

 AEROSPACE MATERIAL SPECIFICATION	AMS 4238E	
	Issued JAN 1963 Reaffirmed MAY 1995 Cancelled SEP 2006 Superseding AMS 4238D	
Aluminum Alloy Castings, Sand 6.8Mg - 0.18Ti - 0.18Mn (535.0-F) As Cast		

RATIONALE

AMS 4238E places this specification in cancelled status.

CANCELLATION NOTICE

This specification has been declared "CANCELLED" by the Aerospace Materials Division, SAE, as of September, 2006. By this action, this document will remain listed in the Numerical Section of the Index of Aerospace Material Specifications indicating that it has been "CANCELLED".

Similar but not necessarily identical products are covered in the following specification. However, this list is provided for information only and does not constitute authority to substitute this specification for the "CANCELLED" specification.

ASTM B 26, Aluminum-Alloy Sand Castings

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Full document details: SAE AMS4238E

1. SCOPE:

- 1.1 Form: This specification covers an aluminum alloy in the form of sand castings.
- 1.2 Application: Primarily for parts requiring high ductility and operating in service up to 250°F (121°C).

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.

2.1.1 Aerospace Material Specifications:

AMS 2360 - Room Temperature Tensile Properties of Castings
AMS 2635 - Radiographic Inspection
AMS 2645 - Fluorescent Penetrant Inspection
AMS 2646 - Contrast Dye Penetrant Inspection
AMS 2694 - Repair Welding of Aerospace Castings
AMS 2804 - Identification, Castings

- 2.2 ASTM Publications: Available from ASTM, 1916 Race Street, Philadelphia, PA 19103-1187.

ASTM B 557 - Tension Testing Wrought and Cast Aluminum- and Magnesium-Alloy Products
ASTM B 557M - Tension Testing Wrought and Cast Aluminum- and Magnesium-Alloy Products (Metric)
ASTM B 660 - Packaging/Packing of Aluminum and Magnesium Products
ASTM E 10 - Brinell Hardness of Metallic Materials
ASTM E 34 - Chemical Analysis of Aluminum and Aluminum Alloys
ASTM E 155 - Reference Radiographs for Inspection of Aluminum and Magnesium Castings

3. TECHNICAL REQUIREMENTS:

- 3.1 Composition: Shall conform to the following percentages by weight, determined by wet chemical methods in accordance with ASTM E 34, by spectrochemical methods, or by other analytical methods acceptable to purchaser:

	min	max
Magnesium	6.2	7.5
Titanium	0.10	0.25
Manganese	0.10	0.25
Beryllium	0.003	0.007
Iron	--	0.15
Silicon	--	0.15
Copper	--	0.05
Boron	--	0.002
Other Impurities, each	--	0.05
Other Impurities, total		0.15
Aluminum	remainder	



3.2 Condition: As cast.

3.3 Casting: Castings shall be produced in lots from metal conforming to 3.1. Metal remelted from previously analyzed Ingot may be poured directly Into castings. Furnace or ladle additions of grain-refining elements or alloys are permissible. Molten metal taken from alloying furnaces, with or without additions of foundry operating scrap (gates, sprues, risers, and rejected castings), shall not be poured Into castings unless first converted to ingot, analyzed, and remelted or unless the composition of a sample taken after the last addition to the melt conforms to 3.1.

3.3.1 A melt shall be the metal withdrawn from a batch furnace charge of 2000 pounds (907 kg) or less as melted for pouring castings or, when permitted by purchaser, a melt shall be 4000 pounds (1814 kg) or less of metal withdrawn from one continuous furnace in not more than eight consecutive hours.

3.3.2 A lot shall be all castings poured from a single melt in not more than eight consecutive hours.

3.4 Cast Test Specimens: Chemical analysis specimens and tensile specimens shall be cast as follows:

3.4.1 Chemical Analysis Specimens: Shall be cast from each melt and shall be of any convenient size, shape, and form.

3.4.2 Tensile Specimens: Shall be cast with each lot of castings, shall be of standard proportions conforming to ASTM B 557 or ASTM B 557M with 0.500 inch (12.70 mm) diameter at the reduced parallel gage section, and shall be cast to size in molds made of the regular foundry mix of sand without using chills. Metal for the specimens shall be part of the melt which is used for the castings. If the metal for castings is given any treatment, such as fluxing or cooling and reheating, the metal for the specimens shall be a portion of the metal so treated and, during such treatment, shall be heated to the same maximum temperature and held for approximately the same time as the molten metal for the castings. The temperature of the metal during pouring of the specimens shall be not lower than that during pouring of the castings.

3.5 Properties: Castings 1.0 inch (25 mm) and under in nominal wall thickness and 50 pounds (23 kg) and under in weight and representative tensile specimens produced in accordance with 3.4.2 shall conform to the following requirements; properties of castings over 1.0 inch (25 mm) in nominal wall thickness or over 50 pounds (23 kg) in weight shall be as agreed upon by purchaser and vendor:

3.5.1 Tensile Properties: Shall be as follows, determined in accordance with ASTM B 557 or ASTM B 557M; conformance to the requirements of 3.5.1.1 shall be used as the basis for acceptance of castings except when purchaser specifies that the requirements of 3.5.1.2 apply:

3.5.1.1 Separately-Cast Specimens:

Tensile Strength, minimum
Yield Strength at 0.2% Offset, minimum
Elongation in 40, minimum

35.0 ksi (241 MPa)
18.0 ksi (124 MPa)
9%