



AEROSPACE MATERIAL SPECIFICATION	AMS4712™	REV. H
	Issued 1945-07 Reaffirmed 2012-02 Revised 2022-10	
Superseding AMS4712G		
Copper Alloy, Wire 65Cu - 35Zn Annealed (O61) (Composition similar to UNS C27000)		

RATIONALE

AMS4712H results from a Five-Year Review and update of this specification with changes to prohibit unauthorized exceptions (3.6, 8.4), update applicable documents (Section 2, 2.3), composition including revision to maximum lead level (3.1, Table 1), ordering information (8.5), and limitations regarding use of prior revisions of this specification due to changes in the composition (8.3, 3.1, Table 1).

1. SCOPE

1.1 Form

This specification covers a copper-zinc alloy (brass) in the form of wire.

1.2 Application

This wire has been used typically for woven wire screening, but usage is not limited to such applications.

2. APPLICABLE DOCUMENTS

The following publications form a part of this document to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order. In the event of conflict between the text of this document and references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

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.

AMS2224 Tolerances, Copper and Copper Alloy Wire

AS7766 Terms Used in Aerospace Metals Specifications

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For more information on this standard, visit
<https://www.sae.org/standards/content/AMS4712H/>

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 B250/B250M General Requirements for Wrought Copper-Alloy Wire

ASTM B601 Temper Designations for Copper and Copper Alloys—Wrought and Cast

ASTM E112 Determining Average Grain Size

ASTM E478 Chemical Analysis of Copper Alloys

2.3 Definitions

Terms used in AMS are defined in AS7766.

2.3.1 Copper temper designations are defined in ASTM B601.

3. TECHNICAL REQUIREMENTS

3.1 Composition

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

Table 1 - Composition

Element (3.1.1)	Min	Max
Copper	63.0	68.5
Lead	--	0.09
Iron	--	0.07
Zinc (3.1.2) remainder	(see 3.1.2)	--
Sum of Named Elements (3.1.3)	99.7	

3.1.1 These composition limits do not preclude the presence of other elements. Limits may be established and analysis required for unnamed elements by agreement between the manufacturer or supplier and purchaser.

3.1.2 Zinc may be reported as "remainder," or as the difference between the sum of results for all elements and 100%, or as the result of direct analysis.

3.1.3 When all named elements in Table 1 are analyzed, the sum shall be 99.7% minimum, but such determination is not required for routine acceptance of each lot.

3.2 Condition

Cold-drawn or cold-rolled, and annealed (O61) (see 2.3.1).

3.3 Properties

Wire shall conform to the following requirements:

3.3.1 Average Grain Size

Shall be 0.035 to 0.070 mm, determined in accordance with ASTM E112 on a longitudinal section.

3.3.2 Twisting

Wire under 0.050 inch (1.27 mm) in diameter shall show no evidence of breaking after two strands of wire are twisted around each other ten times per inch (25.4 mm) of length.

3.4 Quality

Wire, as received by purchaser, shall be uniform in quality and condition, sound, and free from foreign materials and from imperfections detrimental to usage of the wire.

3.5 Tolerances

Shall conform to AMS2224 as applicable to nonrefractory alloys.

3.6 Exceptions

Any exceptions shall be authorized by the purchaser and reported as in 4.4.1.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for Inspection

The producer of wire shall supply all samples for producer'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

All technical requirements are acceptance tests and shall be performed on each lot. A lot shall consist of all wire from the same heat or melt, drawn at the same time, and presented for acceptance at the same time.

4.3 Sampling and Testing

Shall be in accordance with ASTM B250/B250M.

4.4 Reports

The producer of wire shall furnish with each shipment a report showing the results of tests for chemical composition, average grain size, and twisting on each lot and stating that the wire conforms to the other technical requirements. This report shall include the purchase order number, lot number, AMS4712H nominal size, and quantity.

4.4.1 When wire produced to this specification has exceptions taken to the technical requirements listed in Section 3 (see 5.2.3), the report shall contain a statement "This material is certified as AMS4712H(EXC) because of the following exceptions:" and the specific exceptions shall be listed.

4.5 Resampling and Retesting

If any specimen used in the above tests fails to meet specified requirements, disposition of the wire may be based on the results of testing two additional specimens for each original nonconforming specimen. Failure of any retest specimen to meet specified requirements shall be cause for rejection of the wire represented. 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 legibly marked with a durable tag or label showing not less than the manufacturer's identification, purchase order number, AMS4712H, nominal size, and quantity; boxes or drums shall be marked with the same information.

5.2.2 Straight Lengths

Shall have attached to each bundle or enclosed in each box a durable tag or label legibly marked with the information of 5.2.1; when boxed, the box shall be marked with the same information.

5.2.3 When technical exceptions are taken (see 4.4.1), the material shall be marked with AMS4712H(EXC).

5.3 Packaging

5.3.1 Spools and Coils

Coils shall be individually wrapped with waterproof paper or packed in waterproof drums. Spools, when ordered, shall be boxed.

5.3.2 Straight Lengths

Shall be bundled or boxed.

5.3.3 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 producer shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.

7. REJECTIONS

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

8. NOTES

8.1 Revision Indicator

A change bar (I) located in the left margin is for the convenience of the user in locating areas where technical revisions, not editorial changes, have been made to the previous issue of this document. An (R) symbol to the left of the document title indicates a complete revision of the document, including technical revisions. Change bars and (R) are not used in original publications, nor in documents that contain editorial changes only.

8.2 Dimensions and properties in inch/pound units and the Fahrenheit temperatures are primary; dimensions and properties in SI units and the Celsius temperatures are shown as the approximate equivalents of the primary units and are presented only for information.