



AEROSPACE MATERIAL SPECIFICATION

AMS4241™**REV. F**

Issued 1986-07
Reaffirmed 2007-04
Revised 2026-04

Superseding AMS4241E

Aluminum Alloy Castings,
7.0Si - 0.58Mg - 0.15Ti - 0.06Be (D357.0-T6),
Solution and Precipitation Heat Treated,
Dendrite Arm Spacing (DAS) Controlled
(Composition similar to UNS A43570)

RATIONALE

AMS4241F results from a Five-Year Review and update of this specification with changes to clarify that casting approval and reapproval actions are to be carried out by the cognizant engineering organization (see 4.2.3 and 4.4), update wording to prohibit unauthorized exceptions (see 3.8, 4.5.1, and 8.7), relocate Definitions (see 2.5), update Applicable Documents (see Section 2, 3.1, and 3.2), Identification (see 5.1.3), Packaging (see 5.2), and Ordering Information (see 8.8), and allow use of the immediate prior revision of this specification (see 8.6).

1. SCOPE

1.1 Form

This specification covers an aluminum alloy in the form of castings.

1.2 Application

These castings have been used typically for structural aircraft components (see 8.3) requiring DAS quality control, but usage is not limited to such applications.

1.3 Safety - Hazardous Materials

While the materials, 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 issue of the following documents in effect on the date of the purchase order forms a part of this specification to the extent specified herein. The supplier may work to a subsequent revision of a document unless a specific document issue is specified. When the referenced document has been cancelled and no superseding document has been specified, the last published issue of that document shall apply.

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2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (U.S. and Canada only) or +1 724-776-4970 (outside U.S. and Canada), www.sae.org.

AMS2175	Castings, Classification and Inspection of
AMS2360	Room Temperature Tensile Properties of Castings
AMS2694	In-Process Welding of Castings
AMS2771	Heat Treatment of Aluminum Alloy Castings
AMS2804	Identification, Castings
AMS4246	Aluminum Alloy, Welding Wire, 7.0Si - 0.52Mg (357)
ARP1947	Dendrite Arm Spacing of Structural Aircraft Quality D357 Aluminum Alloy Castings, Determination and Acceptance of
AS7766	Terms Used in Aerospace Metals Specifications

2.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM B557	Tension Testing Wrought and Cast Aluminum- and Magnesium-Alloy Products
ASTM B660	Packaging/Packing of Aluminum and Magnesium Products
ASTM E10	Standard Test Method for Brinell Hardness of Metallic Materials
ASTM E18	Standard Test Methods for Rockwell Hardness of Metallic Materials
ASTM E29	Using Significant Digits in Test Data to Determine Conformance with Specifications
ASTM E155	Reference Radiographs for Inspection of Aluminum and Magnesium Castings
ASTM E716	Sampling Aluminum and Aluminum Alloys for Spectrochemical Analysis
ASTM E1251	Analysis of Aluminum and Aluminum Alloys by Atomic Emission Spectrometry
ASTM E1417/E1417M	Liquid Penetrant Testing
ASTM E1742/E1742M	Radiographic Examination
ASTM E3061	Analysis of Aluminum and Aluminum Alloys by Inductively Couple Plasma Atomic Emission Spectrometry (Performance Based Method)

2.3 AIA Publications

Available from Aerospace Industries Association, 1000 Wilson Boulevard, Suite 1700, Arlington, VA 22209-3928, Tel: 703-358-1000, www.aia-aerospace.org.

NAS 823	Cast Surface Comparison Standard
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2.4 ANSI Publications

Copies of these documents are available online at <https://webstore.ansi.org>.

ANSI H35.1/H35.1M Standard Alloy and Temper Designation System for Aluminum

2.5 Definitions

Terms used in AMS are defined in AS7766.

3. TECHNICAL REQUIREMENTS

3.1 Composition

Shall conform to the percentages by weight shown in Table 1, determined in accordance with ASTM E1251 or ASTM E3061 or by other analytical methods acceptable to the purchaser (see 3.4.1).

Table 1 - Composition

Element	Min	Max
Silicon	6.5	7.5
Iron	--	0.12
Manganese	--	0.10
Magnesium	0.55	0.6
Titanium	0.10	0.20
Beryllium	0.04	0.07
Other Impurities, each	--	0.05
Other Impurities, total	--	0.15
Aluminum	remainder	

3.1.1 Test results may be rounded by the “rounding” method of ASTM E29.

3.2 Condition

Solution and precipitation heat treated to T6 condition (refer to ANSI H35.1/H35.1M).

3.3 Casting

Castings shall be produced from metal conforming to 3.1, determined by analysis of a specimen (see 3.4.1) cast after the last melt addition.

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 after the last melt addition and shall be tested to qualify the melt as in 3.1. Spectrochemical sample shall be prepared in accordance with ASTM E716.

3.4.2 Integrally Attached Coupons

Unless otherwise specified, at least two coupons shall be integrally attached to each casting. The two coupons shall represent a variation of size of dendrite arm spacing (DAS). The chilled coupon exhibiting a small DAS shall be identified as coupon “A,” the unchilled coupon of large DAS shall be identified as coupon “B.” These coupons shall be tested for tensile property determination specified in 3.6.1 and microstructure evaluation specified in 3.6.2. Additional coupons may be added for retest and for foundry purposes at the option of the foundry.