



AEROSPACE MATERIAL SPECIFICATION	AMS4508™	REV. J
	Issued 1948-05 Reaffirmed 2015-03 Revised 2021-07 Superseding AMS4508H	
Copper-Zinc Alloy, Laminated Sheet 70Cu - 30Zn Surface Bonded		UNS C26000

RATIONALE

AMS4508J results from a Five-Year Review and update of this specification. Changes have been made to prohibit unauthorized exceptions (3.6, 8.6), update Reports (4.4.1), and Identification (5.1.1), and allow use of the immediate prior revision of this specification (8.5).

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 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 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 B248 General Requirements for Wrought Copper and Copper-Alloy Plate, Sheet, Strip, and Rolled Bar

ASTM B248M General Requirements for Wrought Copper and Copper-Alloy Plate, Sheet, Strip, and Rolled Bar (Metric)

ASTM E478 Chemical Analysis of Copper Alloys

SAE Executive Standards Committee Rules provide that: "This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."

SAE reviews each technical report at least every five years at which time it may be revised, reaffirmed, stabilized, or cancelled. SAE invites your written comments and suggestions.

Copyright © 2021 SAE International

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of SAE.

TO PLACE A DOCUMENT ORDER: Tel: 877-606-7323 (inside USA and Canada)
Tel: +1 724-776-4970 (outside USA)
Fax: 724-776-0790
Email: CustomerService@sae.org
SAE WEB ADDRESS: <http://www.sae.org>

For more information on this standard, visit
<https://www.sae.org/standards/content/AMS4508J/>

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

Table 1 - Composition

Element (3.1.1)	Min	Max
Copper	68.5	71.5
Lead	--	0.07
Iron	--	0.05
Zinc		(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

Laminated shim stock shall be fabricated from brass sheet in the quarter-hard (HO1) 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 inch \pm 0.0002 inch (0.05 mm \pm 0.005 mm) thick or 0.003 inch \pm 0.0003 inch (0.08 mm \pm 0.008 mm) 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.

- 3.3.1.1.1 Thickness of each layer of adhesive shall not exceed 0.0003 inch (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 Inches	Nominal Thickness of Shim Stock Millimeters	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 Inches	Tolerance	
	Inches Plus	Inches 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

Table 3B - Tolerances, SI units

Nominal Total Thickness Millimeters	Tolerance Millimeters Plus	Tolerance Millimeters 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

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 vendor of sheet 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 sheet conforms to specified requirements.

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 B248 or ASTM B248M.

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, AMS4508J, shim stock thickness, foil thickness, percentage of total thickness which is laminated, size, and quantity.

4.4.1 When material produced to this specification has exceptions taken to the technical requirements listed in Section 3, the report shall contain a statement "This material is certified as AMS4508J(EXC) because of the following exceptions:" and the specific exceptions shall be listed (also see 5.1.1).

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.