AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
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AMS 4130E

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ALUMINUM ALLOY FORGINGS
4.5Cu - 0.9Si - 0.8Mn (25S-T6)

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

2. FORM: Die forgings and forging stock.

3. COMPOSITION:

Copper	3.90 - 5.00
Silicon	0.50 - 1.20
Manganese	0.40 - 1.20
Iron	1.00 max
Zinc	0.25 max
Titanium	0.15 max
Chromium	0.10 max
Magnesium	0.05 max
Other Impurities, each	0.05 max
Other Impurities, total	0.15 max
Aluminum	remainder

4. CONDITION:

4.1 Forgings: Solution and precipitation heat treated. Quenching from the solution temperature shall be at a rate fast enough for the material to meet the requirments specified in Section 5, but shall be as slow as practicable in order to keep the internal stresses at a minimum.

4.2 Forging Stock: As fabricated.

5. TECHNICAL REQUIREMENTS:

5.1 Forgings:

5.1.1 Tensile test specimens, machined after heat treatment from separately forged coupons or from forging stock representing the forgings and heat treated with the forgings, or machined from prolongations on the heat treated forgings, shall conform to the following requirements:

Tensile Strength, psi	55,000 min
Yield Strength at 0.2% offset or at 0.0098 inch in 2 in. extension under load, psi	30,000 min
Elongation, % in 4D	16 min

5.1.2 When tensile test specimens are machined from heat treated forgings with the axis approximately parallel to the forging flow lines, the physical properties shall conform to those specified in 5.1.1 above, except that elongation may be as low as 11.0%, unless otherwise agreed upon by purchaser and vendor.

5.1.3 Heat treated forgings and test specimens shall have hardness not lower than Brinell 100, using 500 kg load and 10 mm ball or the equivalent, or not lower than Brinell 106, using 1000 kg load and 10 mm ball.

5.2 Forgings with Special Requirements: When the drawing or purchase order specifies "special processing", the forgings shall conform to the requirements of paragraph 5.1 except that elongation of tensile test specimens machined from prolongations on the heat treated forgings may be as low as 11%; in addition, minimum physical properties of tensile test specimens machined from forgings in directions other than parallel to the forging flow lines shall be as agreed upon by purchaser and vendor, except that elongation shall be not lower than 5%.

5.3 Forging Stock:

5.3.1 If a test coupon is forged from a sample of the stock, a test specimen taken from the coupon after proper heat treatment shall show the physical properties in paragraphs 5.1.1 and 5.1.3, but this test is not required in routine inspection. If a test specimen taken from the stock after proper heat treatment shows the properties in paragraphs 5.1.1 and 5.1.3, the test shall be accepted as equivalent to the test of a forged coupon, but this test is not required.

5.3.2 Unless otherwise specified, tolerances shall be in accordance with commercial practice for the class ordered.

6. QUALITY: Material shall be uniform in quality and condition, clean, sound, and free from foreign materials and from internal and external defects detrimental to fabrication or to performance of parts.

7. REPORTS:

7.1 Unless otherwise specified, the vendor of forgings shall furnish with each shipment three copies of a notarized report stating that the physical properties and chemical composition of the forgings conform to the requirements specified. This report shall include the purchase order number, material specification number, part number, and quantity.

7.2 Unless otherwise specified, the vendor of forging stock shall furnish with each shipment three copies of a notarized report stating that the chemical composition of the stock conforms to the requirements specified. This report shall include the purchase order number, material specification number, size, and quantity.

7.3 Unless otherwise specified, the vendor of finished or semi-finished parts shall furnish with each shipment three copies of a notarized report showing the purchase order number, material specification number, 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 certification that the forgings conform, or shall include copies of laboratory reports showing the results of tests to determine conformance.

8. IDENTIFICATION:

8.1 Forgings shall be identified in accordance with the latest issue of AMS 2808.

8.2 Forging stock shall be identified as agreed upon by purchaser and vendor.