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

AEROSPACE MATERIAL SPECIFICATION

AMS 5010F
Superseding AMS 5010E

Issued 1-22-40
Revised 12-15-74

STEEL BARS
Free Machining (SAE 1212 or SAE 1215)

1. SCOPE:

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

1.2 Application: Primarily for screw stock and other applications where free-machining characteristics are desirable.

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 2231 - Tolerances, Carbon Steel Bars
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:

3.1 Composition: Shall conform to one of the following types in percentages by weight, determined by wet Ø 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:

	Type 1212		Type 1215	
	min	max	min	max
Carbon	--	0.13	--	0.09
Manganese	0.70 -	1.00	0.75 -	1.05
Phosphorus	0.07 -	0.12	0.04 -	0.09
Sulfur	0.16 -	0.23	0.26 -	0.35

Ø 3.1.1 Either type may be supplied unless a specific type is ordered.

3.1.2 Check Analysis: Composition variation shall meet the applicable requirements of AMS 2259.

3.2 Condition: Cold drawn.

3.3 Properties:

3.3.1 Hardness: The product shall have hardness as follows or equivalent, determined in accordance with Ø ASTM E10:

Nominal Diameter or Distance Between Parallel Sides		Hardness
Inches	(Millimetres)	HB
Up to 1.00, incl	(Up to 25.4, incl)	170 - 255
Over 1.00 to 2.00, excl	(Over 25.4 to 50.8, excl)	156 - 201
2.00 and over	(50.8 and over)	110 - 201

3.4 Quality: The product shall be uniform in quality and condition, clean, sound, and, consistent with the type of steel involved, 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 Ø 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 all applicable requirements of AMS 2231.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor of the product shall supply all samples and shall be respons- Ø ible 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 assure that the product conforms 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 or routine control tests.

Ø 4.3 Sampling: Shall be in accordance with AMS 2370.

4.4 Reports: