

AEROSPACE MATERIAL SPECIFICATION



AMS 4045H

Issued JUN 1949
Revised JAN 1993
Reaffirmed JUL 2000

Superseding AMS 4045G

Aluminum Alloy Sheet and Plate
5.6Zn - 2.5Mg - 1.6Cu - 0.23Cr
7075: (-T6 Sheet, -T651 Plate)
Solution and Precipitation Heat Treated

UNS A97075

1. SCOPE:

1.1 Form:

This specification covers an aluminum alloy in the form of sheet and plate.

1.2 Application:

These products have been used typically for structural components, including machined parts subject to excessive warpage during machining, but usage is not limited to such applications.

1.2.1 Certain design and processing procedures may cause these products to become susceptible to stress-corrosion cracking; ARP823 recommends practices to minimize such conditions.

2. APPLICABLE DOCUMENTS:

The following publications form a part of this specification to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order.

2.1 SAE Publications:

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

AMS 2202	Tolerances, Aluminum Alloy and Magnesium Alloy Sheet and Plate
MAM 2202	Tolerances, Metric, Aluminum Alloy and Magnesium Alloy Sheet and Plate
AMS 2355	Quality Assurance Sampling and Testing, Aluminum Alloys and Magnesium Alloys, Wrought Products, Except Forging Stock, and Rolled, Forged, or Flash Welded Rings
MAM 2355	Quality Assurance Sampling and Testing, Aluminum Alloys and Magnesium Alloys, Wrought Products, Except Forging Stock, and Rolled, Forged, or Flash Welded Rings, Metric (SI) Units

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2.1 (Continued):

AMS 2811 Identification, Aluminum and Magnesium Alloy Wrought Products
 ARP823 Minimizing Stress-Corrosion Cracking in Wrought Heat-Treatable Aluminum Alloy Products

2.2 ASTM Publications:

Available from ASTM, 1916 Race Street, Philadelphia, PA 19103-1187.

ASTM B 660 Packaging/Packing of Aluminum and Magnesium Products

2.3 U.S. Government Publications:

Available from Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

MIL-H-6088 Heat Treatment of Aluminum Alloys

3. TECHNICAL REQUIREMENTS:

3.1 Composition:

Shall conform to the percentages by weight shown in Table 1, determined in accordance with AMS 2355 or MAM 2355.

TABLE 1 - Composition

Element	min	max
Zinc	5.1	6.1
Magnesium	2.1	2.9
Copper	1.2	2.0
Chromium	0.18	0.28
Iron	--	0.50
Silicon	--	0.40
Manganese	--	0.30
Titanium	--	0.20
Other Impurities, each	--	0.05
Other Impurities, total	--	0.15
Aluminum	remainder	

3.2 Condition:

The product shall be supplied in the following condition; heat treatments shall be performed in accordance with MIL-H-6088:

3.2.1 Sheet: Solution and precipitation heat treated.

3.2.2 Plate: Solution heat treated, stretched to produce a nominal permanent set of 2% but not less than 1-1/2% nor more than 3%, and precipitation heat treated.

3.2.2.1 Plate shall receive no further straightening operations after stretching.

3.3 Properties:

The product shall conform to the following requirements, determined in accordance with AMS 2355 or MAM 2355:

3.3.1 Tensile Properties: Shall be as specified in Table 2 and 3.3.1.1.

TABLE 2A - Minimum Tensile Properties, Inch/Pound Units

Nominal Thickness Inches	Tensile Strength ksi	Yield Strength at 0.2% Offset ksi	Elongation in 2 Inches or 4D %
0.008 to 0.011, incl	74.0	63.0	5
Over 0.011 to 0.039, incl	76.0	67.0	8
Over 0.039 to 0.125, incl	78.0	68.0	9
Over 0.125 to 0.187, incl	79.0	69.0	9
Over 0.187 to 0.249, incl	80.0	69.0	9
Over 0.249 to 0.499, incl	78.0	67.0	9
Over 0.499 to 1.000, incl	78.0	68.0	7
Over 1.000 to 2.000, incl	77.0	67.0	6
Over 2.000 to 2.500, incl	76.0	64.0	5
Over 2.500 to 3.000, incl	72.0	61.0	5
Over 3.000 to 3.500, incl	71.0	58.0	5
Over 3.500 to 4.000, incl	67.0	54.0	3

TABLE 2B - Minimum Tensile Properties, SI Units

	Nominal Thickness Millimeters		Tensile Strength MPa	Yield Strength at 0.2% Offset MPa	Elongation in 50.8 mm or 4D %
	0.20 to	0.28, incl	510	434	5
Over	0.28 to	0.99, incl	524	462	8
Over	0.99 to	3.18, incl	538	469	9
Over	3.18 to	4.75, incl	545	476	9
Over	4.75 to	6.32, incl	552	476	9
Over	6.32 to	12.67, incl	538	462	9
Over	12.67 to	25.40, incl	538	469	7
Over	25.40 to	50.80, incl	531	462	6
Over	50.80 to	63.50, incl	524	441	5
Over	63.50 to	76.20, incl	496	421	5
Over	76.20 to	88.90, incl	490	400	5
Over	88.90 to	101.60, incl	462	372	3

3.3.1.1 Tensile property requirements for plate over 4.000 inches (101.60 mm) in nominal thickness shall be as agreed upon by purchaser and vendor.

3.3.2 Bending: Product 0.008 to 0.499 inch (0.20 to 12.67 mm), inclusive, in nominal thickness shall withstand, without cracking, bending at room temperature through an angle of 180 degrees around a diameter equal to the bend factor shown in Table 3 times the nominal thickness of the product with axis of bend parallel to the direction of rolling.

TABLE 3 - Bending Parameters

Nominal Thickness Inch		Nominal Thickness Millimeters		Bend Factor
0.008 to 0.020, incl		0.20 to 0.51, incl		7
Over	0.020 to 0.062, incl	Over	0.51 to 1.57, incl	8
Over	0.062 to 0.091, incl	Over	1.57 to 2.31, incl	9
Over	0.091 to 0.125, incl	Over	2.31 to 3.18, incl	10
Over	0.125 to 0.249, incl	Over	3.18 to 6.32, incl	11
Over	0.249 to 0.499, incl	Over	6.32 to 12.67, incl	14

3.3.2.1 Bending requirements for product over 0.499 inch (12.67 mm) in nominal thickness shall be as agreed upon by purchaser and vendor.

3.4 Quality:

The product, as received by purchaser, shall be uniform in quality and condition, sound, and free from foreign materials and from imperfections detrimental to usage of the product.

3.5 Tolerances:

Shall conform to all applicable requirements of AMS 2202 or MAM 2202.

4. QUALITY ASSURANCE PROVISIONS:**4.1 Responsibility for Inspection:**

The vendor of the product shall supply all samples for vendor's tests and shall be responsible for performing all required tests. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the product conforms to the requirements of this specification.

4.2 Classification of Tests:

4.2.1 Acceptance Tests: Tests for composition (3.1), tensile properties (3.3.1), and tolerances (3.5) are acceptance tests and shall be performed on each lot.

4.2.2 Periodic Tests: Tests for bending (3.3.2) are periodic tests and shall be performed at a frequency selected by the vendor unless frequency of testing is specified by purchaser.

4.3 Sampling and Testing:

Shall be in accordance with AMS 2355 or MAM 2355.

4.4 Reports:

The vendor of the product shall furnish with each shipment a report stating that the product conforms to the chemical composition and other technical requirements. This report shall include the purchase order number, lot number, AMS 4045H, size, and quantity.

4.5 Resampling and Retesting:

Shall be in accordance with AMS 2355 or MAM 2355.

5. PREPARATION FOR DELIVERY:**5.1 Identification:**

Shall be in accordance with AMS 2811.