

AEROSPACE MATERIAL SPECIFICATIONS

AMS 4384C

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MAGNESIUM ALLOY SHEET AND PLATE 3.2Th - 0.70Zr (HK31A-0)

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 good formability and weldability.
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:** Annealed recrystallized and pickled.
 - 4.2 **Material Over 0.500 In. Thick:** Annealed recrystallized.
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 0.250, incl	30,000	18,000	0.0095	12
Over 0.250 to 0.500, incl	30,000	16,000	0.0089	12
Over 0.500 to 1.000, incl	30,000	15,000	0.0086	12
Over 1.000 to 3.000, incl	29,000	14,000	0.0083	12

- 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.

Section 8.3 of the SAE Technical Board rules provides that: "All technical reports 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 adhere to any SAE standard or recommended practice, and no commitment 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."

- 5.2 **Bending:** Material shall be capable of withstanding, without cracking, bending at room temperature through an angle of 90 deg around a diameter equal to the bend factor times the nominal thickness of the material with axis of bend perpendicular to direction of rolling. Unless otherwise specified, the specimen shall be approximately 1 in. wide and 4 in. long, with the edges smooth and free from rough, sheared surfaces.

Nominal Thickness Inch	Bend Factor
0.016 to 0.063, incl	8
Over 0.063 to 0.082, incl	10
Over 0.082 to 0.125, incl	12

- 5.3 **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 0.250, incl	12,000
Over 0.250 to 3.000, incl	10,000

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

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.

- 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 on one face, in the respective location indicated below. Symbols shall be applied using a suitable marking fluid and shall be sufficiently stable to withstand normal handling.