SAE The Engineering Society For Advancing Mobility Land Sea Air and Space®
INTERNATIONAL
400 Commonwealth Drive, Warrendale, PA 15096-0001

AEROSPACE MATERIAL SPECIFICATION

SAE AMS 4520H

Issued JAN 1940
Revised MAR 1995

Superseding AMS 4520G

Leaded Phosphor Bronze, Strip
88.5Cu - 4.0Sn - 4.0Pb - 3.0Zn - 0.26P
Cold Rolled, Half Hard (HO2)

UNS C54400

1. SCOPE:

1.1 Form:

This specification covers a copper alloy in the form of strip.

1.2 Application:

This strip has been used typically for rolled, split bushings, but usage is not limited to such applications.

2. APPLICABLE DOCUMENTS:

The following publications form a part of this specification 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.

2.1 SAE Publications:

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

AMS 2222 Tolerances, Copper and Copper Alloy Sheet, Strip, and Plate
MAM 2222 Tolerances, Metric, Copper and Copper Alloy Sheet, Strip, and Plate

2.2 ASTM Publications:

Available from ASTM, 1916 Race Street, Philadelphia, PA 19103-0001.

ASTM B 248 General Requirements for Wrought Copper and Copper-Alloy Plate, Sheet, Strip, and Rolled Bar
ASTM B 248M General Requirements for Wrought Copper and Copper-Alloy Plate, Sheet, Strip, and Rolled Bar (Metric)

QUESTIONS REGARDING THIS DOCUMENT: (724) 772-7161 FAX: (724) 776-0243
TO PLACE A DOCUMENT ORDER: (724) 776-4970 FAX: (724) 776-0790
SAE WEB ADDRESS: http://www.sae.org

2.2 (Continued):

ASTM E 8 Tension Testing of Metallic Materials
ASTM E 8M Tension Testing of Metallic Materials (Metric)
ASTM E 478 Chemical Analysis of Copper Alloys

2.3 U.S. Government Publications:

Available from DODSSP, Subscription Services Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

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

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 E 478, by spectrochemical methods, or by other analytical methods acceptable to purchaser.

TABLE 1 - Composition

Element	min	max
Tin	3.5	4.5
Lead	3.5	4.5
Zinc	1.5	4.5
Phosphorus	0.01	0.50
Iron	--	0.10
Copper + Sum of Named Elements (3.1.2)	99.5	--
Copper (3.1.1)	remainder	

3.1.1 Applicable when copper is not determined by analysis. The reported (certified) value is the difference between the sum of all other specified elements and 100% and will, therefore, include unnamed elements. Limits for unnamed elements may be established by agreement between purchaser and manufacturer or supplier.

3.1.2 Applicable only when copper is determined by direct analysis.

3.2 Condition:

Cold rolled, half hard (H02) temper (See 8.3).

3.3 Properties:

Strip shall conform to the following requirements, determined in accordance with ASTM E8 or ASTM E8M:

Tensile Strength: 55.0 to 70.0 ksi (379 to 483 MPa)
Elongation in two inches (50.8 mm), min: 16%

3.4 Quality:

Strip, 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 strip.

3.5 Tolerances:

Shall conform to AMS 2222 or MAM 2222 as applicable to nonrefractory alloys.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection:

The vendor of strip shall supply all samples for vendor's tests and shall be responsible for performing all required tests. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the strip conforms to the requirements of this specification.

4.2 Classification of Tests:

All technical requirements are acceptance tests and shall be performed on each lot.

4.3 Sampling and Testing:

Shall be in accordance with ASTM B 248 or ASTM B 248M.

4.4 Reports:

The vendor of strip shall furnish with each shipment a report showing the results of tests to determine conformance to the technical requirements. This report shall include the purchase order number, lot number, AMS 4520H, size, and quantity.

4.5 Resampling and Retesting:

If any specimen used in the above tests fails to meet the specified requirements, disposition of the strip 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 strip represented. Results of all tests shall be reported.

5. PREPARATION FOR DELIVERY:

5.1 Identification:

Each strip shall be identified as in 5.1.1 unless line marking as in 5.1.2 is specified by purchaser.

5.1.1 Each strip shall be legibly marked near one end, coils being marked near the outside end, with AMS 4520H, lot number, manufacturer's identification, and nominal thickness, using any suitable marking fluid. As an alternate method, individual pieces or bundles shall have attached a durable tag marked with the above information or shall be boxed and the box marked with the same information.

5.1.2 When specified by purchaser, each strip shall be legibly marked on one face, in the respective location indicated below, with AMS 4520H, lot number, manufacturer's identification, and nominal thickness. The characters shall be applied using a suitable marking fluid removable in hot alkaline cleaning solution without rubbing. The markings shall have no deleterious effect on the strip or its performance and shall be sufficiently stable to withstand normal handling. The specification number, manufacturer's identification, and nominal thickness shall be continuously line marked; the lot number may be included in the line marking or may be marked at one location on each piece.

5.1.2.1 Flat Strip 6 Inches (152 mm) and Under in Width: Shall be marked in one or more lengthwise rows of characters recurring at intervals not greater than 3 feet (914 mm).

5.1.2.2 Flat Strip Over 6 Inches (152 mm) in Width: Shall be marked in lengthwise rows of characters recurring at intervals not greater than 3feet (914 mm), the rows being spaced not more than 6 inches (152 mm) apart and alternately staggered.

5.1.2.3 Coiled Strip: Shall be marked near both the outside and inside ends of the coil; the markings shall be applied as in 5.1.2 or shall appear on a durable tag or label attached to the coil and marked with the information of 5.1.2. When the strip is wound on cores, the tag or label may be attached to the core.

5.2 Packaging:

5.2.1 Strip 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 strip to ensure carrier acceptance and safe delivery.

5.2.2 For direct U.S. Military procurement, packaging shall be in accordance with MIL-C-3993, Level C, unless Level A is specified in the request for procurement.

6. ACKNOWLEDGMENT:

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