AEROSPACE MATERIAL SPECIFICATION

AMS4614™	REV. J

Issued 1940-10
Reaffirmed 2017-09
Revised 2022-09

Superseding AMS4614H

Brass Forgings, Free Cutting
60Cu - 2.0Pb - 37.5Zn
As Forged (M10)
(Composition similar to UNS C37700)

RATIONALE

AMS4614J results from a Five-Year Review and update of this specification specification with changes to prohibit unauthorized exceptions (3.5, 4.4.3, 5.1.3, 8.4), update applicable documents (Section 2, 2.3), composition (3.1), ordering information (8.5), and allow the use of the immediate prior specification revision (8.3).

1. SCOPE

1.1 Form

This specification covers one type of brass in the form of forgings and forging stock.

1.2 Application

These forgings have been used typically for forged fittings, such as elbows, tees, and manifolds in fluid conducting systems.

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 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.

AMS2808 Identification, Forgings

AS7766 Terms Used in Aerospace Metals Specifications

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/AMS4614J/

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 B601 Temper Designation for Copper and Copper Alloys - Wrought and Cast

ASTM E10 Brinell Hardness of Metallic Materials

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	58.0	62.0
Lead	1.5	2.5
Iron	--	0.30
Zinc		(See 3.1.2)
Sum of Named Elements (3.1.3)	99.5	--

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 99.5% minimum, but such determination is not required for routine acceptance of each lot.

3.2 Condition

The product shall be supplied in the following condition:

3.2.1 Forgings

As forged (M10) temper (see 2.3.1).

3.2.2 Forging Stock

As ordered by the forging manufacturer (see 8.5).

3.3 Properties

The product shall conform to the following requirements:

3.3.1 Forgings

Shall have hardness of 70 to 120 HB/10/1000/30, or equivalent, determined in accordance with ASTM E10.

3.3.2 Forging Stock

As agreed upon by purchaser and producer. (see 8.5)

3.4 Quality

The product, 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 product.

3.5 Exceptions

Any exceptions shall be authorized by the purchaser and reported as in 4.4.3.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for Inspection

The producer of the product 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 product conforms to specified requirements.

4.2 Acceptance Tests

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

4.3 Sampling and Testing

Shall be as follows: a lot shall be all forgings of the same size and shape or not more than 10000 pounds (4536 kg) of forging stock of the same size and shape produced in a continuous run and presented for producer's inspection at one time.

4.3.1 Composition

One sample from each lot.

4.3.2 Hardness

10% of the forgings in each lot.

4.4 Reports

4.4.1 The producer of forgings shall furnish with each shipment a report showing the results of tests for chemical composition and hardness of each lot. This report shall include the purchase order number, lot number, AMS4614J, size and melt source of forging stock, size or part number of forgings, and quantity.

4.4.2 The producer of forging stock shall furnish with each shipment a report stating that the stock conforms to the chemical composition requirements. This report shall include the purchase order number, lot number, AMS4614J, size, and quantity.

4.4.3 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 AMS4614J(EXC) because of the following exceptions:" and the specific exceptions shall be listed (also see 5.1.3).

4.5 Resampling and Retesting

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

5. PREPARATION FOR DELIVERY

5.1 Identification

Shall be as follows:

5.1.1 Forgings

In accordance with AMS2808.

5.1.2 Forging Stock

As agreed upon by purchaser and producer. (see 8.5)

5.1.3 When technical exceptions are taken (see 4.4.3), the material shall be identified with AMS4614J(EXC).

5.2 Packaging

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

7. REJECTIONS

Product 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 specification. An (R) symbol to the left of the document title indicates a complete revision of the specification, including technical revisions. Change bars and (R) are not used in original publications, nor in specifications that contain editorial changes only.

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