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

AEROSPACE MATERIAL SPECIFICATION

AMS 7440B
Superseding AMS 7440A

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BALL, LOW-CHROMIUM, HIGH-CARBON STEEL

1. SCOPE:

1.1 Type: This specification covers balls made of a low-chromium, high-carbon steel.

1.2 Application: Primarily for bearing balls. The particular alloy to be chosen depends on the size of the ball and the manufacturer's techniques.

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 6440 - Steel Bars and Forgings, 1.45Cr (0.98 - 1.10C) (SAE 52100) Bearing Quality
AMS 6442 - Steel Bars and Forgings, 0.50Cr (0.98 - 1.10C) (SAE 50100) Bearing Quality
AMS 6449 - Steel Bars and Forgings, 1.05Cr (0.98 - 1.10C) (SAE 51100) Bearing Quality

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 E350 - Chemical Analysis of Carbon Steel, Low-Alloy Steel, Silicon Electrical Steel, Ingot Iron, and Wrought Iron

2.3 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

3. TECHNICAL REQUIREMENTS:

3.1 Material: Shall conform to all applicable requirements of AMS 6440, AMS 6442, or AMS 6449. Ø The particular steel to be used shall be dependent on the size of the bearing balls and the manufacturer's techniques, unless a specific steel is specified.

3.2 Condition: Hardened by quenching from above the transformation range, tempered, and polished.

3.3 Properties:

3.3.1 Hardness: Shall be as specified on the part drawing. When hardness is not specified on the part drawing, the hardness shall be 60 - 67 HRC or equivalent, determined in accordance with ASTM E18.

3.4 Quality: Balls shall be free from cracks, pits, rust, and foreign materials and from internal and external imperfections detrimental to their performance.

3.5 Tolerances: Shall be as specified on the drawing or as agreed upon by purchaser and vendor.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor of the parts shall supply all samples and shall be responsible for performing all required tests. Results of such tests shall be reported to the purchaser as required by 4.4. Purchaser reserves the right to perform such confirmatory testing as he deems necessary to ensure that the parts 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.

4.3 Sampling: Shall be in accordance with the following; a lot shall be all balls of the same nominal size from one heat of steel heat treated in one furnace charge:

4.3.1 Composition: At least one sample from each heat of steel.

4.3.2 Hardness: At least one sample, consisting of five balls, from each lot.

4.4 Reports: The vendor of finished or semi-finished parts shall furnish with each shipment three copies of a report showing the purchase order number, this specification number and its revision letter, composition used, contractor or other direct supplier of material, part number, and quantity. When material for making parts is produced or purchased by the parts vendor, that vendor shall inspect each lot of material to determine conformance to the requirements of this specification, and shall include in the report a statement that the material conforms, or shall include copies of laboratory reports showing the results of tests to determine conformance.

4.5 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 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 Balls shall be handled and packaged in such a manner that they will be protected, during shipment and storage, against mechanical injury and exposure to moisture. Balls of each different part number shall be packed in separate containers.

5.1.2 Each container shall be marked to show the following information:

BALLS, LOW-CHROMIUM, HIGH-CARBON
AMS 7440B
PART NUMBER_____
PURCHASE ORDER NUMBER_____
QUANTITY_____
MANUFACTURER'S IDENTIFICATION_____