SAE Aerospace
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AEROSPACE MATERIAL SPECIFICATION

SAE AMS7732 REV. D

Issued 1970-11
Stabilized 2012-11

Superseding AMS7732C

Steel Wire, Copper Clad, Round
99Fe - 0.32Mn
Annealed

RATIONALE

AMS7732D is designated as stabilized by AMS Committee E because it is deemed to represent technology that is not expected change in the future.

STABILIZED NOTICE

This document has been declared "Stabilized" by the AMS Committee E, Carbon and Low Alloy Steels, and will not be subjected to periodic reviews for currency. Users are responsible for verifying references and continued suitability of technical requirements. Newer technology may exist.

1. SCOPE

1.1 Form

This specification covers a low-carbon steel in the form of round wire clad with electrolytic copper.

1.2 Application

This wire has been used typically for electronic components requiring soft magnetic properties 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 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

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

TO PLACE A DOCUMENT ORDER: **Tel: 877-606-7323 (inside USA and Canada)**
Tel: +1 724-776-4970 (outside USA)
Fax: 724-776-0790
Email: CustomerService@sae.org
SAE WEB ADDRESS: **http://www.sae.org**

SAE values your input. To provide feedback on this Technical Report, please visit
http://www.sae.org/technical/standards/AMS7732D

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 A 370 Mechanical Testing of Steel Products

ASTM B 5 High Conductivity Tough-Pitch Copper Refinery Shapes

ASTM E 350 Chemical Analysis of Carbon Steel, Low-Alloy Steel, Silicon Electrical Steel, Ingot Iron, and Wrought Iron

3. TECHNICAL REQUIREMENTS

3.1 Composition

3.1.1 Basis Wire (Core)

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 or other analytical methods acceptable to purchaser:

TABLE 1 - COMPOSITION

Element	min	max
Carbon	--	0.08
Manganese	0.25	0.40
Phosphorus	--	0.04
Sulfur	--	0.05

3.1.1.1 Check Analysis

Composition variations shall meet the applicable requirements of AMS2259.

3.1.2 Cladding (Sheath)

Shall be electroloytic copper (not less than 99.90% by weight copper) conforming to ASTM B 5.

3.2 Condition

Cold drawn or cold rolled, annealed, cleaned, clad, and annealed.

3.3 Properties

Wire shall conform to the following requirements; tensile and bend testing shall be performed in accordance with ASTM A 370:

3.3.1 Tensile Strength

Shall be 50 to 100 ksi (345 to 690 MPa).

3.3.2 Bending

Finished wire shall withstand, without evidence of cracking or of separation of the cladding (sheath) from the basis wire when examined under 10X magnification, bending at room temperature through an angle of 180 degrees around a diameter equal to the nominal diameter of the wire.

3.4 Quality

Wire, as received by purchaser, shall be uniform in quality, condition, temper, and cross-section. Surfaces, evaluated at up to 30X magnification shall be free from scale, corrosion, cracks, seams, scratches, slivers, dirt, grease, oil, streaks, stains, pit marks, burns, dents, blisters, laps, grooves, inclusions, and other imperfections detrimental to usage of the wire.

3.5 Tolerances

3.5.1 Cladding (Sheath) Thickness

The completed core-and-sheath cross-section shall be 27 to 35% by weight copper. At any cross-section, the maximum thickness of the sheath shall not exceed twice the minimum thickness of the sheath.

3.5.2 Diameter

Wire shall be supplied in the sizes and to the tolerances shown in Table 2.

TABLE 2A - DIAMETER TOLERANCES, INCH/POUND UNITS

Nominal Diameter Inch	Tolerance, Inch plus and minus
0.012	0.0003
0.014	0.0004
0.016	0.0004
0.020	0.0005
0.025	0.0005
0.032	0.0005
0.040	0.0005

TABLE 2B - DIAMETER TOLERANCES, SI UNITS

Nominal Diameter Millimeter	Tolerance, Millimeter plus and minus
0.30	0.008
0.35	0.010
0.40	0.010
0.50	0.012
0.62	0.012
0.80	0.012
1.00	0.012

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 the performance of all required tests. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the wire conforms to specified requirements.

4.2 Classification of Tests

4.2.1 Acceptance Tests

Composition (3.1.1 and 3.1.2), tensile strength (3.3.1), and tolerances (3.5) are classified as acceptance tests and shall be performed on each heat or lot as applicable.

4.2.2 Periodic Tests

Bending (3.3.2) is a periodic test and shall be performed at a frequency selected by the vendor unless frequency of testing is specified by purchaser.

4.3 Sampling

Shall be in accordance with AMS2370.

4.4 Reports

The vendor of wire shall furnish with each shipment a report showing the results of tests for composition of each heat and for tensile strength and cladding thickness of each lot and stating that the wire conforms to the other technical requirements. This report shall include the purchase order number, manufacturer's identification, heat and lot numbers, AMS7732D, nominal size, and quantity.

4.5 Resampling and Retesting

Shall be in accordance with AMS2370.

5. PREPARATION FOR DELIVERY

5.1 Packaging and Identification

5.1.1 Wire shall be wound on spools, without splicing, in lengths of not less than 100 feet (30 m). Spools shall be packaged in such a manner as to minimize, during shipment and storage, damage from normal hazards.

5.1.2 Each spool and the exterior of each container shall be permanently and legibly marked with not less than the following information:

AMS7732D
SIZE _____
QUANTITY _____
PURCHASE ORDER NUMBER _____
MANUFACTURER'S IDENTIFICATION _____

5.1.3 Containers of wire 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 wire to ensure carrier acceptance and safe delivery.

6. ACKNOWLEDGMENT

A vendor shall include this specification number and its revision letter in all quotations and when acknowledging purchaser orders.

7. REJECTIONS

Wire not conforming to this specification or to modifications authorized by purchaser, will be subject to rejection.