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400 COMMONWEALTH DRIVE, WARRENDALE, PA 15096

# AEROSPACE MATERIAL SPECIFICATION

AMS 4827C
Superseding AMS 4827B

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## BEARINGS, BRONZE LEADED
## 80Cu - 10Pb - 10Sn
## Steel Back

1. SCOPE:

1.1 Form: This specification covers bearings of a leaded bronze cast on one or both faces of a steel backing.

1.2 Application: Primarily for bushings and bearings.

2. APPLICABLE DOCUMENTS: The following publications form a part of this specification to the extent specified herein. The latest issue of Aerospace Material Specifications (AMS) 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 2370 - Quality Assurance Sampling of Carbon and Low-Alloy Steels, Wrought Products Except Forgings and Forging Stock
AMS 2800 - Identification, Finished Parts

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

ASTM E18 - Rockwell Hardness and Rockwell Superficial Hardness of Metallic Materials
ASTM E478 - Chemical Analysis of Copper 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 Federal Standards:

Federal Test Method Standard No. 151 - Metals; Test Methods

2.3.2 Military Standards:

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

3. TECHNICAL REQUIREMENTS:

3.1 Composition:

3.1.1 Bearing Metal: Shall conform to the following percentages by weight, determined by wet chemical methods in accordance with ASTM E478, by spectrographic methods in accordance with Federal Test Method Standard No. 151, Method 112, or by other analytical methods approved by purchaser:

| | min | max |
|---|---|---|
| Copper (3.1.1.1) | 77.00 - 83.00 | |
| Tin | 9.00 - 11.00 | |
| Lead | 8.00 - 11.00 | |
| Zinc | -- | 0.75 |
| Nickel | -- | 0.50 |
| Antimony | -- | 0.50 |
| Iron | -- | 0.35 |
| Phosphorus | -- | 0.05 |
| Aluminum | -- | 0.00 |
| Other Elements, total | -- | 0.35 |

3.1.1.1 May be determined by difference.

3.1.2 Backing: Shall be a low-carbon steel.

3.2 Condition: Shall be a composite material produced by casting leaded bronze onto one or both faces of a steel backing.

3.3 Properties: Bearings shall conform to the following requirements:

3.3.1 Hardness: Steel backing shall, unless otherwise specified, have hardness not higher than 75 HR15N or equivalent, determined in accordance with ASTM E18.

3.3.2 Cladding Structure: Shall be free of excessive lead segregation. Methods of testing and standards for acceptance shall be as agreed upon by purchaser and vendor.

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

3.4.1 Cladding shall be firmly and continuously bonded to the steel backing, determined by a procedure agreed upon by purchaser and vendor.

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: Tests to determine conformance to all technical requirements of this specification are classified as acceptance tests and as preproduction tests and shall be performed prior to or on the first-article shipment of a bearing to a purchaser, on each lot, when a change in material 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, 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 steel backing and a single heat of bearing metal processed in one continuous run and submitted for vendor's inspection at one time:

4.3.1 Steel Backing: AMS 2370.

4.3.2 Bearing Metal: Two samples from each heat of alloy melted at the same 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 and processes, and methods of inspection on production parts which are essentially the same as those used on the approved sample parts. If necessary to make any Ø change in materials and/or manufacturing procedures and processing, vendor shall submit for reapproval a statement of the proposed changes in material and/or processing 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 three copies of a report showing the results of tests for chemical composition, Ø hardness, and cladding structure of each lot. This report shall include the purchase order number, lot number, AMS 4827C, part number, and quantity from each heat.

4.6 Resampling and Retesting: If any part or 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 parts or specimens for each Ø original nonconforming specimen. Failure of any retest part or 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 Packaging and Identification:

5.1.1 Parts shall be identified in accordance with AMS 2800.

5.1.2 Parts shall be protected, during shipment and storage, by coating with a suitable corrosion-preventive compound which is readily removable by hydrocarbon solvents.

5.1.3 Parts having different part numbers shall be packed in separate containers. Ø

5.1.4 Each container of parts shall be marked to show not less than the following information:

BEARINGS, LEADED BRONZE CLAD STEEL
AMS 4827C
Ø PART NUMBER _____
PURCHASE ORDER NUMBER _____
QUANTITY _____
MANUFACTURER'S IDENTIFICATION _____