

AEROSPACE MATERIAL SPECIFICATION

Submitted for recognition as an American National Standard



AMS 5060G

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Superseding AMS 5060F

Steel, Bars, Forgings, and Tubing
0.13 - 0.18C (SAE 1015)

UNS G10150

1. SCOPE:

1.1 Form:

This specification covers a low-carbon steel in the form of bars, forgings, mechanical tubing, and forging stock.

1.2 Application:

These products have been used typically for steel-backed bearings and carburized parts requiring a low maximum hardness of uncarburized surfaces after quenching the steel in water from a temperature above the transformation range of the steel, but usage is not limited to such applications.

APPLICABLE DOCUMENTS:

The following publications form a part of this specification to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order.

2.1 SAE Publications:

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

AMS 2231	Tolerances, Carbon Steel Bars
MAM 2231	Tolerances, Metric, Carbon Steel Bars
AMS 2253	Tolerances, Carbon and Alloy Steel Tubing
MAM 2253	Tolerances, Metric, Carbon and Alloy Steel Tubing
AMS 2259	Chemical Check Analysis Limits, Wrought Low-Alloy and Carbon Steels
AMS 2370	Quality Assurance Sampling and Testing, Carbon and Low-Alloy Steel Wrought Products and Forging Stock

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2.1 (Continued):

AMS 2372	Quality Assurance Sampling and Testing, Carbon and Low-Alloy Steel Forgings
AMS 2806	Identification, Bars, Wire, Mechanical Tubing, and Extrusions, Carbon and Alloy Steels and Corrosion and Heat Resistant Steels and Alloys
AMS 2808	Identification, Forgings

2.2 ASTM Publications:

Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

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	0.13	0.18
Manganese	0.30	0.60
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:

The product shall be supplied in the following condition; hardness shall be determined in accordance with ASTM A 370.

3.2.1 Bars: Hot finished, unless otherwise ordered, having hardness not higher than 229 HB, or equivalent (See 8.2). Bars ordered cold finished may have hardness as high as 241 HB, or equivalent.

3.2.2 Forgings: As ordered.

3.2.3 Mechanical Tubing: Cold finished having hardness not higher than 241 HB, or equivalent (See 8.2).

3.2.4 Forging Stock: As ordered by the forging manufacturer.

3.3 Properties:

The product shall conform to the following requirements; hardness testing shall be performed in accordance with ASTM A 370.

3.3.1 Response to Heat Treatment: Specimens with sections not over 0.250 inch (6.35 mm) in nominal thickness shall have surface hardness not higher than 30 HRC, or equivalent (See 8.2) after being quenched in water from a temperature above the transformation range.

3.4 Quality:

The product, 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 product.

3.5 Tolerances:

Shall be as follows:

3.5.1 Bars: In accordance with AMS 2231 or MAM 2231.

3.5.2 Mechanical Tubing: In accordance with AMS 2253 or MAM 2253.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection:

The vendor of the product 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 product conforms to specified requirements.

4.2 Classification of Tests:

All technical requirements are acceptance tests and shall be performed on each heat or lot as applicable.

4.3 Sampling and Testing:

Shall be as follows:

4.3.1 Bars, Mechanical Tubing, and Forging Stock: In accordance with AMS 2370.

4.3.2 Forgings: In accordance with AMS 2372.

4.4 Reports:

The vendor of the product shall furnish with each shipment a report showing the results of tests for chemical composition of each heat and stating that the product conforms to the other technical requirements. This report shall include the purchase order number, heat and lot numbers, AMS 5060G, size, and quantity. If forgings are supplied, the part number and the size and melt source of stock used to make the forgings shall also be included.

4.5 Resampling and Retesting:

Shall be as follows:

4.5.1 Bars, Mechanical Tubing and Forging Stock: In accordance with AMS 2370.

4.5.2 Forgings: In accordance with AMS 2372.

5. PREPARATION FOR DELIVERY:

5.1 Sizes:

Except when exact lengths or multiples of exact lengths are ordered, straight bars and tubing 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 as follows:

5.2.1 Bars and Mechanical Tubing: In accordance with AMS 2806.

5.2.2 Forgings: In accordance with AMS 2808.

5.2.3 Forging Stock: As agreed upon by purchaser and vendor.

5.3 Packaging:

5.3.1 Bars and tubing ordered cold drawn, cold rolled, ground, turned, or polished shall be coated with a corrosion-preventive compound prior to shipment.