

AEROSPACE MATERIAL SPECIFICATION

SAE AMS4827

REV. E

Issued 1942-08
Revised 2004-04
Reaffirmed 2012-02
Superseding AMS4827D

Bearings, Leaded Bronze
80Cu - 10Pb - 10Sn
Steel Back

RATIONALE

AMS4827E has been reaffirmed to comply with the SAE five-year review policy.

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:

These products have been used typically for bushings and bearings.

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, 400 Commonwealth Drive, Warrendale, PA 15096-0001 or www.sae.org.

AMS 2370 Quality Assurance Sampling of Carbon and Low-Alloy Steels, Wrought Products Except Forgings and Forging Stock
AMS 2800 Identification, Finished Parts

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on this Technical Report, please visit
<http://www.sae.org/technical/standards/AMS4827E>**

2.2 ASTM Publications:

Available from ASTM, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959 or www.astm.org.

ASTM E 18	Rockwell Hardness and Rockwell Superficial Hardness of Metallic Materials
ASTM E 478	Chemical Analysis of Copper Alloys

3. TECHNICAL REQUIREMENTS:

3.1 Composition:

- 3.1.1 Bearing Metal: Shall conform to the percentages by weight shown in Table 1, determined by wet chemical methods in accordance with ASTM E 478, by spectrochemical methods, or by other analytical methods acceptable to purchaser:

TABLE 1 - Composition - Bearing Metal

Element (3.1.1.1)	min	max
Copper (3.1.1.2)	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 These composition limits do not preclude the presence of other elements. Limits may be established and analysis required for unnamed elements by agreement between the manufacturer or supplier and purchaser.

- 3.1.1.2 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 have hardness not higher than 75 HR15N, or equivalent, determined in accordance with ASTM E 18.
- 3.3.2 Cladding Structure: Shall be free of excessive lead segregation. Methods of testing and standards for acceptance shall be acceptable to purchaser.

3.4 Quality:

Bearings, 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 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 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:

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 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.

4.3 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 steel backing and a single heat of bearing metal processed in one continuous run and presented 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 change in materials, manufacturing procedures, or 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 a report showing the results of tests for chemical composition, hardness, and cladding structure of each lot. This report shall include the purchase order number, lot number, AMS 4827E, part number, and quantity from each lot.

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 two 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. Results of all tests shall be reported.

5. PREPARATION FOR DELIVERY:

5.1 Packaging and Identification:

- 5.1.1 Shall be in accordance with AMS 2800.
- 5.1.2 Bearings 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 Bearings having different part numbers shall be packed in separate containers.
- 5.1.4 Each container of parts shall be marked with not less than the following information:

BEARINGS, LEADED BRONZE CLAD STEEL

AMS 4827E

PART NUMBER _____

PURCHASE ORDER NUMBER _____

QUANTITY _____

MANUFACTURER'S IDENTIFICATION _____