

COPPER WIRE, OXYGEN-FREE  
99.95 (Cu+Ag)  
Annealed

UNS C10200

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 shall apply. The applicable issue of other documents shall be as specified in AMS 2350.

2.1 SAE Publications: Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096.

2.1.1 Aerospace Material Specifications:

AMS 2224 - Tolerances, Copper and Copper Alloy Wire  
MAM 2224 - Tolerances, Metric, 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 B250M - General Requirements for Wrought Copper-Alloy Wire (Metric)  
ASTM B577 - Hydrogen Embrittlement of Copper  
ASTM E8 - Tension Testing of Metallic Materials  
ASTM E8M - Tension Testing of Metallic Materials (Metric)  
ASTM E53 - Chemical Analysis of Copper

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

2.3.1 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% (by weight) copper including silver, and not more than 0.0010% oxygen, determined by wet chemical methods in accordance with ASTM E53, by spectrochemical methods, or by other analytical methods acceptable to purchaser.

3.2 Condition: Cold drawn or cold rolled, and annealed (061). (See 8.2).

3.3 Properties: Wire shall conform to the following requirements:

3.3.1 Tensile Properties: Shall be as specified in Table I, determined in accordance with ASTM E8 or ASTM E8M.

TABLE I

Nominal Diameter or Distance Between Parallel Sides		Elongation in 10 inches (254 mm) %, minimum
Inch	Millimetres	
Rounds, Hexagons, Octagons		
Up to 0.0113, excl	Up to 0.287, excl	15
0.0133 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 imperfections detrimental to usage of the wire.

3.5 Tolerances: Shall conform to AMS 2224 or MAM 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 for vendor's tests 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 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 to determine conformance to all technical requirements of this specification are classified as acceptance tests and shall be performed on each lot.
- 4.3 Sampling: Shall be in accordance with ASTM B250 or ASTM B250M.
- 4.4 Reports:
- 4.4.1 The vendor of wire shall furnish with each shipment 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, AMS 4701D, size, and quantity.
- 4.4.2 When parts made from this wire or assemblies requiring use of this wire are supplied, the vendor of finished or semi-finished parts shall furnish with each shipment a report showing the purchase order number, AMS 4701D, contractor or other direct supplier of wire, part number, and quantity. When wire for making parts is produced or purchased by the parts vendor, that vendor shall inspect each lot of wire to determine conformance to the requirements of this specification and shall include in the report either a statement that the wire conforms or copies of laboratory reports showing the results of tests to determine conformance.
- 4.5 Resampling and Retesting: If any specimen used in the above tests fails to meet the specified requirements, disposition of the wire may be based on the results of testing three additional specimens for each original nonconforming specimen. Failure of any retest specimen to meet the specified requirements shall be cause for rejection of the wire represented and no additional testing shall be permitted. Results of all tests shall be reported.

#### 5. PREPARATION FOR DELIVERY:

- 5.1 Wire shall be supplied on spools or in coils except when straight lengths are ordered.
- 5.2 Identification:
- 5.2.1 Spools and Coils: Shall be marked with a durable tag or label showing not less than the manufacturer's identification, purchase order number, AMS4701D, nominal size, and quantity; boxes or drums shall be marked with the same information.