AEROSPACE MATERIAL SPECIFICATION

AMS4803™	REV. F

Issued	1944-11
Revised	2010-04
Reaffirmed	2015-10
Stabilized	2022-07

Superseding AMS4803E

Zinc Alloy Castings, Die
4.0Al - 0.04Mg (AG40A)
As Cast
(Composition similar to UNS Z33520)

RATIONALE

AMS4803F has been declared "STABILIZED" by AMS Committee D Nonferrous Alloys Committee. This document will no longer be updated and may no longer represent standard industry practice. This document was stabilized because this document contains technology for which the expertise no longer exists in a Technical Committee.

NOTE: Previously, this document was reaffirmed. The last technical update of this document occurred in April, 2010. Users of this document should refer to the cognizant engineering organization for disposition of any issues with reports/certifications to the specification, including exceptions listed on the certification. In many cases, the purchaser may represent a sub-tier supplier and not the cognizant engineering organization.

STABILIZED NOTICE

AMS4803 has been declared “STABILIZED” by SAE AMS Committee D Nonferrous Alloys and will no longer be subjected to periodic reviews for currency. Users are responsible for verifying references and continued suitability of technical requirements. Newer technology may exist.

TO PLACE A DOCUMENT ORDER: **Tel: 877-606-7323 (inside USA and Canada)**
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SAE WEB ADDRESS: **http://www.sae.org**

For more information on this standard, visit
https://www.sae.org/standards/content/AMS4803F/

1. SCOPE

1.1 Form

This specification covers a zinc alloy in the form of die castings.

1.2 Application

These castings have been used typically for components requiring moderate strength at room temperature, 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 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

AMS2694	In-Process Welding of Castings
AMS2804	Identification, Castings

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 E 536 Chemical Analysis of Zinc and Zinc Alloys
ASTM E 1220 Visible Penetrant Examination Using the Solvent-Removable Process
ASTM E 1417 Liquid Penetrant Testing

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 536 or by spectrochemical or other analytical methods acceptable to purchaser.

TABLE 1 - COMPOSITION

Element	min	max
Aluminum	3.75	4.25
Magnesium	0.03	0.05
Copper	--	0.10
Iron	--	0.10
Lead	--	0.005
Cadmium	--	0.004
Tin	--	0.003
Zinc	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 8 consecutive hours.

3.4 Chemical Analysis Specimens

Shall be cast from each melt and shall be of any suitable size and shape appropriate to the test method.

3.5 Quality

3.5.1 Castings, as received by purchaser, shall be uniform in quality and condition, sound, and free from foreign materials and from imperfections detrimental to usage of the castings.

3.5.1.1 Castings shall have smooth surfaces and shall be cleaned sufficiently to permit nondestructive inspection.

3.5.2 When specified, castings shall be produced under radiographic control. This control shall consist of 100% radiographic inspection of castings until process control factors (4.4.2) have been established to ensure production of acceptable castings. Unless otherwise specified by purchaser, continued radiographic inspection of production castings shall be performed at a frequency determined by the vendor to ensure continued maintenance of internal quality.

3.5.3 When specified, castings shall be subjected to fluorescent penetrant testing in accordance with ASTM E 1417, to visible dye penetrant inspection in accordance with ASTM E 1220 or to both.

3.5.4 Radiographic, fluorescent penetrant, visible dye penetrant, and other quality standards shall be as agreed upon by purchaser and vendor.

3.5.5 Castings shall not be repaired by peening, plugging, welding, or other methods without written permission from purchaser.

3.5.5.1 When authorized by purchaser, welding in accordance with AMS2694 or other program approved by purchaser may be used.

3.5.6 Castings shall not be impregnated, chemically treated, or coated to prevent leakage unless specified or allowed by written permission of purchaser, designating the method to be used.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for Inspection

The vendor of castings shall supply all samples for vendor's tests and shall be responsible for the performance of all required tests. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the castings conform to specified requirements.

4.2 Classification of Tests

All technical requirements of this specification are acceptance tests and preproduction tests and shall be performed prior to or on the first-article shipment of a casting to a purchaser, on each lot, when a change in material, processing, or both requires reapproval as in 4.4.2, and when purchaser deems confirmatory testing to be required.

4.3 Sampling and Testing

Shall be in accordance with the following:

4.3.1 One or more chemical analysis specimen(s) in accordance with 3.4.1 from each melt or a casting from each lot.

4.3.2 One or more preproduction castings in accordance with 4.4.1 of each part number.

4.4 Approval

4.4.1 Sample castings from new or reworked dies and the casting procedure shall be approved by purchaser before castings for production use are supplied, unless such approval be waived by purchaser.

4.4.2 Vendor shall establish for production of sample castings of each part number parameters for the process control factors which will produce acceptable castings; these shall constitute the approved casting procedure and shall be used for producing production castings. If necessary to make any change in parameters for process control factors, vendor shall submit for reapproval a statement of the proposed changes in processing and, when requested, sample castings, test specimens, or both. Production castings incorporating the revised operations shall not be shipped prior to receipt of reapproval.