



AEROSPACE MATERIAL SPECIFICATION

AMS5070™**REV. L**

Issued 1942-03
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Revised 2025-08

Superseding AMS5070K

Steel, Bars, Forgings and Forging Stock,
0.18 - 0.23C (SAE 1022)
(Composition similar to UNS G10220)

RATIONALE

AMS5070L is the result of a Five-Year Review and update of the specification. The revision updates the Title to align with the Scope, clarifies size limits (see 1.1), updates composition reporting (see 3.1.2) and tensile testing requirements (see 3.3.1.3), clarifies size requirements are specific to bar products (see 4.4.2), provides resource information on naming convention (see 8.5), and addresses additional forging stock properties (see 8.7).

1. SCOPE

1.1 Form

This specification covers a carbon steel in the form of bars up through 3.000 inches (76.20 mm) and forgings and forging stock of any size.

1.2 Application

This product has been used typically for parts requiring low strength and high ductility, but usage is not limited to such applications.

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 International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (U.S. and Canada only) or +1 724-776-4970 (Outside U.S. and Canada), www.sae.org.

AMS2231	Tolerances, Carbon Steel Bars
AMS2259	Chemical Check Analysis Limits, Wrought Low-Alloy and Carbon Steels
AMS2370	Quality Assurance Sampling and Testing, Carbon and Low-Alloy Steel Wrought Products and Forging Stock

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Full document details: SAE AMS5070L

For more information on this standard, visit
<https://www.sae.org/standards/content/AMS5070L/>

Documents

Standard, visit Sharing Hub

AMS2372	Quality Assurance Sampling and Testing, Carbon and Low-Alloy Steel Forgings
AMS2806	Identification, Bars, Wire, Mechanical Tubing, and Extrusions, Carbon and Alloy Steels and Corrosion and Heat-Resistant Steels and Alloys
AMS2808	Identification, Forgings
AS7766	Terms Used in Aerospace Metals Specifications
SAE J403	Chemical Compositions of SAE Carbon Steels

2.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM A370 Mechanical Testing of Steel Products

ASTM A751 Chemical Analysis of Steel Products

ASTM E112 Determining Average Grain Size

2.3 Definitions

Terms used in AMS are defined in AS7766.

3. TECHNICAL REQUIREMENTS

3.1 Composition

Composition shall conform to the percentages by weight shown in Table 1, determined in accordance with ASTM A751 or by other analytical methods acceptable to the purchaser.

Table 1 - Composition

Element	Min	Max
Carbon	0.18	0.23
Manganese	0.70	1.00
Silicon	0.15	0.35
Phosphorus	--	0.040
Sulfur	--	0.050

3.1.1 Aluminum, vanadium, and columbium (niobium) are optional grain refining elements and need not be determined or reported unless used to satisfy the average grain size requirements of 3.3.2.2.

3.1.2 The producer may test for any element not listed in Table 1 and include this analysis in the report of 4.4. Reporting of any element not listed in the composition table is not a basis for rejection unless limits of acceptability are specified by the purchaser.

3.1.3 Check Analysis

Composition variations shall meet the applicable requirements of AMS2259.

3.2 Condition

The product shall be supplied in the following condition:

3.2.1 Bars

Bars shall be cold finished. Bar shall not be cut from plate (see 4.4.2).

3.2.2 Forgings

Forgings shall be normalized.

3.2.3 Forging Stock

As ordered by the forging manufacturer.

3.3 Properties

Bars and forgings shall conform to the following requirements:

3.3.1 Tensile Properties

Tensile properties shall be as follows, determined in accordance with ASTM A370:

3.3.1.1 Bars

Bars shall be as shown in Table 2.

Table 2A - Minimum tensile properties, inch/pound units

Nominal Diameter or Least Distance Between Parallel Sides Inches	Tensile Strength ksi	Yield Strength at 0.2% Offset ksi	Elongation in 4D %
Up to 0.875, incl	70	60	18
Over 0.875 to 1.250, incl	65	55	16
Over 1.250 to 2.000, incl	60	50	15
Over 2.000 to 3.000, incl	55	45	15

Table 2B - Minimum tensile properties, SI units

Nominal Diameter or Least Distance Between Parallel Sides Millimeters	Tensile Strength MPa	Yield Strength at 0.2% Offset MPa	Elongation in 4D %
Up to 22.22, incl	483	414	18
Over 22.22 to 31.75, incl	448	379	16
Over 31.75 to 50.80, incl	414	345	15
Over 50.80 to 76.20, incl	379	310	15

3.3.1.1.1 Tensile property requirements for product outside the range covered by Table 2 shall be agreed upon between the purchaser and producer.

3.3.1.2 Forgings

Forgings shall be as shown in Table 3.