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AEROSPACE MATERIAL SPECIFICATION

Submitted for recognition as an American National Standard

AMS 5010H

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Superseding AMS 5010G

STEEL BARS
Free Machining (SAE 1212 or SAE 1215)
Cold Drawn

UNS G12120

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 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 2231 - Tolerances, Carbon Steel Bars
 MAM 2231 - Tolerances, Metric, 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
 AMS 2806 - Identification, Bars, Wire, Mechanical Tubing, and Extrusions, Carbon and Alloy Steels and Corrosion and Heat Resistant Steels and Alloys

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2.2 ASTM Publications: Available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 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 U.S. Government Publications: Available from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

2.3.1 Military Standards:

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

3. TECHNICAL REQUIREMENTS:

3.1 Composition: Shall conform to one of the following types in percentages by weight, determined by wet chemical methods in accordance with ASTM E350, by spectrochemical methods, or by other analytical methods acceptable to purchaser:

	<u>Type 1212</u>		<u>Type 1215</u>	
	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

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: Bars shall conform to the following requirements:

3.3.1 Hardness: Shall be as follows, or equivalent, determined in accordance with ASTM E10:

<u>Nominal Diameter or Distance Between Parallel Sides</u>		Hardness HB
<u>Inches</u>	<u>Millimetres</u>	
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: Bars, as received by purchaser, shall be uniform in quality and condition, sound, and, consistent with the type of steel involved, free from foreign materials and from 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 feet (1.8 - 6.1 m) but not more than 10% of any shipment shall be supplied in lengths shorter than 10 feet (3 m).
- 3.6 Tolerances: Shall conform to all applicable requirements of AMS 2231 or MAM 2231.
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 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 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 a report showing the results of tests for chemical composition of each heat and stating that the bars conform to the hardness requirements of this specification. This report shall include the purchase order number, lot number, AMS 5010H, size, and quantity.
- 4.4.2 The vendor of finished or semi-finished parts shall furnish with each shipment a report showing the purchase order number, AMS 5010H, 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 either a statement that the bars conform or copies of laboratory reports showing the results of tests to determine conformance.
- 4.5 Resampling and Retesting: Shall be in accordance with AMS 2370.
5. PREPARATION FOR DELIVERY:
- 5.1 Identification: Shall be in accordance with AMS 2806.
- 5.2 Protective Treatment: Bars shall be coated with a suitable corrosion-preventive compound prior to shipment.