



# AEROSPACE MATERIAL SPECIFICATION

**AMS4700™****REV. F**

Issued 1969-11  
Reaffirmed 2014-12  
Revised 2024-09

Superseding AMS4700E

Copper Wire, Bare,  
High Purity  
(Composition similar to UNS C10100)

## RATIONALE

AMS4700F results from a Five-Year Review and update of this specification with changes to update general agreement language to prohibit unauthorized exceptions (see 4.4.1, 5.2.3, and 8.4), relocate Definitions (see 2.3), and update Applicable Documents (see Section 2), Composition (see 3.1), Tolerances (see 3.5), and Ordering Information (see 8.5).

### 1. SCOPE

#### 1.1 Form

This specification covers one type of copper in the form of wire (see 8.5).

#### 1.2 Application

This wire has been used typically as electronic component leads, which must be resistance welded to produce high-quality weld joints, 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 +1 724-776-4970 (outside USA), [www.sae.org](http://www.sae.org).

|         |                                               |
|---------|-----------------------------------------------|
| AMS2224 | Tolerances, Copper and Copper Alloy Wire      |
| AS7766  | Terms Used in Aerospace Metals Specifications |

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## 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](http://www.astm.org).

ASTM B170 ANNEX Oxygen-Free Electrolytic Copper—Refinery Shapes

ASTM B193 Resistivity of Electrical Conductor Materials

ASTM B250/B250M General Requirements for Wrought Copper-Alloy Wire

ASTM B577 Detection of Cuprous Oxide (Hydrogen Embrittlement Susceptibility) in Copper (Test Method C)

ASTM E3 Preparation of Metallographic Specimens

ASTM E478 Chemical Analysis of Copper Alloys

## 2.3 Definitions

Terms used in AMS are defined in AS7766.

## 3. TECHNICAL REQUIREMENTS

### 3.1 Composition

Shall conform to the percentages by weight shown in Table 1, determined by wet chemical methods in accordance with ASTM E478, ASTM B170 ANNEX, or by other analytical methods acceptable to the purchaser (see 8.5).

**Table 1 - Composition**

| Element               | Min   | Max               |
|-----------------------|-------|-------------------|
| Copper (see 3.1.1)    | 99.99 | --                |
| Sulfur                | --    | 0.0015 (15 ppm)   |
| Lead                  | --    | 0.0005 (5 ppm)    |
| Bismuth (see 3.1.2)   | --    | 0.0001 (1 ppm)    |
| Selenium (see 3.1.2)  | --    | 0.0003 (3 ppm)    |
| Tellurium (see 3.1.2) | --    | 0.0002 (2 ppm)    |
| Phosphorus            | --    | 0.0003 (3 ppm)    |
| Zinc                  | --    | 0.0001 (1 ppm)    |
| Cadmium               | --    | 0.0001 (1 ppm)    |
| Mercury               | --    | 0.0001 (1 ppm)    |
| Arsenic (see 3.1.2)   | --    | 0.0005 (5 ppm)    |
| Antimony (see 3.1.2)  | --    | 0.0004 (4 ppm)    |
| Tin (see 3.1.2)       | --    | 0.0002 (2 ppm)    |
| Manganese (see 3.1.2) | --    | 0.00005 (0.5 ppm) |
| Iron                  | --    | 0.0010 (10 ppm)   |
| Nickel                | --    | 0.0001 (1 ppm)    |
| Oxygen                | --    | 0.0005 (5 ppm)    |

3.1.1 Copper shall be determined by taking the difference between 100% and the sum of the other elements listed.

3.1.2 The sum of the bismuth, selenium, tellurium, arsenic, antimony, tin, and manganese shall not exceed 0.0022% (22 ppm).