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

AEROSPACE MATERIAL SPECIFICATION

AMS 5132E
Superseding AMS 5132D
Issued 11-1-41
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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 Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, Pennsylvania 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, Pennsylvania 19103.

ASTM E10 - Brinell 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, Pennsylvania 19120.

2.3.1 Federal Standards:

Federal Test Method Standard No. 151 - Metals; Test Methods

3. TECHNICAL REQUIREMENTS:

Ø 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 approved analytical methods:

	min	max
Carbon	0.90	1.30
Manganese	0.15	0.50
Silicon	0.10	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: The product shall conform to the following requirements; hardness testing shall be performed in accordance with ASTM E10:

3.3.1 Hardness: Shall be not greater than specified in Table I.

TABLE I

Nominal Diameter or Distance Between Parallel Sides		Hardness	
Inches	(Millimetres)		
Up to 0.125 incl	(Up to 3.18, incl)	302 HB	32 HRC
Over 0.125 to 0.250, incl	(Over 3.18 to 6.35, incl)	277 HB	29 HRC
Over 0.250 to 0.500, incl	(Over 6.35 to 12.70, incl)	241 HB	23 HRC
Over 0.500	(Over 12.70)	207 HB	95 HRB

3.3.2 Decarburization: The product shall be free from any decarburization as determined microscopically at a magnification not exceeding 100X unless steel is order 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 speroidized carbides, free from carbide network and excessive amounts of lamellar pearlite.

3.4 Quality: The product shall be uniform in quality and condition, clean, sound, and free from foreign materials and from internal and external imperfections detrimental to fabrication or to performance of parts.

3.5 Sizes: Except when exact lengths or multiples of exact lengths are ordered, 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

4. QUALITY ASSURANCE PROVISIONS: