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400 COMMONWEALTH DRIVE, WARRENDALE, PA. 15096

AEROSPACE MATERIAL SPECIFICATION

AMS 5132F
Superseding AMS 5132E
Issued 11-1-41
Revised 10-1-81

UNS G10950

STEEL BARS
0.90 - 1.30C

1. SCOPE:

1.1 Form: This specification covers a high-carbon steel in the form of bars.

1.2 Application: Primarily for dowels and other parts requiring close tolerances.

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 SAE, 400 Commonwealth Drive, Warrendale, PA 15096.

2.1.1 Aerospace Material Specifications:

AMS 2259 - Chemical Check Analysis Limits, Wrought Low-Alloy and Carbon Steels
AMS 2350 - Standards and Test Methods
AMS 2370 - Quality Assurance Sampling of Carbon and Low-Alloy Steels, Wrought Products Except Forgings and Forging Stock

2.2 ASTM Publications: Available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

ASTM A370 - Mechanical Testing of Steel Products
ASTM E350 - Chemical Analysis of Carbon Steel, Low-Alloy Steel, Silicon Electrical Steel, Ingot Iron, and Wrought Iron

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-163 - Steel Mill Products, Preparation for Shipment and Storage

3. TECHNICAL REQUIREMENTS:

3.1 Composition: Shall conform to the following percentages by weight, determined by wet chemical methods in accordance with ASTM E350, by spectrographic methods in accordance with Federal Test Method Standard No. 151, Method 112, or by other analytical methods approved by purchaser:

	min	max
Carbon	0.90	1.30
Manganese	0.15	0.50
Silicon	0.15	0.35
Phosphorus	--	0.040
Sulfur	--	0.050

3.1.1 Check Analysis: Composition variations shall meet the applicable requirements of AMS 2259.

3.2 Condition: Spheroidized annealed and cold finished; round bars shall be ground or polished.

3.3 Properties: Bars shall conform to the following requirements:

3.3.1 Hardness: Shall be not greater than specified in Table I, determined in accordance with ASTM A370.

TABLE I

Nominal Diameter or Distance Between Parallel Sides		Hardness
Inches	Millimetres	
Up to 0.125, incl	(Up to 3.15, incl)	302 HB or 32 HRC
Over 0.125 to 0.250, incl	(Over 3.15 to 6.25, incl)	277 HB or 29 HRC
Over 0.250 to 0.500, incl	(Over 6.25 to 12.50, incl)	241 HB or 23 HRC
Over 0.500	(Over 12.50)	207 HB or 95 HRB

3.3.2 Decarburization: Bars shall be free from any decarburization, determined microscopically at a magnification not exceeding 100X, unless bars are ordered to tolerances greater than those specified in 3.6 in which case the permissible maximum depth of decarburization shall be as agreed upon by purchaser and vendor.

3.3.3 Microstructure: Shall consist of uniformly distributed spheroidized carbides free from carbide network and excessive amounts of lamellar pearlite. Standards for acceptance shall be as agreed upon by purchaser and vendor.

3.4 Quality: Bars, as received by purchaser, shall be uniform in quality and condition, sound, and free from foreign materials and from internal and external imperfections detrimental to usage of the bars.

3.5 Sizes: Except when exact lengths or multiples of exact lengths are ordered, straight bars will be acceptable in mill lengths of 6 - 20 ft (1.8 - 6.1 m) but not more than 10% of any shipment shall be supplied in lengths shorter than 10 ft (3 m).

3.6 Tolerances: Unless otherwise specified, tolerances shall conform to the requirements of Table II.

TABLE II

Nominal Diameter or Distance Between Parallel Sides Inches	Tolerance, Inch Plus and Minus
Up to 0.1249, incl	0.0002
Over 0.1249 to 0.4999, incl	0.00025
Over 0.4999 to 1.5000, incl	0.0005

TABLE II (SI)

Nominal Diameter or Distance Between Parallel Sides Millimetres	Tolerance, Millimetre Plus and Minus
Up to 3.172, incl	0.005
Over 3.172 to 12.697, incl	0.0064
Over 12.697 to 38.100, incl	0.013

3.6.1 Tolerances for bars over 1.50 in. (37.5 mm) in nominal diameter or distance between parallel sides shall be as agreed upon by purchaser and vendor.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor of bars shall supply all samples for vendor's tests and shall be responsible for performing all required tests. Results of such tests shall be reported to Ø the purchaser as required by 4.4. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the bars conform to the requirements of this specification.

4.2 Classification of Tests: Tests to determine conformance to all technical requirements of this Ø specification are classified as acceptance tests and shall be performed on each heat or lot as applicable.

4.3 Sampling: Shall be in accordance with AMS 2370.

4.4 Reports:

4.4.1 The vendor of bars shall furnish with each shipment three copies of a report showing the results of tests for chemical composition of each heat and for hardness of each lot. This report shall include the purchase order number, heat number, AMS 5132F, size, and quantity from each heat.

4.4.2 The vendor of finished or semi-finished parts shall furnish with each shipment three copies of a report showing the purchase order number, AMS 5132F, contractor or other direct supplier of bars, part number, and quantity. When bars for making parts are produced or purchased by the parts vendor, that vendor shall inspect each lot of bars to determine conformance to the requirements of this specification and shall include in the report a statement that the bars conform, or shall include copies of laboratory reports showing the results of tests to determine conformance.