

# AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.  
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New York City

## AMS 4701B

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### COPPER WIRE Annealed

1. **ACKNOWLEDGMENT:** A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.
2. **APPLICATION:** Primarily for copper brazing, high conductivity bonding, and emergency safetying.
3. **COMPOSITION:** Material shall be electrolytic tough pitch or oxygen-free copper and shall contain not less than 99.90% copper, silver being counted as copper.
4. **CONDITION:** Cold drawn or rolled, and annealed.
5. **TECHNICAL REQUIREMENTS:**

#### 5.1 Tensile Properties:

Nominal Diameter or Distance Between Parallel Sides Inch	Tensile Strength psi, max	Elongation % in 10 in., min
Rounds, Hexagons, Octagons		
0.020 and under	--	20
Over 0.020 to 0.102, incl	38,500	25
Over 0.102 to 0.289, incl	37,000	30
Over 0.289	36,000	35
Squares, Rectangles, Thickness		
0.010 and under	--	20
Over 0.010 to 0.020, incl	40,000	25
Over 0.020 to 0.050, incl	38,000	30
Over 0.050 to 0.188, incl	37,000	32

#### 5.2 Embrittlement: Wire shall be capable of meeting the following test:

- 5.2.1 Test specimens shall be heated in an atmosphere of dry hydrogen at approximately 1475 F for not less than 20 minutes. Specimen shall be clamped between jaws having edge radii equal to 2.5 times the nominal diameter or thickness of wire in plane of bend. Specimen shall be bent 90 deg over the edge of one jaw and returned to its initial position; this constitutes one bend. Specimen shall then be bent 90 deg in the reverse direction and again returned to its initial position; this constitutes another bend. Each bend shall be made in the opposite direction from that of the preceding bend. Specimens shall withstand the following number of bends without cracking or breaking:

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Nominal Diameter or Distance Between Parallel Sides Inch	Number of Bends min
0.081 and under	10
Over 0.081 to 0.102, incl	9
Over 0.102 to 0.129, incl	8
Over 0.129 to 0.162, incl	7
Over 0.162	6

6. QUALITY: Material shall be uniform in quality and condition, clean, sound, smooth, and free from foreign materials and from internal and external defects detrimental to fabrication or to performance of parts, or to its use as brazing wire.
7. TOLERANCES: Unless otherwise specified, tolerances shall conform to the latest issue of AMS 2224 as applicable. Diameter, thickness, and width tolerances shall be as specified below:
- 7.1 Rounds, Hexagons, and Octagons: Table II, Non-refractory.
- 7.2 Squares: Table III, Copper.
- 7.3 Rectangles, Thickness: Table III, Copper.
- 7.4 Rectangles, Width: Table IV, Non-refractory.
8. REPORTS:
- 8.1 Unless otherwise specified, the vendor of the product shall furnish with each shipment three copies of a report showing the results of tests to determine conformance to the requirements of this specification or stating that the chemical composition and tensile properties of the product conform to the requirements specified. This report shall include the purchase order number, material specification number, size, and quantity.
- 8.2 Unless otherwise specified, the vendor of finished or semi-finished parts shall furnish with each shipment three copies of a report showing the purchase order number, material specification number, contractor or other direct supplier of material, part number, and quantity. When material for making parts is produced or purchased by the parts vendor, that vendor shall inspect each lot of material to determine conformance to the requirements of this specification, and shall include in the report a statement that the material conforms, or shall include copies of laboratory reports showing the results of tests to determine conformance.
9. IDENTIFICATION:
- 9.1 Individual coils or reels shall be closely wrapped in waterproof paper, and shall have attached a metal tag stamped with the manufacturer's identification, purchase order number, AMS 4701B, nominal size, and quantity.
- 9.2 Material furnished in straight lengths shall be bundled and shall have attached to each bundle a metal tag stamped with information in 9.1, or shall be boxed and the box marked with the same information.