

SAE-AMS5040

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AEROSPACE MATERIAL SPECIFICATION

SAE

AMS 5040K

Issued MAR 1940
Revised JUL 1994
Superseding AMS 5040J

Submitted for recognition as an American National Standard

STEEL, SHEET AND STRIP
0.15 Carbon, maximum
Deep Forming Grade

UNS G10100

1. SCOPE:

1.1 Form:

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

1.2 Application:

These products have been used typically for deep drawn and formed parts requiring a steel of high ductility, but usage is not limited to such applications.

2. 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 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 Steel

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, 1916 Race Street, Philadelphia, PA 19103-1187.

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

2.3 U.S. Government Publications:

Available from DODSSP, Subscription Services Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

MIL-STD-163 Steel Mill Products, Preparation for Shipment and Storage

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	--	0.15
Manganese	0.30	0.60
Phosphorus	--	0.035
Sulfur	--	0.040

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

3.2 Condition:

(R)

Product shall be supplied annealed, dead soft.

3.3 Properties:

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

- 3.3.1 Hardness: Shall be not higher than shown in Table 2, or equivalent (See 8.2):

TABLE 2 - Maximum Hardness

Nominal Thickness Inch		Nominal Thickness Millimeters		Hardness
0.009 to 0.014, incl		0.23 to 0.36 incl		99 HV (1 kg Load)
Over 0.014 to 0.027, incl		Over 0.36 to 0.69, incl		79 HR15T
Over 0.027 to 0.059, incl		Over 0.69 to 1.50, incl		53 HR30T
Over 0.059 to 0.089, incl		Over 1.50 to 2.26, incl		88 HRF
Over 0.089		Over 2.26		55 HRB

- 3.3.2 Bending: The product shall withstand, without cracking or producing an "orange peel" surface, bending at room temperature flat on itself with axis of bend parallel to the direction of rolling.

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 conform to all applicable requirements of AMS 2232 or MAM 2232.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection:

(R)

The vendor of the product shall supply all samples for vendor's tests and shall be responsible for performing all required tests. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the product conforms to the requirements of this specification.

4.2 Classification of Tests:

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

4.3 Sampling and Testing:

(R)

Shall be in accordance with AMS 2370.