Society of Automotive Engineers, Inc.
400 COMMONWEALTH DRIVE, WARRENDALE, PA. 15096

AEROSPACE MATERIAL SPECIFICATION

AMS 4805C
Superseding AMS 4805B
Issued 9-1-41
Revised 10-15-80

BEARINGS, SINTERED METAL POWDER
89Cu - 10Sn
Oil Impregnated

1. SCOPE:

1.1 Form: This specification covers one type of sintered metal powder in the form of oil-impregnated bearings.

1.2 Application: Primarily for bearings requiring self-lubrication, low coefficient of friction, and accurate dimensions.

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 Society of Automotive Engineers, Inc., 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 B438 - Copper-Base Sintered Bearings (Oil Impregnated)
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 (Oil-Free Basis): 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	87.5	90.5
Tin	9.5	10.5
Graphite	--	1.5
Other Elements, total	--	0.50

3.2 Condition: Supplied impregnated with a high-grade, non-gumming petroleum oil.

3.3 Properties: Bearings shall conform to the following requirements:

3.3.1 Specific Gravity: Shall be 6.4 - 6.8, determined at 68°F ± 2 (20°C ± 1) on bearings as supplied fully impregnated with oil.

3.3.2 Oil Absorption: Bearings, heated to 300°F ± 10 (150°C ± 5) and held at heat for 4 - 5 min., shall exude uniformly a film or beads of oil from the bearing surface.

3.3.3 Radial Crushing Strength: Shall not be lower than the value calculated from the following equation:

$$P = \frac{KLT^2}{D-T}$$

P = Calculated radial crushing strength in pounds (N)
K = 22,500 psi (155 MPa)
L = Length of bearing in inches (mm)
T = Bearing wall thickness in inches (mm)
D = Outside diameter of bearing in inches (mm)

3.3.3.1 Radial crushing strength shall be determined by compressing the test specimen between two flat surfaces, with a load applied perpendicular to the longitudinal axis of the specimen. The maximum load shall be considered the crushing strength value. This test applies to plain cylindrical bearings. Flanged bearings shall be tested by cutting off the flange and compressing the two sections separately.

3.3.3.2 Bearings shall not be brittle and shall take a permanent deformation without fracture when compressed under a gradually applied load or bent by suitable means.

3.4 Quality: Bearings, as received by purchaser, shall be uniform in quality and condition, sound, Ø and free from foreign materials and from internal and external 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 Ø to the purchaser as required by 4.5. Purchaser reserves the right to sample and to perform such confirmatory testing as he deems 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 lot. Ø

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 on the first-article shipment of a bearing to a purchaser, when a change in material or processing requires re-approval as in 4.4.2, and when purchaser deems confirmatory testing to be required. Ø

4.2.2.1 For direct U.S. Military procurement, substantiating test data and, when requested, pre-production test bearings shall be submitted to the cognizant agency as directed by the procuring activity, the contracting officer, or the request for procurement. Ø