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AEROSPACE MATERIAL SPECIFICATION

SAE AMS-7445 REV C

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Superseding AMS-7445B

Submitted for recognition as an American National Standard

BALLS, STEEL, CORROSION RESISTANT
17Cr
Hardened

UNS S44002
UNS S44003
UNS S44004

1. SCOPE:

1.1 Form: 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 SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order.

2.1 SAE Publications: Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

2.1.1 Aerospace Material Specifications:

AMS-2248 - Chemical Check Analysis Limits, Wrought Corrosion and Heat Resistant Steels and Alloys, Maraging and Other Highly-Alloyed Steels, and Iron Alloys

2.2 ASTM Publications: Available from ASTM, 1916 Race Street, Philadelphia, PA 19103-1187.

ASTM E 18 - Rockwell Hardness and Rockwell Superficial Hardness of Metallic Materials

ASTM E 353 - Chemical Analysis of Stainless, Heat-Resisting, Maraging, and Other Similar Chromium-Nickel-Iron Alloys

2.3 U.S. Government Publications: Available from Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

2.3.1 Military Standards:

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

3. TECHNICAL REQUIREMENTS:

3.1 Composition: Shall conform to one of the following compositions in 0 percentages by weight, determined by wet chemical methods in accordance with ASTM E 353, by spectrochemical methods, or by other analytical methods acceptable to purchaser:

	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
Nickel	--	0.75	--	0.75	--	0.75
Molybdenum	--	0.75	--	0.75	--	0.75
Copper	--	0.50	--	0.50	--	0.50

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, hardness shall be 55 - 64 HRC, or equivalent, determined in accordance with ASTM E 18.

3.4 Quality: Balls, as received by purchaser, shall be free from cracks, pits, rust, and foreign materials and from imperfections detrimental to usage of the balls.

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
0 for vendor's tests and shall be responsible for performing all required tests. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the balls conform to the requirements of this specification.

4.2 Classification of Tests: Tests for all technical requirements are acceptance tests and shall be performed on each heat or lot as applicable.

4.3 Sampling and Testing: Shall be in accordance with the following; a lot
0 shall be all balls of the same size or part number from one heat of steel, heat treated in one furnace charge, and presented for vendor's inspection at one time:

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 balls shall furnish with each shipment a report
0 showing the results of tests for chemical composition of each heat and stating that the balls conform to the other technical requirements. This report shall include the purchase order number, lot number, AMS-7445C, composition used, size, and quantity.

4.5 Resampling and Retesting: If any specimen used in the above tests fails to meet the specified requirements, disposition of the balls may be based on the results of testing three additional specimens for each original nonconforming specimen. Failure of any retest specimen to meet the specified requirements shall be cause for rejection of the balls 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.