Society of Automotive Engineers, Inc.
TWO PENNSYLVANIA PLAZA, NEW YORK, N.Y. 10001

AEROSPACE MATERIAL SPECIFICATION

AMS 5121D
Superseding AMS 5121C
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STEEL STRIP
(0.90 - 1.04C) (SAE 1095)

1. SCOPE:

1.1 Form: This specification covers a carbon steel in the form of strip.

1.2 Application: Primarily for heat treated springs, shims, spacers, and other applications where spring temper is required.

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., Two Pennsylvania Plaza, New York, New York 10001.

2.1.1 Aerospace Material Specifications:

AMS 2232 - Tolerances, Carbon Steel Sheet, Strip, and Plate
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 A370 - Mechanical Testing of Steel Products
ASTM E112 - Estimating Average Grain Size of Metals
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	0.90	1.04
Manganese	0.30	0.50
Silicon	0.15	0.30
Phosphorus	--	0.040
Sulphur	--	0.050

3.1.1 Check Analysis: Composition variations shall meet the requirements of AMS 2259, paragraph titled "Carbon Steels, Sheet, Strip, Plate, and Flat Wire"

3.2 Condition: The product shall be supplied in the following condition; hardness shall be determined in accordance with ASTM A370:

3.2.1 Thicknesses Up to 0.063 In. (1.60 mm), Incl: Cold rolled and annealed, having hardness not higher than 85 HRB or equivalent.

3.2.2 Thicknesses Over 0.063 In. (1.60 mm): Cold rolled and annealed, or hot rolled, annealed, and descaled, having hardness not higher than 85 HRB or equivalent.

3.3 Properties: The product shall conform to the following requirements; hardness and bend testing shall be performed in accordance with ASTM A370:

3.3.1 Grain Size: Predominantly 5 or finer with occasional grains as large as 3 permissible, ASTM E112, McQuaid-Ehn test.

3.3.2 Decarburization: The product shall be free from complete decarburization as determined microscopically at a magnification not exceeding 100X. It shall also be free from partial decarburization to the extent that the increase in hardness from the surface to the point of maximum subsurface hardness of an oil-hardened specimen, protected during heat treatment to prevent changes in surface carbon content, will be not more than two units on the Rockwell Superficial 30-N scale.

3.3.3 Bending: The product shall withstand, without cracking, free bending through an angle of 180 deg (3.14 rad) around a diameter equal to twice the nominal thickness of the product with the axis of bend parallel to the direction of rolling. If the bend cannot be made with the axis parallel to the direction of rolling, bending shall be done with the axis perpendicular to the direction of rolling around a diameter equal to the nominal thickness of the product.

3.4 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.

3.5 Tolerances: Unless otherwise specified, tolerances shall conform to all applicable requirements of AMS 2232.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor of the product shall supply all samples 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 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 specification are classified as acceptance or routine control tests.

4.3 Sampling: Shall be in accordance with AMS 2370.

4.4 Reports:

4.4.1 The vendor of the product shall furnish with each shipment three copies of a report of the results of tests for chemical composition of each heat in the shipment and a statement that the product conforms to the other technical requirements of this specification. This report shall include the purchase order number, heat number, material specification number and its revision letter, size, and quantity from each heat.