

ALUMINUM ALLOY SHEET AND PLATE  
2.5Mg - 0.25Cr (5052-H32)  
Strain Hardened, Quarter-Hard, and Stabilized

UNS A95052

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 strength, good formability, good welding characteristics, and good resistance to 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 shall apply. The applicable issue of other documents shall be as specified in AMS 2350.

2.1 SAE Publications: Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096.

2.1.1 Aerospace Material Specifications:

- AMS 2202 - Tolerances, Aluminum Alloy and Magnesium Alloy Sheet and Plate  
MAM 2202 - Tolerances, Metric, Aluminum Alloy and Magnesium Alloy Sheet and Plate  
AMS 2350 - Standards and Test Methods  
AMS 2355 - Quality Assurance Sampling and Testing of Aluminum Alloys and Magnesium Alloys, Wrought Products (Except Forging Stock) and Flash Welded Rings  
MAM 2355 - Quality Assurance Sampling and Testing of Aluminum Alloys and Magnesium Alloys, Wrought Products (Except Forging Stock) and Flash Welded Rings, Metric (SI) Units

2.2 ASTM Publications: Available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

ASTM B660 - Packaging/Packing of Aluminum and Magnesium Products

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### 3. TECHNICAL REQUIREMENTS:

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

	min	max
Magnesium	2.2	2.8
Chromium	0.15	0.35
Iron	--	0.40
Silicon	--	0.25
Zinc	--	0.10
Manganese	--	0.10
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 or MAM 2355:

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

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TABLE I

Nominal Thickness Inches	Tensile Strength psi	Yield Strength at 0.2% Offset psi, min	Elongation in 2 Inches or 4D %, min
0.017 to 0.019, incl	31,000 - 38,000	23,000	4
Over 0.019 to 0.050, incl	31,000 - 38,000	23,000	5
Over 0.050 to 0.113, incl	31,000 - 38,000	23,000	7
Over 0.113 to 0.249, incl	31,000 - 38,000	23,000	9
Over 0.249 to 0.499, incl	31,000 - 38,000	23,000	11
Over 0.499 to 2.000, incl	31,000 - 38,000	23,000	12

TABLE I (SI)

Nominal Thickness Millimetres	Tensile Strength MPa	Yield Strength at 0.2% Offset MPa, min	Elongation in 50.8 mm or 4D %, min
0.43 to 0.48, incl	214 - 262	159	4
Over 0.48 to 1.27, incl	214 - 262	159	5
Over 1.27 to 2.87, incl	214 - 262	159	7
Over 2.87 to 6.32, incl	214 - 262	159	9
Over 6.32 to 12.67, incl	214 - 262	159	11
Over 12.67 to 50.80, incl	214 - 262	159	12

3.3.1.1 Tensile property requirements for product under 0.017 inch (0.43 mm) or over 2.000 inches (50.80 mm) in nominal thickness shall be as agreed upon by the purchaser and vendor.

3.3.2 Bending: Product 0.249 inch (6.32 mm) and under 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 times the nominal thickness of the product with axis of bend parallel to the direction of rolling.

Nominal Thickness		Bend Factor
Inch	Millimetres	
Up to 0.019, incl	Up to 0.48, incl	0
Over 0.019 to 0.050, incl	Over 0.48 to 1.27, incl	1
Over 0.050 to 0.113, incl	Over 1.27 to 2.87, incl	2
Over 0.113 to 0.249, incl	Over 2.87 to 6.32, incl	3

3.3.2.1 Bending requirements for product over 0.249 inch (6.32 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. Results of such tests shall be reported to the purchaser as required by 4.4. 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 to determine conformance to requirements for composition (3.1), tensile properties (3.3.1), and tolerances (3.5) are classified as acceptance tests and shall be performed on each lot.

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

4.3 Sampling: Shall be in accordance with AMS 2355 or MAM 2355.

#### 4.4 Reports:

- 4.4.1 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 of this specification. This report shall include the purchase order number, lot number, AMS 4016H, size, and quantity.
- 4.4.2 The vendor of finished or semi-finished parts shall furnish with each shipment a report showing the purchase order number, AMS 4016H, contractor or other direct supplier of product, part number, and quantity. When product for making parts is produced or purchased by the parts vendor, that vendor shall inspect each lot of product to determine conformance to the requirements of this specification and shall include in the report either a statement that the product conforms or copies of laboratory reports showing the results of tests to determine conformance.

4.5 Resampling and Retesting: Shall be in accordance with AMS 2355 or MAM 2355.

#### 5. PREPARATION FOR DELIVERY:

- 5.1 Identification: Each sheet and plate shall be marked on one face, in the respective location indicated below, with the alloy number and temper, AMS 4016 or applicable Federal specification designation, manufacturer's identification, and nominal thickness. The characters shall be of such size as to be legible, shall be applied using a suitable marking fluid, and shall be sufficiently stable to withstand normal handling. The markings shall have no deleterious effect on the product or its performance.
- 5.1.1 Flat Sheet and Plate Under 6 Inches (152 mm) Wide: Shall be marked in one or more lengthwise rows of characters recurring at intervals not greater than 3 feet (914 mm).
- 5.1.2 Flat Sheet and Plate 0.375 Inches (9.52 mm) and Under Thick, 6 - 60 Inches (152 - 1524 mm), Incl, Wide, and 36 - 200 Inches (914 - 5080 mm), Incl, Long: Shall be marked in lengthwise rows of characters recurring at intervals not greater than 3 feet (914 mm), the rows being spaced approximately 6 inches (152 mm) on centers across the width and staggered. Every third row shall show the manufacturer's identification and nominal thickness. The other rows shall show the alloy number and temper and AMS 4016 or applicable Federal specification designation.
- 5.1.3 Flat Sheet and Plate Over 0.375 Inches (9.52 mm) Thick, Over 60 Inches (1524 mm) Wide, or Over 200 Inches (5080 mm) Long: Shall be marked as in 5.1.2 or, at vendor's discretion, shall be marked in one or two rows of characters recurring at intervals not greater than 3 feet (914 mm) and running around the periphery of the piece. If one row is used, it shall show all information of 5.1. If two rows are used, one row shall show the alloy number, temper, and AMS 4016 or applicable Federal specification designation; the second row shall show the manufacturer's identification and nominal thickness.
- 5.1.3.1 If peripheral marking is applied to the full piece as produced but partial sheets or plates are supplied, an arrow shall also be applied near one corner indicating the direction of rolling.