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400 Commonwealth Drive, Warrendale, PA 15096-0001

AEROSPACE MATERIAL SPECIFICATION

Submitted for recognition as an American National Standard

SAE AMS-5032

REV
E

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Revised 1990-07-01

Superseding AMS-5032D

WIRE, STEEL
0.18 - 0.23C (SAE 1020)
Annealed

UNS G10200

1. SCOPE:

1.1 Form: This specification covers a low-carbon steel in the form of wire.

1.2 Application: Primarily for use as lockwire.

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.

2.1.1 Aerospace Material Specifications:

AMS-2259 - Chemical Check Analysis Limits, Wrought Low-Alloy and Carbon Steels

AMS-2370 - Quality Assurance Sampling of Carbon and Low-Alloy Steels, Wrought Products Except Forgings and Forging Stock

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 Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

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SAE AMS-5032 Revision E**2.3.1 Military Standards:**

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

3. TECHNICAL REQUIREMENTS:

- 3.1 Composition: Shall conform to the following percentages by weight, determined by wet chemical methods in accordance with ASTM E 350, by spectrochemical methods, or by other analytical methods acceptable to purchaser:

	min	max
Carbon	0.18	0.23
Manganese	0.30	0.60
Phosphorus	--	0.040
Sulfur	--	0.050
Copper	--	0.15

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

- 3.2 Condition: Cold drawn and bright annealed.

- 3.3 Properties: Wire shall conform to the following requirements:

- 3.3.1 Tensile Properties: Shall be as follows, determined in accordance with ASTM A 370:

Tensile Strength	50,000 - 75,000 psi (345 - 517 MPa)
Elongation in 10 Inches (254 mm), minimum	15%

- 3.3.2 Bending: A length of wire not less than 12 inches (305 mm) long shall withstand, without splitting or breaking, being wrapped in a closed helix for at least six complete turns around a cylindrical mandrel having a diameter equal to the nominal diameter of the wire and then unwrapped.

- 3.4 Quality: Wire, as received by purchaser, shall be uniform in quality and condition, sound, cylindrical, and free from kinks, twists, scrapes, splits, laps, seams, and other imperfections detrimental to usage of the wire.

- 3.4.1 The surface of the wire shall have a bright, smooth finish free from pits, abrasions, and other surface defects.

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3.5 Tolerances: Diameter tolerances shall conform to Table I.

TABLE I

Nominal Diameter Inch	Tolerance, Inch plus and minus
Up to 0.076, excl	0.001
0.076 to 0.249, incl	0.002

TABLE I (SI)

Nominal Diameter Millimetres	Tolerance, Millimetre plus and minus
Up to 1.93, excl	0.025
1.93 to 6.35, incl	0.05

4. QUALITY ASSURANCE PROVISIONS:

- 4.1 Responsibility for Inspection: The vendor of wire 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 wire 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: Shall be in accordance with AMS-2370.
- 4.4 Reports: The vendor of wire shall furnish with each shipment a report showing the results of tests for chemical composition of each heat and for tensile and bending properties of each lot. This report shall include the purchase order number, lot number, AMS-5032E, size, and quantity.
- 4.5 Resampling and Retesting: Shall be in accordance with AMS-2370.

5. PREPARATION FOR DELIVERY:

- 5.1 Identification: Shall be as follows:
- 5.1.1 Coils or reels of wire shall each be identified by a durable tag marked with not less than the purchase order number, AMS-5032E, nominal size, quantity, and manufacturer's identification or shall be boxed and the box marked with the same information.
- 5.1.2 Straight lengths shall be bundled or boxed and shall have attached to each bundle or box a durable tag marked with the information of 5.1.1.
- 5.2 Protective Treatment: Wire, prior to shipment, shall be coated with a suitable corrosion-preventive compound.