



AEROSPACE MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
TWO PENNSYLVANIA PLAZA, NEW YORK, N.Y. 1000

AMS 4382

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Revised

PLATE, EXTRA FLAT, MAGNESIUM ALLOY
3.0Al - 1.0Zn (AZ31B-0)

1. ACKNOWLEDGMENT: A vendor shall mention this specification number in all quotations and when acknowledging purchase orders.
2. APPLICATION: Primarily for applications requiring plate with a high degree of flatness, dimensional stability, and weldability.
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: Annealed.
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: The following properties are applicable to thicknesses from 0.250 to 6.000 in., inclusive:

Tensile Strength, psi	30,000 min
Yield Strength at 0.2% Offset or at 0.0071 in. in 2 in. Extension Under Load (E = 6,500,000), psi	10,000 min
Elongation, % in 2 in. or 4D	9 min

- 5.1.1 If sizes other than those shown are ordered, tensile property requirements shall be as agreed upon by purchaser and vendor.
- 5.1.2 When a dispute occurs between purchaser and vendor over the yield strength values, yield strength determined by the offset method shall apply.
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 shown below:

7.1 Thickness (See Note 1):

Nominal Thickness Inches	Tolerance, Inch Plus and Minus
0.250 to 0.750, incl	0.010
Over 0.750 to 1.250, incl	0.017
Over 1.250 to 2.000, incl	0.025
Over 2.000 to 3.000, incl	0.050
Over 3.000 to 3.250, incl	0.065
Over 3.250 to 3.500, incl	0.080
Over 3.500 to 4.000, incl	0.110
Over 4.000 to 5.000, incl	0.125
Over 5.000 to 6.000, incl	0.135

Note 1. Maximum variation in thickness within a plate shall not exceed ± 0.010 inch.

7.2 Width and Length: For thickness from 0.250 to 6.000 in., incl, tolerance shall be:7.2.1 Width:

Nominal Width Inches	Tolerance, Inch Plus Only
Up to 10, incl	3/16
Over 10 to 48, incl	3/8
Over 48 to 84, incl	1/2
Over 84 to 132, incl	5/8
Over 132 to 168, incl	7/8

7.2.2 Length:

Nominal Length Inches	Tolerance, Inch Plus Only
Up to 10, incl	3/16
Over 10 to 48, incl	3/8
Over 48 to 84, incl	1/2
Over 84	5/8

7.3 Lateral Bow (Camber) (See Note 2):7.3.1 Thickness 0.250 to 6.000 In., Incl:

Nominal Length Inches	Tolerance, Inches Width Ranges, Inches		
	10 and under	Over 10 to 18 incl	Over 18 to 168 incl
Up to 30, incl	1/16	1/32	1/32
Over 30 to 60, incl	1/4	1/16	1/16
Over 60 to 90, incl	1/2	1/8	3/32
Over 90 to 120, incl	1	1/4	1/8
Over 120 to 150, incl	1-1/2	13/32	3/16
Over 150 to 180, incl	2	19/32	5/16
Over 180 to 210, incl	3	25/32	7/16
Over 210 to 240, incl	4 (See Note 3)	1 (See Note 3)	9/16 (See Note 3)

Note 2. Lateral bow (camber) is defined as the curvature of the edges of plate in the plane of the surface of the plate, and is measured as the perpendicular distance from the point of maximum departure of the curved edges from a straight line joining the extremities.

Note 3. Also applicable to any 240-in. increment of longer plate.

7.4 Flatness:

Nominal Thickness Inches	Tolerance, Inch (See Note 4)	
	Any 1 ft	Any 6 ft
0.250 to 1.000, incl	0.005	0.015
Over 1.000 to 6.000, incl	0.010	0.020

Note 4. As measured with the plate resting on a flat surface, concave side upward, using a straight edge and a feeler gauge, dial gauge, or scale.

7.5 Squareness:

Nominal Length Feet	Allowable Difference in Length of Diagonals, Inch	
	Width Ranges, Feet (See Note 5)	
	Up to 3, incl	Over 3
Up to 12, incl	$3/32 \times \text{width, ft}$	$5/64 \times \text{width, ft}$
Over 12	$9/64 \times \text{width, ft}$	$7/64 \times \text{width, ft}$

Note 5. If nominal width is other than an exact multiple of 12 in., tolerance is determined by using the next largest exact multiple. For example, if nominal width is 53 in. and nominal length is 72 in., the tolerance is $5/64 \text{ in.} \times 5 = 25/64 \text{ inch}$. This result is then rounded to $7/16 \text{ in.}$ in accordance with the following rule: Use values for calculating only, then round result upward to nearest $1/16 \text{ inch}$.

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 plate shall be marked on one face, in the respective location indicated below, with the alloy number and temper, AMS 4382 or applicable Federal or Military specification designation, inspection lot number, manufacturer's identification, and nominal thickness in inches. An inspection lot shall be material of the same alloy, temper, section, and size traceable to a heat treatment lot or lots and subjected to inspection at one time. The characters shall be of such size as to be clearly legible, shall be applied using a suitable marking fluid, and shall be sufficiently stable to withstand normal handling.

9.1 Plate Under 6 In. Wide: Shall be marked in one or more lengthwise rows of characters recurring at intervals not greater than 3 feet. The inspection lot number may appear in the row marking or may appear at only one location on the piece.