AEROSPACE MATERIAL SPECIFICATION

AMS4280™	REV. K

Issued 1942-06
Reaffirmed 2014-05
Revised 2025-09

Superseding AMS4280J

Aluminum Alloy Castings, Permanent Mold,
5.0Si - 1.2Cu - 0.5Mg (355.0-T71),
Solution Heat Treated and Overaged
(Composition similar to UNS A03550)

RATIONALE

AMS4280K 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 8.5), provide casting Class inspection standards when none are specified (see 3.7.2), allow use of sampling from integrally cast coupons when specified (see 3.4.2.1, 3.4.2.2, 4.3.2, 4.3.4.1, and 8.6), relocate Definitions (see 2.4), update Applicable Documents (see Section 2, 3.1, 3.2, 3.4.2.1, 3.4.2.2, 3.6.1, and 4.3.4.1), Composition (see 3.1), Condition (see 3.2), significant figures in tensile values (see Table 3), Resampling and Retesting (see 4.6), and Ordering Information (see 8.6), and allow use of the immediate prior revision of this specification (see 8.4).

1. SCOPE

1.1 Form

This specification covers an aluminum alloy in the form of permanent mold castings (see 8.6).

1.2 Application

These castings have been used typically for components requiring moderate strength and dimensional stability up to 300 °F (149 °C), but usage is not limited to such applications.

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.

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

SAE Executive Standards Committee Rules provide that: “This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user.”

SAE reviews each technical report at least every five years at which time it may be revised, reaffirmed, stabilized, or cancelled. SAE invites your written comments and suggestions.

Copyright © 2025 SAE International

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, or used for text and data mining, AI training, or similar technologies, without the prior written permission of SAE.

TO PLACE A DOCUMENT ORDER: **Tel: 877-606-7323 (inside USA and Canada)**
Tel: +1 724-776-4970 (outside USA)
Fax: 724-776-0790
Email: CustomerService@sae.org
SAE WEB ADDRESS: http://www.sae.org

For more information on this standard, visit
https://www.sae.org/standards/content/AMS4280K/

Documents Document Sharing Hub

Full document details: SAE AMS4280K

AMS2360 Room Temperature Tensile Properties of Castings

AMS2694 In-Process Welding of Castings

AMS2771 Heat Treatment of Aluminum Alloy Castings

AMS2804 Identification, Castings

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 E29 Using Significant Digits in Test Data to Determine Conformance with Specifications

ASTM E716 Sampling and Sample Preparation of Aluminum and Aluminum Alloys for Determination of Chemical Composition by Spark Atomic Emission Spectrometry

ASTM E1251 Analysis of Aluminum and Aluminum Alloys by Spark Atomic Emission Spectrometry

ASTM E1417/E1714M 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 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

2.4 Definitions

Terms used in AMS are defined in AS7766 and as follows:

2.4.1 MELT

A single homogeneous batch of molten metal to which all melt additions and processing have been completed and from which castings are poured.

2.4.2 MELT LOT

Castings poured from a single melt.

Documents
Document Sharing Hub

Full document details: SAE AMS4280K

2.4.3 HEAT-TREAT LOT

Castings of the same part number, poured from a single melt, and solution and precipitation heat treated in the same heat-treat batch.

3. TECHNICAL REQUIREMENTS

3.1 Composition

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

Table 1 - Composition

Element (see 3.1.1)	Min	Max
Silicon	4.5	5.5
Iron (see 3.1.2)	--	0.6
Copper	1.0	1.5
Manganese (see 3.1.2)	--	0.5
Magnesium	0.4	0.6
Chromium	--	0.25
Zinc	--	0.35
Titanium	--	0.25
Other Elements, each	--	0.05
Other Elements, total	--	0.15
Aluminum	remainder	

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

3.1.2 If iron content exceeds 0.45, manganese content shall be not less than one-half the iron content.

3.2 Condition

Solution heat treated and overaged to the T71 temper (refer to ANSI H35.1/H35.1M).

3.3 Castings

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 lot as in 3.1. Spectrochemical sample shall be prepared in accordance with ASTM E716.

3.4.2 Tensile Specimens

3.4.2.1 Unless specimens cut from a casting or from integrally cast coupons are specified by the purchaser, separately cast specimens conforming to ASTM B557 shall be cast from each melt after the last melt addition. Specimens shall be cast in permanent molds. Chills are not permitted on test specimen cavity except on the end face of the specimen when approved in accordance with 4.4.2. Tensile specimens shall be processed with each heat-treat lot and tested for conformance to 3.6.1.

Documents
Document Sharing Hub
Full document details: SAE AMS4280K