SAE Aerospace
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AEROSPACE MATERIAL SPECIFICATION

SAE AMS 5132J

Issued NOV 1941
Reaffirmed JAN 1999
Revised JAN 2003

Superseding AMS 5132H

Steel, Bars
0.90 - 1.03C

(Composition similar to UNS G10950)

1. SCOPE:

1.1 Form:

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

1.2 Application:

These bars have been used typically for dowels and other parts requiring close tolerances, but usage is not limited to such application.

2. APPLICABLE DOCUMENTS:

The issue of the following documents in effect on the date of the purchase order forms a part of this specification to the extent specified herein. The supplier may work to a subsequent revision of a document unless a specific document issue is specified. When the referenced document has been cancelled and no superseding document has been specified, the last published issue of that document shall apply.

2.1 SAE Publications:

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001 or www.sae.org.

AMS 2259 Chemical Check Analysis Limits, Wrought Low-Alloy and Carbon Steels
AMS 2370 Quality Assurance Sampling and Testing, Carbon and Low-Alloy Steels, Wrought Products and Forging Stock

TO PLACE A DOCUMENT ORDER:
Tel: 877-606-7323 (inside USA and Canada)
Tel: 724-776-4970 (outside USA)
Fax: 724-776-0790
Email: custsvc@sae.org
SAE WEB ADDRESS: http://www.sae.org

2.2 ASTM Publications:

Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959 or www.astm.org.

ASTM A 370 Mechanical Testing of Steel Products
ASTM E 350 Chemical Analysis of Carbon Steel, Low-Alloy Steel, Silicon Electrical Steel, Ingot Iron, and Wrought Iron

3. TECHNICAL REQUIREMENTS:

3.1 Composition:

Shall conform to the percentages by weight shown in Table 1, determined by wet chemical methods in accordance with ASTM E 350, by spectrochemical methods, or by other analytical methods acceptable to purchaser.

TABLE 1 - Composition

Element	min	max
Carbon	0.90	1.03
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 2, determined in accordance with ASTM A 370 (See 8.2).

TABLE 2 - Hardness

Nominal Diameter or Distance Between Parallel Sides Inch	Nominal Diameter or Distance Between Parallel Sides Millimeters	Hardness
Up to 0.125, incl	Up to 3.18, incl	302 HB or 32 HRC
Over 0.125 to 0.250, incl	Over 3.18 to 6.35, incl	277 HB or 29 HRC
Over 0.250 to 0.500, incl	Over 6.35 to 12.70, incl	241 HB or 23 HRC
Over 0.500	Over 12.70	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 3.5 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. Standards for acceptance for lamellar pearlite may be 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 imperfections detrimental to usage of the bars.

3.5 Tolerances:

Shall conform to the requirements of Table 3.

TABLE 3A - Diameter Tolerances, Inch/Pound Units

Nominal Diameter or Distance Between Parallel Sides Inches	Tolerance, Inch Plus and Minus
Up to 0.125, excl	0.0002
0.125 to 0.500, excl	0.00025
0.500 to 1.500, incl	0.0005

TABLE 3B - Diameter Tolerances, SI Units

Nominal Diameter or Distance Between Parallel Sides Millimeters	Tolerance, Millimeter Plus and Minus
Up to 3.18, excl	0.005
3.18 to 12.70, excl	0.0064
12.70 to 38.10, incl	0.013

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 the performance of all required tests. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the bars conform to the specified requirements.

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 AMS 2370.

4.4 Reports:

The vendor of bars shall furnish with each shipment 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 and lot numbers, AMS 5132J, size, and quantity.

4.5 Resampling and Retesting:

Shall be in accordance with AMS 2370.

5. PREPARATION FOR DELIVERY:

5.1 Sizes:

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

5.2 Identification:

Shall be in accordance with AMS 2806.

5.3 Protective Treatment:

Bars shall be coated with a suitable corrosion-preventive compound prior to shipment.

5.4 Packaging:

Bars shall be prepared for shipment in accordance with commercial practice and in compliance with applicable rules and regulations pertaining to the handling, packaging, and transportation of the bars to ensure carrier acceptance and safe delivery.

6. ACKNOWLEDGMENT:

A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.