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INTERNATIONAL
400 Commonwealth Drive, Warrendale, PA 15096-0001

AEROSPACE MATERIAL SPECIFICATION

SAE AMS 4800D

Issued JAN 1940
Revised APR 1992
Reaffirmed SEP 2000

Superseding AMS 4800C

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 SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order.

2.1 SAE Publications:

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

AMS 2800 Identification, Finished Parts

2.2 U.S. Government Publications:

Available from Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

MIL-STD-2073-1 DOD Materiel, Procedures for Development and Application of Packaging Requirements

QUESTIONS REGARDING THIS DOCUMENT: (724) 772-7161 FAX: (724) 776-0243
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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.

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 performing all required tests. 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:

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.

4.2.1 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, contracting officer, or request for procurement.

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 which, 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:

a. Limits on melt composition
b. Pour temperature
c. Backing material
d. Backing material surface condition
e. Backing material temperature (preheat)
f. Rotation speed for centrifugal casting
g. Pouring rate
h. Cooling technique
i. 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 chemical 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 4800D, 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.