

1.4 Safety - Hazardous Materials: While the materials, methods, applications, and processes described or referenced in this specification may involve the use of hazardous materials, this specification does not address the hazards which may be involved in such use. It is the sole responsibility of the user to ensure familiarity with the safe and proper use of any hazardous materials and to take necessary precautionary measures to ensure the health and safety of all personnel involved.

2. APPLICABLE DOCUMENTS: The following publications form a part of this specification to the extent specified herein. The latest issue of Aerospace Material Specifications 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 Alloys and Magnesium Alloys, Wrought Products Except Forging Stock) and Flash Welded Rings
MAM 2355 - Quality Assurance Sampling and Testing of Aluminum Alloys and Magnesium Alloys, Wrought Products (Except Forging Stock) and Flash Welded Rings, Metric (SI) Units

2.2 ASTM Publications: Available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

ASTM B660 - Packaging/Packing of Aluminum and Magnesium Products

3. TECHNICAL REQUIREMENTS:

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

	min	max
Thorium	2.5	3.5
Manganese	1.2	--
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:

3.3.1 Tensile Properties: Shall be as follows, determined in accordance with AMS 2355 or MAM 2355:

3.3.1.1 Bars, Rods, Wire, and Solid Shapes Under 4 Square Inches (26 cm2) in Cross-Sectional Area:

Tensile Strength, minimum	37,000 psi (255 MPa)
Yield Strength at 0.2% Offset, minimum	26,000 psi (179 MPa)
Elongation in 4D, minimum	4 %

3.3.1.2 Bars, Rods, Wire, and Solid Shapes 4 Square Inches (26 cm2) and Over in Cross-Sectional Area and Hollow Shapes: Shall be as agreed upon by purchaser and vendor.

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

3.5 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 perfoming all 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: Tests to determine conformance to all technical requirements of this specification are classified as acceptance tests and shall be performed on each lot.

4.3 Sampling: Shall be in accordance with AMS 2355 or MAM 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, AMS 4388D, 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 4388D, 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 or MAM 2355.

5. PREPARATION FOR DELIVERY:

5.1 Identification: Extrusions shall be identified as follows:

5.1.1 Each straight bar and rod 0.500 inch (12.70 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 inch (12.70 mm) wide recessed not more than 1/8 inch (3 mm) below the outline of the shape shall be marked in a row of characters recurring at intervals not greater than 3 feet (914 mm) with the alloy number, temper, AMS 4388 or applicable Military 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 marked with the information of 5.1.1, including the inspection lot number, and attached, not farther than 2 feet (610 mm) from each end, to the extrusions in each bundle, box, or lift.

5.1.3 Coiled bar, rod, and wire and spooled wire shall be identified with the information of 5.1.1, including the inspection lot number, marked on a durable tag attached to each coil or directly on one flange of each spool.

5.2 Protective Treatment: Extrusions shall be coated, prior to shipment, with a light corrosion-inhibiting oil.