

Aluminum Alloy Castings  
7.0Si - 0.55Mg - 0.12Ti (F357.0-T6)  
Solution and Precipitation Heat Treated

**RATIONALE**

AMS4289 has been reaffirmed to comply with the SAE five-year review policy.

**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 components requiring high strength, but usage is not limited to such application.

**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 canceled and no superseding document has been specified, the last published issue of that document shall apply.

**2.1 SAE Publications:**

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001 or [www.sae.org](http://www.sae.org).

AMS 2360	Room Temperature Tensile Properties of Castings
AMS 2694	Repair Welding of Aerospace Castings
AMS 2771	Heat Treatment of Aluminum Alloy Castings
AMS 2804	Identification, Castings
AMS-STD-2175	Classification and Inspection of Castings

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on this Technical Report, please visit  
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## 2.2 ASTM Publications:

Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959 or [www.astm.org](http://www.astm.org).

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 E 29	Using Significant Digits in Test Data to Determine Conformance with Specifications
ASTM E 34	Chemical Analysis of Aluminum and Aluminum Alloys
ASTM E 155	Reference Radiographs for Inspection of Aluminum and Magnesium Castings
ASTM E 227	Optical Emission Spectrometric Analysis of Aluminum and Aluminum Alloys by the Point-to-Plane Technique
ASTM E 607	Optical Emission Spectrometric Analysis of Aluminum and Aluminum Alloys by the Point-to-Plane Technique, Nitrogen Atmosphere
ASTM E 716	Sampling Aluminum and Aluminum Alloys for Spectrochemical Analysis
ASTM E 1251	Optical Emission Spectrometric Analysis of Aluminum and Aluminum Alloys by the Argon Atmosphere, Point-to-Plane, Unipolar Self-Initiating Capacitor Discharge
ASTM E 1417	Liquid Penetrant Examination
ASTM E 1742	Radiographic Examination

## 3. TECHNICAL REQUIREMENTS:

### 3.1 Composition:

Shall conform to the percentages by weight shown in Table 1, determined by wet chemical methods in accordance with ASTM E 34, by spectrochemical methods in accordance with ASTM E 227, ASTM E 607, or ASTM E 1251, or by other analytical methods acceptable to purchaser (See 3.4.1).

TABLE 1 - Composition

Element	min	max
Silicon	6.5	7.5
Iron	--	0.10
Copper	--	0.20
Manganese	--	0.10
Magnesium (see 8.3)	0.40	0.7
Zinc	--	0.10
Titanium	0.04	0.20
Beryllium	--	0.002
Other Elements, each (see 8.4)	--	0.05
Other Elements, total	--	0.15
Aluminum	remainder	

3.1.1 Test results may be rounded by the "rounding off" method of ASTM E 29.

3.2 Condition:

Solution and precipitation heat treated to T6 condition.

3.3 Castings:

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

3.4 Test Specimens:

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. The method for control of any subsequent additions prior to pouring (i.e., grain refining, correction for magnesium fade, etc.) shall be documented as a control factor (See 4.4.2). Spectrochemical sample shall be prepared in accordance with ASTM E 716.

3.4.2 Tensile Specimens:

3.4.2.1 Specimens Cut from Castings: Shall conform to ASTM B 557 or ASTM B 557M and shall be tested for tensile property determination as in 3.6.1.1. Location(s) and size of cut specimens shall be as agreed upon by purchaser and vendor.

3.4.2.2 Integrally Cast Coupons: Shall be integrally attached to castings and tested for tensile property determination as in 3.6.1.2. Unless otherwise specified by purchaser, the following shall apply: