

A ROSPACE MATERIAL SPECIFICATIONS

AMS 4385C

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MAGNESIUM ALLOY SHEET AND PLATE 3.2Th - 0.70Zr (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 (290 C).
- 3. COMPOSITION:**

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

4. CONDITION:

- 4.1 Material 0.500 In. and Under in Thickness:** Cold rolled, partially annealed (-H24), and pickled.
- 4.2 Material Over 0.500 In. Thick:** Cold rolled and partially annealed (-H24).

5. TECHNICAL REQUIREMENTS: When ASTM methods are specified for determining conformance to the following requirements, tests shall be conducted in accordance with the issue of the ASTM method listed in the latest issue of AMS 2350.

- 5.1 Tensile Properties:** Test specimens shall conform to ASTM E8 and shall be taken parallel to the direction of rolling. Sheet type specimens shall be used for material less than 0.500 in. thick and 0.750 in. and over in width. Round specimens shall be used for material 0.500 in. and over in thickness and 0.750 in. and over in width. Material under 0.750 in. wide and under 0.500 in. thick may be tested in either full section or by use of round specimens; for such sizes, elongation requirements apply only when round specimens are used.

Nominal Thickness Inches	Tensile Strength psi, min	Yield Strength at 0.2% Offset or at Extension Indicated (E = 6,500,000)		Elongation % in 2 in. or 4D, min
		psi, min	in. in 2 in.	
0.016 to 0.125, incl	34,000	26,000	0.0120	4
Over 0.125 to 0.250, incl	34,000	24,000	0.0114	4
Over 0.250 to 1.000, incl	34,000	25,000	0.0117	4
Over 1.000 to 3.000, incl	33,000	25,000	0.0117	4

Section 8.3 of the SAE Technical Board rules provides that: "All technical rules including standards approved and practices recommended, are advisory only. Their use by anyone engaged in industry or trade is entirely voluntary. There is no obligation to conform to or be guided by any technical report. In formulating and approving 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."

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. Specimens shall be tested in the longitudinal direction in accordance with ASTM E9.

Nominal Thickness Inches	Yield Strength at 0.2% Offset psi, min
0.063 to 0.125, incl	20,000
Over 0.125 to 0.250, incl	22,000
Over 0.250 to 1.000, incl	20,000
Over 1.000 to 3.000, incl	17,000

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

5.3 Tensile Properties at 600 F (315.6 C): Material 0.016 to 0.250 in., excl, thick shall be capable of meeting the following requirements. Test specimens shall conform to ASTM E8 and shall be taken parallel to the direction of rolling. Sheet type specimens shall be used. Material under 0.750 in. wide is tested in full section, in which case elongation is not determined. Unless otherwise specified, tensile test specimens shall be heated to 600 F \pm 5 (315.6 C \pm 2.8), held at 600 F \pm 5 (315.6 C \pm 2.8) for 10 min. before testing, and tested at 600 F \pm 5 (315.6 C \pm 2.8) 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 all applicable requirements of the latest issue of AMS 2202.

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.