



AEROSPACE MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
400 COMMONWEALTH DRIVE, WARRENDALE, PA. 15096

AMS 4059E

Superseding AMS 4059D

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ALUMINUM ALLOY SHEET AND PLATE
4.4Mg - 0.70Mn - 0.15Cr (5083-H321)

1. SCOPE:

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

1.2 Application: Primarily for parts requiring moderate forming and where good welding characteristics, moderate strength, and good resistance to corrosion are important. Excessive cold work or prolonged heating in the temperature range 150° - 300°F (65° - 150°C) may cause susceptibility to stress-corrosion.

2. APPLICABLE DOCUMENTS: The following publications form a part of this specification to the extent specified herein. The latest issue of Aerospace Material Specifications (AMS) shall apply. The applicable issue of other documents shall be as specified in AMS 2350.

2.1 SAE Publications: Available from Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096.

2.1.1 Aerospace Material Specifications:

AMS 2202 - Tolerances, Aluminum-Base and Magnesium-Base Alloy Sheet and Plate

AMS 2350 - Standards and Test Methods

AMS 2355 - Quality Assurance Sampling and Testing of Aluminum-Base and Magnesium-Base Alloys, Wrought Products (Except Forgings and Forging Stock) and Flash Welded Rings

2.2 Government Publications: Available from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

2.2.1 Military Standards:

MIL-STD-649 - Aluminum and Magnesium Products, Preparation for Shipment and Storage

3. TECHNICAL REQUIREMENTS:

REAFFIRMED

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Documents

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- 3.1 Composition: Shall conform to the following percentages by weight, determined in accordance with AMS 2355:

	min	max
Magnesium	4.0	4.9
Manganese	0.40	1.0
Chromium	0.05	0.25
Iron	--	0.40
Silicon	--	0.40
Zinc	--	0.25
Titanium	--	0.15
Copper	--	0.10
Other Impurities, each	--	0.05
Other Impurities, total	--	0.15
Aluminum	remainder	

- 3.2 Condition: Strain-hardened quarter hard and stabilized.

- 3.3 Properties: The product shall conform to the following requirements, determined in accordance with AMS 2355:

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

TABLE I

Nominal Thickness Inches	Tensile Strength psi		Yield Strength at 0.2% Offset psi		Elongation in 2 in. or 4D %, min
	min	max	min	max	
0.188 to 1.500, incl	44,000 - 56,000		31,000 - 43,000		12
Over 1.500 to 3.000, incl	41,000 - 56,000		29,000 - 43,000		12

TABLE I (SI)

Nominal Thickness Millimetres	Tensile Strength MPa		Yield Strength at 0.2% Offset MPa		Elongation in 50.8 mm or 4D %, min
	min	max	min	max	
4.78 to 38.10, incl	303	386	214	296	12
Over 38.10 to 76.20, incl	283	386	200	296	12

- 3.3.1.1 Tensile property requirements for product less than 0.188 in. (4.78 mm) or over 3.000 in. (76.20 mm) in nominal thickness shall be as agreed upon by purchaser and vendor.

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

- 3.5 Tolerances: Unless otherwise specified, tolerances shall conform to all applicable requirements of AMS 2202.