

AEROSPACE MATERIAL SPECIFICATION

SAE

AMS 4025J

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Superseding AMS 4025H

Submitted for recognition as an American National Standard

ALUMINUM ALLOY, SHEET AND PLATE
1.0Mg - 0.60Si - 0.28Cu - 0.20Cr (6061-0)
Annealed

UNS A96061

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 parts where moderate formability and response to precipitation heat treatment are required, but usage is not limited to such applications.

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

AMS 2770 Heat Treatment of Wrought Aluminum Alloy Parts

AMS 2811 Identification, Aluminum and Magnesium Alloy Wrought Products

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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 DODSSP, Subscription Services Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19131-5094.

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
Magnesium	0.8	1.2
Silicon	0.40	0.8
Copper	0.15	0.40
Chromium	0.04	0.35
Iron	--	0.7
Zinc	--	0.25
Manganese	--	0.15
Titanium	--	0.15
Other Impurities, each	--	0.05
Other Impurities, total	--	0.15
Aluminum	remainder	

3.2 Condition:

Annealed in accordance with MIL-H-6088.

3.3 Properties:

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

3.3.1 As Annealed:

3.3.1.1 Tensile Properties: Shall be as shown in Table 2.

TABLE 2A - Tensile Properties, Inch/Pound Units

Nominal Thickness Inches	Tensile Strength ksi, max	Yield Strength at 0.2% Offset ksi, max	Elongation in 2 Inches or 40 %, min
0.006 to 0.007, incl	22.0	12.0	10
Over 0.007 to 0.009, incl	22.0	12.0	12
Over 0.009 to 0.020, incl	22.0	12.0	14
Over 0.020 to 0.128, incl	22.0	12.0	16
Over 0.128 to 0.499, incl	22.0	12.0	18
Over 0.499 to 1.000, incl	22.0	--	18
Over 1.000 to 3.000, incl	22.0	--	16

TABLE 2B - Tensile Properties, SI Units

Nominal Thickness Millimeters	Tensile Strength MPa, max	Yield Strength at 0.2% Offset MPa, max	Elongation in 50.8 mm or 40 %, min
0.15 to 0.18, incl	152	83	10
Over 0.18 to 0.23, incl	152	83	12
Over 0.23 to 0.51, incl	152	83	14
Over 0.51 to 3.25, incl	152	83	16
Over 3.25 to 12.67, incl	152	83	16
Over 12.67 to 25.40, incl	152	--	18
Over 25.40 to 76.20, incl	152	--	16

3.3.1.2 Bending: Product 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
0.006 to 0.020, incl	0.15 to 0.51, incl	0
Over 0.020 to 0.128, incl	Over 0.51 to 3.25, incl	1
Over 0.128 to 0.249, incl	Over 3.25 to 6.32, incl	2
Over 0.249 to 0.499, incl	Over 6.32 to 12.67, incl	3

3.3.2 After Heat Treatment: The product, as received by purchaser, shall have (R) the following properties after solution and precipitation heat treatment to the T62 temper in accordance with AMS 2770:

3.3.2.1 Tensile Properties: Shall be as shown in Table 4.

TABLE 4A - Minimum Tensile Properties. Inch/Pound Units

Nominal Thickness Inches	Tensile Strength ksi	Yield Strength at 0.2% Offset ksi	Elongation in 2 Inches or 40 %
0.006 to 0.007, incl	42.0	35.0	4
Over 0.007 to 0.009, incl	42.0	35.0	6
Over 0.009 to 0.020, incl	42.0	35.0	8
Over 0.020 to 0.499, incl	42.0	35.0	10
Over 0.499 to 1.000, incl	42.0	35.0	9
Over 1.000 to 2.000, incl	42.0	35.0	8
Over 2.000 to 3.000, incl	42.0	35.0	6

TABLE 4B - 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 %
0.15 to 0.18, incl	290	241	4
Over 0.18 to 0.23, incl	290	241	6
Over 0.23 to 0.51, incl	290	241	8
Over 0.51 to 12.67, incl	290	241	10
Over 12.67 to 25.40, incl	290	241	9
Over 25.40 to 50.80, incl	290	241	8
Over 50.80 to 76.20, incl	290	241	6

3.3.2.2 Bending: Product 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 5 times the nominal thickness of the product with axis of bend parallel to direction of rolling.

TABLE 5 - Bending Parameters

Nominal Thickness Inch	Nominal Thickness Millimeters	Bend Factor
0.006 to 0.020, incl	0.15 to 0.51, incl	2
Over 0.020 to 0.036, incl	Over 0.51 to 0.91, incl	3
Over 0.036 to 0.064, incl	Over 0.91 to 1.63, incl	4
Over 0.064 to 0.128, incl	Over 1.63 to 3.25, incl	5
Over 0.128 to 0.249, incl	Over 3.25 to 6.32, incl	6
Over 0.249 to 0.499, incl	Over 6.32 to 12.67, incl	7

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.