



AEROSPACE MATERIAL SPECIFICATIONS

SOCIETY OF AUTOMOTIVE ENGINEERS, Inc.

485 Lexington Ave., New York, N. Y. 10017

AMS 4375E

Superseding AMS 4375D

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MAGNESIUM ALLOY SHEET AND PLATE

3. 0Al - 1. 0Zn (AZ31B-O)

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 low strength parts requiring rigidity and low density. Special care is necessary to prevent corrosion.
3. **COMPOSITION:**

	min	max
Aluminum	2.5	3.5
Zinc	0.7	1.3
Manganese	0.20	--
Silicon	--	0.10
Copper	--	0.05
Calcium	--	0.04
Iron	--	0.005
Nickel	--	0.005
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:** The product shall conform to the following requirements; tensile properties shall be determined in accordance with the latest issue of AMS 2355.

5.1 **Tensile Properties:**

Nominal Thickness Inches	Tensile Strength psi	Yield Strength at 0.2% Offset or at Extension Indicated (E = 6,500,000)		Elongation % in 2 in. or 4D min
		psi, min	Extension Under Load in. in 2 in.	
0.016 to 0.060, incl	32,000 - 40,000	18,000	0.0095	12
Over 0.060 to 0.500, incl	32,000 - 40,000	15,000	0.0086	12
Over 0.500 to 2.000, incl	32,000 - 40,000	15,000	0.0086	10
Over 2.000 to 3.000, incl	32,000 - 40,000	15,000	0.0086	9

- 5.1.1 When a dispute occurs between purchaser and vendor over the yield strength values, 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 0.063 in. and over in thickness shall be capable of meeting the following requirements. Specimens shall be tested in the longitudinal direction in accordance with the issue of ASTM E9 specified in the latest issue of AMS 2350.

Nominal Thickness Inches	Yield Strength at 0.2% Offset psi, min
0.063 to 0.249, incl	12,000
Over 0.249 to 2.000, incl	10,000
Over 2.000 to 3.000, incl	8,000

- 5.2.1 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, 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 all applicable requirements of the latest issue of AMS 2202. Flatness tolerances for material over 2.000 in. in thickness shall be as agreed upon by purchaser and vendor.

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.

- 9.1 Flat Sheet and Plate 0.375 In. and Under Thick, 6 - 60 In., Incl, Wide, and 36 - 200 In., Incl, Long: Shall be marked in rows of symbols not less than 3/8 in. in height and recurring at intervals not greater than 3 feet. Rows shall run parallel to the direction of rolling of the piece and shall be spaced approximately 6 in. on centers across the width. Every third row shall show the manufacturer's identification and nominal thickness in inches. The other rows shall show the alloy number and temper, or AMS 4375, and shall be staggered.

- 9.2 Flat Sheet and Plate Over 0.375 In. Thick, or Over 60 In. Wide, or Over 200 In. Long: Shall be marked as in 9.1 above or, at vendor's discretion, shall be marked in one or two rows of symbols not less than 3/8 in. in height and running around the periphery of the piece. If one row is used, it shall show the alloy number and temper, or AMS 4375, manufacturer's identification, and nominal thickness in inches. If two rows are used, one row shall show the alloy number and temper, or AMS 4375; the second row shall show the manufacturer's identification and nominal thickness in inches.

- 9.2.1 If peripheral marking is applied to the full piece as produced but partial sheets or plates are supplied, an arrow shall also be applied near one corner indicating the direction of rolling.