SAE Aerospace
An SAE International Group

AEROSPACE MATERIAL SPECIFICATION

SAE AMS4800 REV. E

Issued 1940-01
Revised 2006-10
Reaffirmed 2012-02

Superseding AMS4800D

Bearings, Babbitt
91Sn - 4.5Sb - 4.5Cu

(Composition similar to UNS L13910)

RATIONALE

AMS4800E has been reaffirmed to comply with the SAE five-year review policy.

1. SCOPE

1.1 Form

This specification covers bearings of a tin alloy cast on one or both faces of a steel or bronze backing.

1.2 Application

Primarily for bearings, bushings, and sleeves.

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.

AMS 2800 Identification, Finished Parts

3. TECHNICAL REQUIREMENTS

3.1 Composition

3.1.1 Babbitt

Shall conform to the percentages by weight shown in Table 1, determined by spectrochemical methods or by other analytical methods acceptable to purchaser.

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**

SAE values your input. To provide feedback on this Technical Report, please visit
http://www.sae.org/technical/standards/AMS4800E

TABLE 1 - COMPOSITION

Element	min	max
Antimony	4.0	5.0
Copper	4.0	5.0
Lead	--	0.50
Arsenic	--	0.10
Iron	--	0.08
Bismuth	--	0.08
Zinc	--	0.005
Aluminum	--	0.005
Other Elements, total	--	0.20
Tin	remainder	

3.1.1.1 For bearings purchased in the finish machined condition, samples of babbitt for chemical analysis shall be taken between the surface and a point midway between the babbitt surface and the bond of the babbitt and backing. For bearings purchased in the as-cast condition, samples of babbitt for chemical analysis shall be taken from the melt at the time of pouring.

3.1.2 Backing

Shall be as specified on the drawing or purchase order. Where steel is specified, low carbon steel shall be supplied unless another steel is specified.

3.2 Condition

Shall be a composite material produced by casting babbitt metal onto one or both faces of the specified backing.

3.3 Properties

Bearings shall conform to the following requirements:

3.3.1 Cladding Structure

Shall be free from excessive segregation. Purchaser may specify metallographic, macroetch, or other acceptance standards.

3.3.2 Bonding

Cladding shall be firmly and continuously bonded to the backing material, determined by a procedure agreed upon by purchaser and vendor. Where no procedure is agreed upon, destructive examination with a chisel or similar tool shall show no more than 5% of the clad area to be unbonded.

3.3.3 Babbitt Thickness

Shall meet drawing requirements.

3.4 Quality

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

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for Inspection

The vendor of bearings 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 bearings conform to specified requirements.

4.2 Classification of Tests

Tests for all technical requirements are acceptance tests and preproduction tests and shall be performed prior to or on the first-article shipment of a bearing to a purchaser, on each heat or lot as applicable, when a change in materials and/or processing 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; a lot shall be all parts of one size and configuration made from a single heat of backing material and a single lot of babbitt processed in one continuous run and presented for vendor's inspection at one time.

4.3.1 Backing

As agreed upon by purchaser and vendor.

4.3.2 Babbitt

One sample from each heat of metal melted at one time taken from a melt or part as applicable.

4.3.3 Bearings

4.3.3.1 Visual

100%.

4.3.3.2 Non-Destructive Test

As agreed upon by purchaser and vendor.

4.3.3.3 Destructive Tests

One part from each lot.

4.4 Approval

4.4.1 The process and control procedures, or a preproduction sample part, or both, whichever is specified, shall be approved by the cognizant engineering organization before production parts are supplied.

4.4.2 The supplier shall make no significant change in materials, processes or controls from those on which the approval was based, unless the change is approved by the cognizant engineering organization. A significant change is one that, in the judgment of the cognizant engineering organization, could affect the properties or performance of the parts.

4.4.3 Control factors for the process shall include but not be limited to:

Limits on melt composition
Pour temperature
Backing material
Backing material surface condition
Backing material temperature (preheat)
Rotation speed for centrifugal casting
Pouring rate
Cooling technique
Limits on as-cast thickness

4.5 Reports

The vendor of bearings shall furnish with each shipment a report showing the results of tests for composition and, when agreed upon, cladding structure for each lot. This report shall include the purchase order number, lot number, applicable specification governing the backing material used, AMS 4800E, part number, and quantity.

4.6 Resampling and Retesting

If any part used in the above tests fails to meet the specified requirements, disposition of the parts may be based on the results of testing three additional parts for each original nonconforming part. Failure of any retest part to meet the specified requirements shall be cause for rejection of the parts represented. Results of all tests shall be reported.

5. PREPARATION FOR DELIVERY

5.1 Identification

Bearings shall be identified in accordance with AMS 2800. Each container of bearings shall be marked with not less than the following information:

BEARINGS, BABBITT
AMS 4800E
PART NUMBER _____
PURCHASE ORDER NUMBER _____
LOT NUMBER _____
QUANTITY _____
MANUFACTURER'S IDENTIFICATION _____

5.2 Protective Treatment

Bearings shall be protected, during shipment and storage, by coating with a suitable corrosion preventive compound that is readily removable by hydrocarbon solvents or alkaline detergents.

5.3 Packaging

5.3.1 Bearings having different part numbers shall be packaged in separate containers.

5.3.2 Containers of bearings shall be prepared for shipment in accordance with commercial practice and in compliance with applicable rules and regulations pertaining to the handling, packaging, and transportation of the bearings to ensure carrier acceptance and safe delivery.

6. ACKNOWLEDGMENT

A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.

7. REJECTIONS

Bearings not conforming to this specification, or to modifications authorized by purchaser, will be subject to rejection.

8. NOTES

8.1 A change bar (|) located in the left margin is for the convenience of the user in locating areas where technical revisions, not editorial changes, have been made to the previous issue of this specification. An (R) symbol to the left of the document title indicates a complete revision of the specification, including technical revision. Change bars and (R) are not used in original publications, nor in specifications that contain editorial changes only.

8.2 Terms used in AMS are clarified in ARP1917.