



AEROSPACE MATERIAL SPECIFICATION

AMS4226™**REV. B**

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Superseding AMS4226A

Aluminum Alloy Castings, High Strength
5.0Cu - 0.35Mn - 0.18Zr - 0.10V (224.0)
Solution and Precipitation Heat Treated (Overaged)

UNS A02240

RATIONALE

AMS4226B has been declared "STABILIZED" by AMS Committee D because it contains mature technology that is not expected to change and thus no further revisions are anticipated.

STABILIZED NOTICE

AMS4226B has been declared "STABILIZED" by the SAE AMS D Nonferrous Alloys Committee. This document was stabilized because this document contains mature technology that is not expected to change and thus no further revisions are anticipated. Previously this document was non-current. The last technical update of this document occurred in December, 1974. Users of this document should refer to the cognizant engineering organization for disposition of any issues with reports/certifications to this specification; including exceptions listed on the certification.

NOTE: In many cases, the purchaser may represent a sub tier supplier and not the cognizant engineering organization.

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1. SCOPE:

- 1.1 Form: This specification covers an aluminum alloy in the form of high-strength sand, permanent mold, and composite mold castings of four classes.
- 1.2 Application: Primarily for components requiring a combination of high strength at room and elevated temperatures and good resistance to stress-corrosion cracking.
- 1.3 Classification: This specification covers four classes of aluminum alloy castings, defined by tensile property requirements in 3.6.1.1 and 3.6.1.2. The class or combination of classes supplied shall be as specified by the purchaser.

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, Pennsylvania 15096.

2.1.1 Aerospace Material Specifications:

AMS 2350 - Standards and Test Methods
AMS 2635 - Radiographic Inspection
AMS 2804 - Identification, Castings

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

ASTM B117 - Salt Spray (Fog) Testing
ASTM B557 - Tension Testing Wrought and Cast Aluminum and Magnesium Alloy Products
ASTM E21 - Short-Time Elevated Temperature Tension Tests of Materials
ASTM E34 - Chemical Analysis of Aluminum and Aluminum-Base Alloys

- 2.3 Government Publications: Available from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, Pennsylvania 19120.

2.3.1 Federal Standards:

Federal Test Method Standard No. 151 - Metals; Test Methods

3. TECHNICAL REQUIREMENTS:

- 3.1 Composition: Shall conform to the following percentages by weight, determined by wet chemical methods in accordance with ASTM E34, by spectrographic methods in accordance with Federal Test Method Standard No. 151, Method 112, or by other approved analytical methods:

		min	max
Ø	Copper	4.5	- 5.5
	Manganese	0.20	- 0.50
	Zirconium	0.10	- 0.25
	Vanadium	0.05	- 0.15
	Titanium	--	0.35
	Iron	--	0.10
	Silicon	--	0.06
	Other Impurities, each	--	0.03
	Other Impurities, total	--	0.10
	Aluminum	remainder	

3.2 Condition: Solution and precipitation heat treated.

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. Unless otherwise agreed upon by purchaser and vendor, 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 until the composition of a sample taken after the last addition to the melt has been found to conform to 3.1.

3.3.1 A melt shall be the metal withdrawn from a batch furnace charge of 2000 lb (908 kg) or less as melted for pouring castings or, when permitted by the purchaser, a melt shall be 4000 lb (1816 kg) or less of metal withdrawn from one continuous furnace in not more than 8 consecutive hours.

3.3.2 A lot shall consist of castings poured from a single melt in not more than 8 consecutive hours.

3.4 Cast Test Specimens: When tensile test specimens and chemical analysis specimens are required, they shall be cast as follows and, when requested, shall be supplied with the castings.

3.4.1 Tensile Test Specimens: Shall be cast with each lot of castings, shall be of standard proportions conforming to ASTM B557 with 0.500 in. (12.70 mm) diameter at the reduced parallel gage section, and shall be cast to size in molds representative of the practice used for castings. 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.

3.4.2 Chemical Analysis Specimens: Shall be cast from each melt and shall be of the size and shape agreed upon by purchaser and vendor.

3.5 Heat Treatment: All castings and tensile test specimens representing them shall be solution heat treated and overaged as follows; at least one set of tensile test specimens shall, during each stage of heat treatment, be put into a batch-type furnace with each load of castings or into a continuous furnace at intervals of not longer than three hours.

3.5.1 The solution heat treatment shall consist of heating to 930° F ± 10 (498.9° C ± 5.6), holding at heat for 5 hr ± 0.5, heating to 1000° F ± 10 (537.8° C ± 5.6), holding at heat for 24 hr ± 1, and quenching immediately in water at 150° F ± 5 (65.6° C ± 2.8).