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

AMS 4390

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Revised

MAGNESIUM ALLOY SHEET AND PLATE
2Th - 0.8Mn (HM21A-T8)

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

2. APPLICATION: Primarily for components requiring weldability and good strength-to-weight ratio up to 700 F.

3. COMPOSITION:

Thorium	1.5 - 2.5
Manganese	0.45 - 1.1
Other Impurities, each	0.10 max
Other Impurities, total	0.30 max
Magnesium	remainder

4. CONDITION: Solution heat treated, cold worked, precipitation heat treated, and pickled.

5. TECHNICAL REQUIREMENTS:

5.1 Tensile Properties: Test specimens shall conform to ASTM E8-57T except from sheet less than 3/4 in. wide and shall be cut parallel to the direction of rolling. Elongation requirements apply only to sheet 3/4 in. and over in width.

Nominal Thickness Inch	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. min
0.016 to 0.250, incl	31,000	18,000	0.0095	4

5.1.1 When a dispute occurs between purchaser and vendor over the yield strength value, yield strength determined by the offset method shall apply.

5.1.2 If sizes other than those shown are ordered, tensile property requirements shall be as agreed upon by purchaser and vendor.

5.2 Compressive Properties: Material shall be capable of meeting the following requirements. Test specimens shall be tested in the longitudinal direction in a suitable jig.

Nominal Thickness Inch	Yield Strength at 0.2% Offset psi, min
0.016 to 0.250, incl	13,000

5.3 Tensile Properties at 600 F: Material shall be capable of meeting the following requirements. Test specimens shall conform to ASTM E8-57T except from sheet less than 3/4 in. wide, and shall be cut parallel to the direction of rolling. Elongation requirements apply only to sheets 3/4 in. and over in width. Tensile test specimens shall be heated to 600 F ± 5, held at 600 F ± 5 for 10 min. before testing, and tested at 600 F ± 5 at a rate not greater than 0.05 in. per in. per min. up to the yield strength and at a rate of 0.11 - 0.14 in. per in. per min. above the yield strength.

Tensile Strength, psi	11,000 min
Elongation, % in 2 in.	8 min

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

7. TOLERANCES: Unless otherwise specified, tolerances shall conform to the latest issue of AMS 2202 as applicable. Thickness tolerances shall conform to Table II.

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 product conforms to the chemical composition and technical requirements of this specification. This report shall include the purchase order number, material specification number, thickness, size, and quantity.

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: Unless otherwise specified, each sheet and plate shall be marked, in the respective location indicated below, with the manufacturer's identification, the alloy number and temper, or AMS 4390, and nominal thickness in inches. The characters shall be not less than 3/8 in. in height, shall be applied using a suitable marking fluid, and shall not be obliterated by normal handling.

9.1 Flat Sheet and Plate: The alloy number and temper, or AMS 4390, shall be marked in rows of recurring characters from one edge to the opposite edge with rows spaced such that no piece larger than approximately 12 in. square could be cut without bearing the alloy identification. The manufacturer's identification and thickness shall be marked in rows not more than 20 in. apart.

10. PROTECTIVE TREATMENT: Unless otherwise specified, material shall be oiled, prior to shipment, with a light corrosion-inhibiting oil, and shall be further protected during shipment and storage by interleaving with suitable paper sheets.