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INTERNATIONAL
400 Commonwealth Drive, Warrendale, PA 15096-0001

AEROSPACE MATERIAL SPECIFICATION

SAE AMS 4383E

Issued SEP 1966
Revised JAN 1992
Noncurrent JUL 2000

Superseding AMS 4383D

Magnesium Alloy, Sheet and Plate
2.0Th - 0.78Mn
Solution Heat Treated, Cold Worked, and Precipitation Heat Treated

UNS M13210

NONCURRENT NOTICE

This specification has been declared “NONCURRENT” by the Aerospace Materials Division, SAE, as of July 2000. It is recommended, therefore, that this specification not be specified for new designs.

“NONCURRENT” refers to those materials which have previously been widely used and which may be required on some existing designs in the future. The Aerospace Materials Division, however, does not recommend these as standard materials for future use in new designs. Each of these “NONCURRENT” specifications is available from SAE upon request.

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1. SCOPE:

1.1 Form:

This specification covers a magnesium alloy in the form of sheet and plate.

1.2 Application:

These products have been used typically for parts requiring good weldability and good strength-to-weight-ratio up to 700 °F (371 °C), but usage is not limited to such applications.

1.3 Precautions:

Alloy covered by this specification is radioactive. All applicable rules and regulations pertaining to handling of radioactive material and all licensing provisions for use of such material should be observed.

1.4 Safety - Hazardous Materials:

While the alloy, methods, applications, and processes described or referenced in this specification may involve the use of hazardous materials, this specification does not address the hazards which may be involved in such use. It is the sole responsibility of the user to ensure familiarity with the safe and proper use of any hazardous materials and to take necessary precautionary measures to ensure the health and safety of all personnel involved.

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 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
AMS 2811	Identification, Aluminum and Magnesium Alloy Wrought 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
ASTM E 9	Compression Testing of Metallic Materials at Room Temperature
ASTM E 21	Elevated Temperature Tension Tests of Metallic Materials

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
Thorium	1.5	2.5
Manganese	0.45	1.1
Other Impurities, each (3.1.1)	--	0.10
Other Impurities, total (3.1.1)	--	0.30
Magnesium	remainder	

3.1.1 Determination not required for routine acceptance.

3.2 Condition:

Solution heat treated, cold worked, precipitation heat treated, and pickled.

3.3 Properties:

Product 0.125 - 0.312 inch (3.18 - 7.92 mm) in nominal thickness and 48 inches (1219 mm) and under in nominal width shall conform to the following requirements. Property requirements for product 48 inches (1219 mm) and under in nominal width and under 0.125 inch (3.18 mm) or over 0.312 inch (7.92 mm) in nominal thickness and for product over 48 inches (1219 mm) in nominal width in all thicknesses shall be as agreed upon by purchaser and vendor:

3.3.1 Tensile Properties:

3.3.1.1 At Room Temperature: Shall be as specified in Table 2, determined in accordance with AMS 2355 or MAM 2355.

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

Specimen Orientation	Tensile Strength ksi	Yield Strength at 0.2% Offset ksi	Elongation in 2 inches or 4D %
Longitudinal	34.0	25.0	4
Long-Transverse	34.0	22.0	4

TABLE 2B - Minimum Tensile Properties, SI Units

Specimen Orientation	Tensile Strength MPa	Yield Strength at 0.2% Offset MPa	Elongation in 50.8 mm or 4D %
Longitudinal	234	172	4
Long-Transverse	224	152	4

3.3.1.2 At 600 °F (316 °C): Tensile strength shall be not lower than 15.0 ksi (103 MPa), determined in accordance with ASTM E 21 on specimens in both the longitudinal and long-transverse directions heated to 600 °F ± 5 (316 °C ± 3), held at heat for 10 to 20 minutes before testing, and tested at 600 °F ± 5 (316 °C ± 3) at a rate not greater than 0.05 inch/inch per minute (0.05 mm/mm per minute) through the 0.2% offset and at a rate of 0.11 - 0.14 inch/inch per minute (0.11 - 0.14 mm/mm per minute) above the 0.2% offset.

3.3.2 Compressive Properties: Compressive yield strength at 0.2% offset in both the longitudinal and long-transverse directions shall be not lower than 20.0 ksi (138 MPa), determined in accordance with ASTM E 9.

3.4 Quality:

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

3.4.1 Acceptance limits for imperfections shall be as agreed upon by purchaser and vendor.

3.5 Tolerances:

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