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# AEROSPACE MATERIAL SPECIFICATION

Submitted for recognition as an American National Standard

SAE

AMS 4508G

Issued MAY 1948  
Revised JUL 1994

Superseding AMS 4508F

## COPPER-ZINC ALLOY, LAMINATED SHEET 70Cu - 30Zn Surface Bonded

UNS C26000

### 1. SCOPE:

#### 1.1 Form:

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

#### 1.2 Application:

This sheet has been used typically for shims in which thickness is adjusted by removal of laminations as required, 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 applicable issue of referenced publications shall be the issue in effect on the date of the purchase order.

#### 2.1 ASTM Publications:

Available from ASTM, 1916 Race Street, Philadelphia, PA 19103-1187.

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)

ASTM E 478 Chemical Analysis of Copper Alloys

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## 2.2 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:

(R)

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
Copper	68.50	71.50
Lead	--	0.07
Iron	--	0.05
Copper + Sum of Named Elements (3.1.2)	99.7	--
Zinc (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.

3.1.2 Applicable only when copper is determined by direct analysis.

(R)

## 3.2 Condition:

Laminated shim stock shall be fabricated from brass sheet in the quarter-hard (H01) or harder temper (See 8.2).

## 3.3 Properties:

Sheet shall conform to the following requirements:

## 3.3.1 Fabrication:

3.3.1.1 Stock shall consist of laminations, each  $0.002 \text{ inch} \pm 0.0002$  ( $0.05 \text{ mm} \pm 0.005$ ) thick or  $0.003 \text{ inch} \pm 0.0003$  ( $0.08 \text{ mm} \pm 0.008$ ) thick, or one-quarter or one-half of such laminations combined with a single solid lamination, as ordered, surface bonded together so that individual laminations may be peeled for adjustment of shim thickness and the laminations cut without separation of the remaining laminations.

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3.3.1.1.1 Thickness of each layer of adhesive shall not exceed 0.0003 inch (R) (0.008 mm).

3.3.1.2 Sheet shall consist of the thickness and combinations of laminations and solid base shown in Table 2.

TABLE 2 - Lamination Thickness and Combination

Nominal Thickness of Shim Stock Inch	Nominal Thickness of Shim Stock Millimeter	All Laminated Laminations Each 0.002 Inch (0.05 mm)	All Laminated Laminations Each 0.003 Inch (0.08 mm)	Half Solid, Half Laminated, Laminations Each 0.002 Inch (0.05 mm)	Half Solid, Half Laminated, Laminations Each 0.003 Inch (0.08 mm)	Three-Quarters Solid, One-Quarter Laminated, Laminations Each 0.002 Inch (0.05 mm)	Three-Quarters Solid, One-Quarter Laminated, Laminations Each 0.003 Inch (0.08 mm)
0.006	0.15	X					
0.008	0.20	X					
0.010	0.25	X					
0.016	0.41	X	X				
0.020	0.51	X	X				
0.032	0.81	X	X				
0.047	1.19	X	X				
0.062	1.57	X	X	X	X		
0.094	2.39	X	X	X	X		
0.125	3.18	X	X	X	X	X	X

### 3.4 Quality:

3.4.1 Sheet, as received by purchaser, shall be uniform in quality and condition, sound, and free from imperfections detrimental to usage of the sheet.

3.4.2 Laminations shall be bonded together so that any shape can be cut out of the shim stock without causing the laminations in the shape to separate. Normal handling shall not cause separation of laminations.

### 3.5 Tolerances:

Shall be as specified in Table 3.

TABLE 3A - Tolerances, Inch/Pound Units

Nominal Total Thickness Inch	Tolerance Inch Plus	Tolerance Inch Minus
Up to 0.008, incl	0.001	0.0005
Over 0.008 to 0.010, incl	0.0015	0.0005
Over 0.010 to 0.016, incl	0.0015	0.001
Over 0.016 to 0.021, incl	0.002	0.001
Over 0.021 to 0.033, incl	0.003	0.002
Over 0.033 to 0.048, incl	0.005	0.002
Over 0.048 to 0.063, incl	0.006	0.002
Over 0.063 to 0.080, incl	0.007	0.002
Over 0.080 to 0.094, incl	0.009	0.003
Over 0.094 to 0.109, incl	0.010	0.003
Over 0.109 to 0.125, incl	0.012	0.003

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TABLE 3B - Tolerances, SI Units

Nominal Total Thickness Millimeter	Tolerance Millimeter Plus	Tolerance Millimeter Minus
Up to 0.20, incl	0.02	0.013
Over 0.20 to 0.25, incl	0.038	0.013
Over 0.25 to 0.41, incl	0.038	0.025
Over 0.41 to 0.53, incl	0.05	0.025
Over 0.53 to 0.84, incl	0.08	0.05
Over 0.84 to 1.22, incl	0.13	0.05
Over 1.22 to 1.60, incl	0.15	0.05
Over 1.60 to 2.03, incl	0.18	0.05
Over 2.03 to 2.39, incl	0.23	0.08
Over 2.39 to 2.77, incl	0.25	0.08
Over 2.77 to 3.18, incl	0.30	0.08

**4. QUALITY ASSURANCE PROVISIONS:****4.1 Responsibility for Inspection:**

The vendor of sheet 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 sheet conforms to the requirements of this specification.

**4.2 Classification of Tests:**

Tests for all technical requirements are acceptance tests and shall be performed on each lot.

**4.3 Sampling and Testing:**  
(R)

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

**4.4 Reports:**

The vendor of sheet shall furnish with each shipment a report showing the results of tests on each lot to determine conformance to the technical requirements. This report shall include the purchase order number, lot number, AMS 4508G, shim stock thickness, foil thickness, percentage of total thickness which is laminated, 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 sheet 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 sheet represented. Results of all tests shall be reported.