SAE The Engineering Society For Advancing Mobility Land Sea Air and Space®
INTERNATIONAL
400 Commonwealth Drive, Warrendale, PA 15096-0001

AEROSPACE MATERIAL SPECIFICATION

SAE AMS 4276

Issued SEP 1997

Submitted for recognition as an American National Standard

Aluminum Alloy, Sheet
4.4Cu - 1.5Mg - 0.60Mn (2024-0)
Annealed, Fine Grained

UNS A92024

1. SCOPE:

1.1 Form:

This specification covers an aluminum alloy in the form of sheet with fine grain structure.

1.2 Application:

This sheet has been used typically for severely-formed structural parts which will be subsequently heat treated and painted or otherwise protected from corrosion, but usage is not limited to such applications.

1.2.1 Certain design and processing procedures may cause this sheet to become susceptible to stress-corrosion cracking after heat treatment; 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.

QUESTIONS REGARDING THIS DOCUMENT: (412) 772-7154 FAX: (412) 776-0243
TO PLACE A DOCUMENT ORDER: (412) 776-4970 FAX: (412) 776-0790

2.1 SAE Publications:

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

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 2772	Heat Treatment of Aluminum Alloy Raw Materials
ARP823	Minimizing Stress Corrosion Cracking in Wrought Heat Treatable Aluminum Alloy Products

2.2 ASTM Publications:

Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

ASTM B 666 /B 666M	Identification Marking of Aluminum and Magnesium Products
ASTM E 112	Determining Average Grain Size

2.3 ANSI Publications:

Available from ANSI, 11 West 42nd Street, New York, NY 10036-8002.

ANSI H35.2	Dimensional Tolerances for Aluminum Mill Products
ANSI H35.2M	Dimensional Tolerances for Aluminum Mill Products (Metric)

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
Copper	3.8	4.9
Magnesium	1.2	1.8
Manganese	0.30	0.9
Iron	--	0.50
Silicon	--	0.50
Zinc	--	0.25
Titanium	--	0.15
Chromium	--	0.10
Other Impurities, each	--	0.05
Other Impurities, total	--	0.15
Aluminum	remainder	

3.2 Condition:

Annealed in accordance with AMS 2772.

3.3 Properties:

The sheet shall conform to the requirements:

3.3.1 As Annealed:

3.3.1.1 Average Grain Size: Shall be ASTM No. 6 or finer, determined in accordance with ASTM E 112 or by a technique agreed upon by purchaser and vendor.

3.3.1.2 Tensile Properties: Sheet, 0.020 to 0.126 inch (0.51 to 3.20 mm), inclusive, in nominal thickness shall conform to the requirements shown in Table 2, determined in accordance with AMS 2355 or MAM 2355:

TABLE 2 - Tensile Properties

Property	Value
Tensile Strength ksi, max	32.0 ksi (221 MPa)
Yield Strength at 0.2% Offset ksi, max	14.0 ksi (97 MPa)
Elongation in 2 Inches (50.8 mm) %, min	12%

3.3.1.3 Bending: Sheet 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 sheet with axis of bend parallel to the direction of rolling.

TABLE 3 - Bending Parameters

Nominal Thickness Inch	Nominal Thickness Millimeters	Bend Factor
0.020 to 0.063, incl	0.51 to 1.60, incl	0
Over 0.063 to 0.126, incl	Over 1.60 to 3.20, incl	2

3.3.2 After Solution Heat Treatment: The sheet, as received by purchaser, shall have the properties shown in Table 4 after solution heat treatment in accordance with AMS 2772 and aging for not less than 4 days at room temperature:

3.3.2.1 Tensile Properties: Shall be as specified in Table 4 for sheet 0.020 to 0.126 inch (0.51 to 3.20 mm), inclusive, in nominal thickness.

TABLE 4A - Minimum Tensile Properties

Property	Value
Tensile Strength	62.0 ksi (427 MPa)
Yield Strength at 0.2% Offset	40.0 ksi (276 MPa)
Elongation in 2 Inches (50.8 mm)	15%

3.3.2.2 Bending: Sheet 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 sheet with axis of bend parallel to the direction of rolling.

TABLE 5 - Bending Parameters

Nominal Thickness Inch	Nominal Thickness Millimeters	Bend Factor
0.010 to 0.020, incl	0.25 to 0.51, incl	4
Over 0.020 to 0.051, incl	Over 0.51 to 1.30, incl	5
Over 0.051 to 0.126, incl	Over 1.30 to 3.20, incl	6