



AEROSPACE MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
400 COMMONWEALTH DRIVE, WARRENDALE, PA. 15086

AMS 4701C

Superseding AMS 4701B

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UNS C10200

COPPER WIRE
99.95(Cu+Ag) (CDA 102)
Annealed

1. SCOPE:

1.1 Form: This specification covers one type of copper in the form of wire.

1.2 Application: Primarily for copper brazing, high-conductivity bonding, and emergency lockwiring.

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., 400 Commonwealth Drive, Warrendale, PA 15096.

2.1.1 Aerospace Material Specifications:

AMS 2224 - Tolerances, Copper and Copper Alloy Wire
AMS 2350 - Standards and Test Methods

2.2 ASTM Specifications: Available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

ASTM B250 - General Requirements for Wrought Copper-Alloy Wire
ASTM B577 - Hydrogen Embrittlement of Copper
ASTM E8 - Tension Testing of Metallic Materials
ASTM E53 - Chemical Analysis of Copper (Electrolytic Determination of Copper)

2.3 Government Publications: Available from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

2.3.1 Federal Standards:

Federal Test Method Standard No. 151 - Metals; Test Methods

2.3.2 Military Specifications:

MIL-C-3993 - Copper and Copper-Base Alloy Mill Products, Packaging of

3. TECHNICAL REQUIREMENTS:

3.1 Composition: Wire shall be oxygen-free copper containing not less than 99.95% copper + silver, and not more than 0.001% oxygen, determined by wet chemical methods in accordance with ASTM E53, by spectrographic methods in accordance with Federal Test Method Standard No. 151, Method 112, or by other approved analytical methods.

3.2 Condition: Cold drawn or cold rolled, and annealed.

3.3 Properties: Wire shall conform to the following requirements:

SAE Technical Board rules provide that: "All technical reports, including standards approved and practices recommended, are advisory only. Their use by anyone engaged in industry or trade is entirely voluntary. There is no agreement to adhere to any SAE standard or recommended practice, and no commitment to conform to or be guided by any technical report. In formulating and approving technical reports, the Board and its Committees will not investigate or consider patents which may apply to the subject matter. Prospective users of the report are responsible for protecting themselves against liability for infringement of patents."

3.3.1 **Tensile Properties:** Shall be as specified in Table I, determined in accordance with ASTM E8.

TABLE I

Ø	Nominal Diameter or Distance Between Parallel Sides		Elongation in 10 in. (250 mm) %, min
	Inch	(Millimetres)	
Rounds, Hexagons, Octagons			
	Up to 0.0113, excl	(Up to 0.287, excl)	15
	0.0113 to 0.0226, excl	(0.287 to 0.574, excl)	20
	0.0226 to 0.1144, excl	(0.574 to 2.906, excl)	25
	0.1144 to 0.2893, incl	(2.906 to 7.348, incl)	30
	Over 0.2893	(Over 7.348)	35
Squares, Rectangles (Thickness)			
	Up to 0.011, excl	(Up to 0.28, excl)	20
	0.011 to 0.021, excl	(0.28 to 0.53, excl)	25
	0.021 to 0.051, excl	(0.53 to 1.30, excl)	30
	0.051 to 0.290, excl	(1.30 to 7.37, excl)	32
	0.290 and over	(7.37 and over)	35

3.3.2 **Embrittlement:** Wire, after exposure to hydrogen, shall withstand, without cracking, eight bends, determined in accordance with ASTM B577, Method D.

3.4 **Quality:** Wire, as received by purchaser, shall be uniform in quality and condition, sound, smooth, and free from foreign materials and from internal and external imperfections detrimental to usage of the wire.

3.5 **Tolerances:** Unless otherwise specified, tolerances shall conform to AMS 2224 as applicable to copper and non-refractory alloys.

4. QUALITY ASSURANCE PROVISIONS:

4.1 **Responsibility for Inspection:** The vendor of wire 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 ensure that the wire 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 tests.

4.3 **Sampling:** Shall be in accordance with ASTM B250.

4.4 Reports:

4.4.1 The vendor of wire shall furnish with each shipment three copies of a report showing the results of tests on each lot to determine conformance to the technical requirements of this specification. This report shall include the purchase order number, lot number, material specification number and its revision letter, size, and quantity.