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INTERNATIONAL
400 Commonwealth Drive, Warrendale, PA 15096-0001

# AEROSPACE MATERIAL SPECIFICATION

SAE AMS 4558F

Issued MAY 1948
Revised DEC 1997

Superseding AMS 4558E

Submitted for recognition as an American National Standard

## Brass, Seamless Tubing
## 66.5Cu - 31.5Zn - 1.6Pb
## Drawn Temper (H58)

UNS C33200



1. SCOPE:

1.1 Form:

This specification covers a copper alloy (brass) in the form of seamless tubing.

1.2 Application:

This tubing has been used typically for screw machine parts, 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 2223 | Tolerances, Copper and Copper Alloy Seamless Tubing |
| MAM 2223 | Tolerances Metric, Copper and Copper Alloy Seamless Tubing |



**QUESTIONS REGARDING THIS DOCUMENT:** (412) 772-7154 FAX: (412) 776-0243
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2.2 ASTM Publications:

Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

| | |
|---|---|
| ASTM B 154 | Mercurous Nitrate Test for Copper and Copper Alloys |
| ASTM B 251 | General Requirements for Wrought Seamless Copper and Copper-Alloy Tube |
| ASTM B 251M | General Requirements for Wrought Seamless Copper and Copper-Alloy Tube (Metric) |
| ASTM B 858M | Determination of Susceptibility to Stress Corrosion Cracking in Copper Alloys Using an Ammonia Vapor Test (Metric) |
| 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 |

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 (3.1.1) | min | max |
|---|---|---|
| Copper | 65.0 | 68.0 |
| Lead | 1.50 | 2.50 |
| Iron | -- | 0.07 |
| Sum of Named Elements (3.1.3) | 99.6 | -- |
| Zinc (3.1.2) | remainder | |



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”, 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 minimum, but such determination is not required for routine acceptance of each lot.

3.2 Condition:

Drawn temper, general purpose (H58) (See 8.3).

3.3 Fabrication:

Tubing shall be produced by a seamless process. The external and internal surface finishes shall be produced by any method which will result in surfaces free from laps, folds, tears, and extraneous materials and which show no oxide discoloration. Processing shall not affect limits of wall thickness or corrosion resistance.

3.4 Properties:

Tubing shall conform to the following requirements:

3.4.1 Tensile Strength: Shall be not lower than 54.0 ksi (372 MPa), determined in accordance with ASTM E 8 or ASTM E 8M.

3.4.2 Embrittlement: Specimens of tubing, nominally 6 inches (152 mm) in length or twice the diameter, whichever is greater, shall withstand, without cracking, the mercurous nitrate test performed in accordance with ASTM B 154, Procedure A, or the Ammonia Vapor Test in accordance with ASTM B 858M.

3.5 Quality:

Tubing, 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 tubing.

3.6 Tolerances:

Shall conform to AMS 2223 or MAM 2223 as applicable to nonrefractory alloys.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection:

The vendor of tubing shall supply all samples for vendor'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 tubing conforms to specified requirements.

4.2 Classification of Tests:

4.2.1 Acceptance Tests: Composition (3.1), tensile strength (3.4.1), and tolerances (3.6) are acceptance tests and shall be performed on each lot.

4.2.2 Periodic Tests: Embrittlement (3.4.2) is a periodic test and shall be performed at a frequency selected by the vendor unless frequency of testing is specified by purchaser.

4.3 Sampling and Testing:

Shall be in accordance with ASTM B 251 or ASTM B 251M.

4.4 Reports:

The vendor of tubing shall furnish with each shipment a report showing the results of tests for chemical composition and tensile properties, and stating that the tubing conforms to the other technical requirements. This report shall include the purchase order number, lot number, AMS 4558F, nominal size and quantity.

4.5 Resampling and Retesting:

If any specimen used in the above tests fails to meet specified requirements, disposition of the tubing may be based on the results of testing three additional specimens for each original nonconforming specimen. Failure of any retest specimen to meet specified requirements shall be cause for rejection of the tubing represented. Results of all tests shall be reported.

5. PREPARATION FOR DELIVERY:

5.1 Identification:

Individual tubes or bundles shall have attached a durable tag marked with not less than the purchase order number, lot number, AMS 4558F, and nominal size or shall be boxed and the box marked with the same information.

5.2 Packaging:

Tubing 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 product to ensure carrier acceptance and safe delivery.

6. ACKNOWLEDGMENT:

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

7. REJECTIONS:

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