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

# AEROSPACE MATERIAL SPECIFICATION

AMS 5069B
Superseding AMS 5069A
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## STEEL BARS, FORGINGS, AND TUBING
## 0.15 - 0.20C (SAE 1018)





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: Primarily for parts requiring a material of low strength and high ductility.

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 2253 - Tolerances, Carbon and Alloy Steel Tubing
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 2372 - Quality Assurance Sampling of Carbon and Low-Alloy Steels, Forgings and Forging Stock
AMS 2808 - Identification, Forgings

2.2 ASTM Publications: Available from American Society of 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 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 | 0.15 | 0.20 |
| Manganese | 0.60 | 0.90 |
| Silicon | 0.15 | 0.30 |
| Phosphorous | -- | 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 ø accordance with ASTM E10:

3.2.1 Bars: Hot finished having hardness not higher than 229 HB or equivalent except that 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.

3.2.4 Forging Stock: As ordered by the forging manufacturer.

3.3 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.

3.4 Sizes: Except when exact lengths or multiples of exact lengths are ordered, bars and tubing will be ø 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).

3.5 Tolerances: Unless otherwise specified, tolerances shall conform to all applicable requirements of the following:

3.5.1 Bars: AMS 2231.

3.5.2 Mechanical Tubing: AMS 2253.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor of the product shall supply all samples and shall be responø sible 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 specifiø cation are classified as acceptance or routine control tests.

4.3 Sampling: Shall be in accordance with the following:

4.3.1 Bars and Mechanical Tubing: AMS 2370.

4.3.2 Forgings and Forging Stock: AMS 2372.