AERONAUTICAL MATERIAL SPECIFICATIONS

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

AMS 4385A

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MAGNESIUM ALLOY SHEET AND PLATE
3.2Th - 0.7Zr (HK31A-H24)

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

2. APPLICATION: Primarily for components requiring weldability and good strength-to-weight ratio up to 550 F.

3. COMPOSITION:

Thorium	2.5 - 4.0
Zirconium	0.45 - 1.0
Other Elements, each	0.15 max
Other Elements, total	0.30 max
Magnesium	remainder

4. CONDITION:

Ø4.1 Material 0.500 in. and Under: Cold rolled, partially annealed (-H24), and pickled.

Ø4.2 Material Over 0.500 in.: Cold rolled and partially annealed (-H24).

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.

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Nominal Thickness Inches	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 0.125, incl	34,000	26,000	0.0120	4
Over 0.125 to 0.250, incl	34,000	23,000	0.0111	4
Over 0.250 to 0.500, incl	34,000	21,000	0.0105	4
Over 0.500 to 1.000, incl	34,000	18,000	0.0095	10
Over 1.000 to 2.000, incl	33,000	15,000	0.0086	10
Over 2.000 to 3.000, incl	33,000	15,000	0.0086	8

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.

5.2 (Cont'd)

Ø Nominal Thickness Inches	Yield Strength at 0.2% Offset psi, min
0.016 to 0.125, incl	20,000
Over 0.125 to 0.250, incl	19,000
Over 0.250 to 0.500, incl	18,000
Over 0.500 to 1.000, incl	13,000
Over 1.000 to 3.000, incl	11,000

5.3 Tensile Properties at 600 F: Material 0.016 to 0.250 in., excl, thick 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. Unless otherwise specified, 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	10,000 min
Elongation, % in 2 in.	20 min

6. 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.

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 and, in addition, the alloy name or number and temper, or AMS 4385, 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.