

AEROSPACE MATERIAL SPECIFICATION



AMS 5120K

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Superseding AMS 5120J

Steel Strip
0.68 - 0.80C (SAE 1074)

(Composition similar to UNS G10740)

1. SCOPE:

1.1 Form:

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

1.2 Application:

This product has been used typically for heat treated springs, spring pins, shims, spacers, and other applications where spring temper is required, 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 canceled and no superseding document has been specified, the last published issue of that document shall apply.

2.1 SAE Publications:

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

AMS 2232	Tolerances, Carbon Steel Sheet, Strip, and Plate
MAM 2232	Tolerances, Metric, Carbon Steel Sheet, Strip, and Plate
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
AMS 2807	Identification, Carbon and Low-Alloy Steels, Corrosion and Heat Resistant Steels and Alloys, Sheet, Strip, Plate, and Aircraft Tubing

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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

ASTM E 384 Microindentation Hardness of Materials

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 or by spectrochemical methods or other analytical methods acceptable to purchaser.

TABLE 1 - Composition

Element	min	max
Carbon	0.68	0.80
Manganese	0.50	0.80
Silicon	0.10	0.30
Phosphorus	--	0.040
Sulfur	--	0.050

3.1.1 Check Analysis: Composition variations shall meet the applicable requirements of AMS 2259.

3.2 Condition:

Strip shall be supplied in the following condition; hardness shall be determined in accordance with ASTM A 370:

3.2.1 0.063 Inch (1.60 mm) and Under in Nominal Thickness: Cold rolled and annealed having hardness not higher than 85 HRB, or equivalent (See 8.2).

3.2.2 Over 0.063 Inch (1.60 mm) in Nominal Thickness: Cold rolled and annealed, or hot rolled, annealed, and descaled, having hardness not higher than 85 HRB, or equivalent (See 8.2).

3.3 Properties:

Strip shall conform to the following requirements; hardness and bend tests shall be performed in accordance with ASTM A 370:

- 3.3.1 Decarburization: Depending on thickness of the product, decarburization may be measured by a HR30N hardness step test method, or by the microhardness traverse method. Additionally, the metallographic method shall be used in part (see 3.3.1.4.1) to inspect product.
- 3.3.1.1 In the case of dispute, the microhardness method, conducted in accordance with ASTM E 384, shall govern. The allowance for decarburization shall be that which would have been applicable had the step method been used (see 3.3.1.4.1).
- 3.3.1.2 Specimens: Shall be full thickness of the product. Recommended minimum specimen size is 1 x 4 inch (25 x 102 mm). A full cross section metallographic sample shall be prepared to inspect for presence of complete decarburization (ferrite).
- 3.3.1.3 Procedure: Specimens shall be hardened by austenitizing and quenching; preferably, they shall not be tempered, but, if tempered, the tempering temperature shall be not higher than 300 °F (149 °C). During heat treatment, specimens shall be protected by suitable atmosphere or medium or by suitable plating to prevent carburization or further decarburization.
- 3.3.1.4 Protective plating, if used to prevent any decarburization during hardening, shall be removed, and a portion of the specimen shall be ground with copious coolant to prevent thermal or mechanical effects to a depth of 0.050 inch (1.27 mm) or one-half thickness, whichever is less.
- 3.3.1.4.1 Allowance: The product shall show no layer of complete decarburization (ferrite) determined metallographically at a magnification not exceeding 100X. It shall also be free from any partial decarburization to the extent that the difference in hardness between the original surface and the surface (depth) generated by grinding as in 3.3.1.4 shall not be greater than two units on the HRA scale or equivalent (see 8.2). Also, refer to 3.3.1.1.
- 3.3.2 Bending: Strip shall withstand, without cracking, bending at room temperature through an angle of 180 deg around a diameter equal to twice the nominal thickness of the strip 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 strip.
- 3.4 Quality:
- Strip, 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 strip.
- 3.5 Tolerances:
- Shall conform to AMS 2232 or MAM 2232.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection:

The vendor of strip 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 strip conforms to specified requirements.

4.2 Classification of Tests:

All technical requirements of this specification are 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:

The vendor of strip shall furnish with each shipment a report showing the results of tests for chemical composition of each heat and for hardness of each lot, and stating that the product conforms to the other technical requirements. This report shall include the purchase order number, heat and lot numbers, AMS 5120K, size, and quantity.

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 2807.

5.2 Protective Treatment:

Strip shall be protected from corrosion prior to shipment.

5.3 Packaging:

Strip shall be prepared for shipment in accordance with commercial practice and in compliance with applicable rules and regulations pertaining to the handling, packaging, and transportation of the strip to ensure carrier acceptance and safe delivery.