



AEROSPACE MATERIAL

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

AMS 7445A

Superseding AMS 7445

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BALLS, STEEL, CORROSION RESISTANT

17Cr
Hardened

1. SCOPE:

- 1.1 Type: This specification covers balls made of high-carbon corrosion-resistant steel of three carbon ranges.
- 1.2 Application: Primarily for bearing balls. The particular carbon range 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 2248 - Chemical Check Analysis Limits, Wrought Heat and Corrosion Resistant Steels and Alloys

AMS 2350 - Standards and Test Methods

- 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 E353 - Chemical Analysis of Stainless, Heat-Resisting, Maraging, and Other Similar Chromium-Nickel-Iron Alloys

- 2.3 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:

SAE Technical Board rules provide that: "All technical reports, including standards approved by the Board, are advisory only. Their use by anyone engaged in industry or trade is entirely voluntary. There is no agreement to adhere to any SAE standard or to recommend practice, and no commitment to conform to or be guided by any technical report. In formulating and approving technical reports, the Board and its Committees will not investigate or consider patents which may apply to the subject matter. Prospective users of the report are responsible for protecting themselves against infringement of patents."

- 3.1 Composition: Balls shall conform to one of the following compositions in percentages by weight, determined by wet chemical methods in accordance with ASTM E353, by spectrographic methods in accordance with Federal Test Method Standard No. 151, Method 112, or by other approved analytical methods:

	51440A		51440B		51440C	
	min	max	min	max	min	max
Carbon	0.60	0.75	0.75	0.95	0.95	1.20
Manganese	--	1.00	--	1.00	--	1.00
Silicon	--	1.00	--	1.00	--	1.00
Phosphorus	--	0.040	--	0.040	--	0.040
Sulfur	--	0.030	--	0.030	--	0.030
Chromium	16.00	18.00	16.00	18.00	16.00	18.00
Molybdenum	--	0.75	--	0.75	--	0.75

- 3.1.1 Check Analysis: Composition variations shall meet the requirements of AMS 2248.

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

- 3.3 Properties: Balls shall conform to the following requirements:

- 3.3.1 Hardness: Shall be as specified on the part drawing. When not specified on the part drawing, hardness shall be 55 - 64 HRC or equivalent, determined in accordance with ASTM E18.

- 3.4 Quality:

- 3.4.1 Steel for balls shall be bearing quality.

- 3.4.2 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 balls 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 balls 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 size or part number 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 three samples 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 balls 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.