Society of Automotive Engineers, Inc.
400 COMMONWEALTH DRIVE, WARRENDALE, PA. 15096

AEROSPACE MATERIAL SPECIFICATION

AMS 4614E
Superseding AMS 4614D
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UNS C37700

BRASS FORGINGS, FREE CUTTING
60Cu - 2.0Pb - 38Zn (CDA 377)

1. SCOPE:

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

1.2 Application: Primarily for forged fittings, such as elbows, tees, and manifolds in fluid conducting systems.

2. APPLICABLE DOCUMENTS: The following publications form a part of this specification to the extent specified herein. The latest issue of Aerospace Material Specifications (AMS) shall apply. The applicable issue of other documents shall be as specified in AMS 2350.

2.1 SAE Publications: Available from Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096.

2.1.1 Aerospace Material Specifications:

AMS 2350 - Standards and Test Methods
AMS 2808 - Identification, Forgings

2.2 ASTM Publications: Available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

ASTM E10 - Brinell Hardness of Metallic Materials
ASTM E36 - Chemical Analysis of Brasses

2.3 Government Publications: Available from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

2.3.1 Federal Standards:

Federal Test Method Standard No. 151 - Metals; Test Methods

2.3.2 Military Specifications:

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

3. TECHNICAL REQUIREMENTS:

3.1 Composition: Shall conform to the following percentages by weight, determined by wet chemical methods in accordance with ASTM E36, by spectrographic methods in accordance with Federal Test Method Standard No. 151, Method 112, or by other approved analytical methods:

	min	max
Copper	58.0 -	62.0
Lead	1.5 -	2.5
Iron	--	0.30
Other Elements, each	--	0.05
Other Elements, total	--	0.50
Zinc	remainder	

3.2 Condition: The product shall be supplied in the following condition:

3.2.1 Forgings: As forged.

3.2.2 Forging Stock: As ordered by the forging manufacturer.

3.3 Properties: The product shall conform to the following requirements:

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

3.3.2 Forging Stock: As agreed upon by purchaser and vendor.

3.4 Quality: The product, as received by the purchaser, shall be uniform in quality and condition, sound, and free from foreign materials and from internal and external imperfections detrimental to usage of the product.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor of the product shall supply all samples and shall be responsible for performing all required tests. Results of such tests shall be reported to the purchaser as required by 4.4. Purchaser reserves the right to perform such confirmatory testing as he deems necessary to ensure that the product conforms to the requirements of this specification.

4.2 Classification of Tests: Tests to determine conformance to all technical requirements of this specification are classified as acceptance tests and as preproduction tests.

4.2.1 For direct U.S. Military procurement of forgings, substantiating test data and, when requested, preproduction forgings shall be submitted to the cognizant agency as directed by the procuring activity, the contracting officer, or the request for procurement.

4.3 Sampling: Shall be as follows; a lot shall be all forgings of the same size and shape or not more than 10,000 lb (4540 kg) of forging stock of the same size and shape produced in a continuous run and presented for vendor's inspection at one time:

4.3.1 Composition: One sample from each lot.

4.3.2 Hardness: 10% of the pieces in each lot.

4.4 Reports:

4.4.1 The vendor of forgings shall furnish with each shipment three copies of 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, material specification number and its revision letter, size and melt source of forging stock, size or part number of the forgings, and quantity.

4.4.2 The vendor of forging stock shall furnish with each shipment three copies of a report stating that the stock conforms to the chemical composition requirements. This report shall include the purchase order number, lot number, material specification number and its revision letter, size, and quantity.

4.4.3 The vendor of finished or semi-finished parts shall furnish with each shipment three copies of a report showing the purchase order number, material specification number and its revision letter, contractor or other direct supplier of forgings, part number, and quantity. When forgings for making parts are produced or purchased by the parts vendor, that vendor shall inspect each lot of forgings to determine conformance to the requirements of this specification, and shall include in the report a statement that the forgings conform, or shall include copies of laboratory reports showing the results of tests to determine conformance.