

**AEROSPACE
MATERIAL
SPECIFICATION**

Submitted for recognition as an American National Standard

SAE AMS 4800C

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Superseding AMS 4800B

**BEARINGS, BABBITT
91Sn - 4.5Sb - 4.5Cu**

UNS L13910

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 following publications form a part of this specification to the extent specified herein. The latest issue of Aerospace Material Specifications shall apply. The applicable issue of other documents shall be as specified in AMS 2350.

2.1 SAE Publications: Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096.

2.1.1 Aerospace Material Specifications:

AMS 2350 - Standards and Test Methods
AMS 2800 - Identification, Finished Parts

2.2 ASTM Publications: Available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

ASTM E57 - Chemical Analysis of White Metal Bearing Alloys

2.3 U.S. Government Publications: Available from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

2.3.1 Military Standards:

MIL-STD-794 - Parts and Equipment, Procedures for Packaging and Packing of

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3. TECHNICAL REQUIREMENTS:

3.1 Composition:

3.1.1 Babbitt: Shall conform to the following percentages by weight, determined by wet chemical methods in accordance with ASTM E57 or by spectrographic or other analytical methods approved by purchaser:

| | 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 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.

3.1.2 Backing:

3.1.2.1 Steel: Shall be low carbon.

3.1.2.2 Bronze: Shall be as specified on the drawing or purchase order.

3.2 Condition: Shall be a composite material produced by casting babbitt metal onto one or both faces of a steel or bronze backing, as specified.

3.3 Properties: Bearings shall conform to the following requirements:

3.3.1 Cladding Structure: Shall be free from excessive segregation and shall conform to standards specified by purchaser, determined by a procedure agreed upon by purchaser and vendor.

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.

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 performing all required tests. Results of such tests shall be reported to the purchaser as required by 4.5. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the bearings conform to the requirements of this specification.
- 4.2 Classification of Tests:
- 4.2.1 Acceptance Tests: Tests to determine conformance to all technical requirements of this specification are classified as acceptance tests and shall be performed on each heat or lot as applicable.
- 4.2.2 Preproduction Tests: Tests to determine conformance to all technical requirements of this specification are classified as preproduction tests and shall be performed prior to or on the first-article shipment of a bearing to a purchaser, when a change in material, processing, or both requires reapproval as in 4.4.2, and when purchaser deems confirmatory testing to be required.
- 4.2.2.1 For direct U. S. Military procurement, substantiating test data and, when requested, preproduction test material shall be submitted to the cognizant agency as directed by the procuring activity, the contracting officer, or the request for procurement.
- 4.3 Sampling: 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: Two samples from each heat of metal melted at one time.
- 4.3.3 Bearings: Three samples from each lot.
- 4.4 Approval:
- 4.4.1 Sample bearings shall be approved by purchaser before bearings for production use are supplied, unless such approval be waived by purchaser.
- 4.4.2 Vendor shall use materials, manufacturing procedures, processes, and methods of inspection on production bearings which are essentially the same as those used on the approved sample bearings. If necessary to make any change in materials, manufacturing procedures, or processing, vendor shall submit for reapproval a statement of the proposed changes in material, processing, or both and, when requested, sample bearings. Production bearings made by the revised procedure shall not be shipped prior to receipt of reapproval.

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

4.6 Resampling and Retesting: If any specimen 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 specimens for each original nonconforming specimen. Failure of any retest specimen to meet the specified requirements shall be cause for rejection of the parts represented and no additional testing shall be permitted. 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 4800C

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 which is readily removable by hydrocarbon solvents.

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. Packaging shall conform to carrier rules and regulations applicable to the mode of transportation.

5.3.3 For direct U. S. Military procurement, packaging shall be in accordance with MIL-STD-794, Level A or Level C, as specified in the request for procurement. Commercial packaging as in 5.3.1 and 5.3.2 will be acceptable if it meets the requirements of Level C.

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.