

AERONAUTICAL MATERIAL SPECIFICATIONS

AMS 4132

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Revised

ALUMINUM ALLOY FORGINGS 2.3Cu - 1.6Mg - 1.1Fe - 1.1Ni - 0.07Ti (2618-T61)

1. ACKNOWLEDGMENT: A vendor shall mention this specification number in all quotations and when acknowledging purchase orders.
2. FORM: Die forgings, hand forgings, and forging stock.
3. APPLICATION: Primarily for rotor parts operating at temperatures up to 450 F and other parts operating up to 600 F at low stresses.
4. COMPOSITION:

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|-------------------------|-------------|
| Copper | 1.9 - 2.7 |
| Magnesium | 1.3 - 1.8 |
| Iron | 0.9 - 1.3 |
| Nickel | 0.9 - 1.2 |
| Titanium | 0.04 - 0.10 |
| Silicon | 0.25 max |
| Other Impurities, each | 0.05 max |
| Other Impurities, total | 0.15 max |
| Aluminum | remainder |

5. CONDITION:

- 5.1 Die Forgings, and Hand Forgings 4 in. and Under in Thickness: Unless otherwise specified, solution and precipitation heat treated. Forgings shall be solution heat treated by heating to 985 F \pm 10, holding at heat for not less than 6 hr, and quenching in boiling water and shall then be precipitation heat treated by heating to 390 F \pm 5, holding at heat for approximately 20 hr, and cooling in air.
- 5.2 Hand Forgings Over 4 in. in Thickness: As forged, unless otherwise specified.
- 5.3 Forging Stock: As fabricated.

6. TECHNICAL REQUIREMENTS:

- 6.1 Die Forgings:

- 6.1.1 Tensile Properties:

- 6.1.1.1 Test Specimens: Test specimens machined from separately forged coupons or from forging stock representing the forgings and in either case heat treated with the forgings, or machined from prolongations on heat treated forgings, shall conform to the following requirements:

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| Tensile Strength, psi | 58,000 min |
| Yield Strength at 0.2% Offset or at 0.0139 in. in 2 in. Extension Under Load (E = 10,800,000), psi | 48,000 min |
| Elongation, % in 4D | 6 min |

6.1.1.2 Forgings, With Grain Flow: When test specimens are machined from forgings not over 4 in. in thickness with the axis approximately parallel to the forging flow lines, the tensile properties shall conform to those specified in 6.1.1.1, except that elongation may be as low as 4%, unless otherwise agreed upon by purchaser and vendor.

6.1.1.3 Forgings, Across Grain Flow: When test specimens are machined from die forgings not over 4 in. in thickness so that the axis is other than approximately parallel to the forging flow lines, the tensile properties shall conform to the following requirements:

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| Tensile Strength, psi | 55,000 min |
| Yield Strength at 0.2% Offset or at 0.0123 in. in 2 in. Extension Under Load (E = 10,800,000), psi | 45,000 min |
| Elongation, % in 4D | 4 min |

6.1.1.3.1 The elongation requirement applies only to test specimens having a gage length diameter not less than 0.25 in. and cut so that the length of the specimen is in a plane parallel to the parting plane.

6.1.1.3.2 If any individual specimen fails to meet the requirements of 6.1.1.3, two additional specimens shall be cut from adjacent areas in the same forging or from the same area in two additional forgings. Should either of these specimens fail to meet the values specified in 6.1.1.3, the entire lot may be rejected.

6.1.2 Hardness: Forgings shall have hardness not lower than Brinell 115 using 500 kg load and 10 mm ball or 1000 kg load and 9/16 in. ball, or not lower than Brinell 120 using 1000 kg load and 10 mm ball.

6.2 Forging Stock:

6.2.1 When a sample of stock is forged to a test coupon and heat treated in the same manner as forgings, a tensile test specimen taken from the heat treated coupon shall have properties not lower than those specified in 6.1.1.1 and 6.1.2. If a test specimen taken from the stock after heat treatment in the same manner as forgings has properties not lower than those specified in 6.1.1.1 and 6.1.2, the test shall be accepted as equivalent to the test of a forged coupon. Neither of these tests is required in routine inspection.

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

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