AERONAUTICAL MATERIAL SPECIFICATIONS

SOCIETY OF AUTOMOTIVE ENGINEERS, Inc. 485 Lexington Ave., New York 17, N.Y.

AMS 4116A

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ALUMINUM ALLOY BARS, ROLLED
1Mg - 0.6Si - 0.3Cu - 0.25Cr (6061-T4)

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

2. FORM: Bars, rods, and wire.

3. APPLICATION: Primarily for parts where moderate ductility, formability, and response to precipitation heat treatment are required.

4. COMPOSITION:

Magnesium	0.8 - 1.2
Silicon	0.40 - 0.8
Copper	0.15 - 0.40
Chromium	0.15 - 0.35
Iron	0.7 max
Zinc	0.25 max
Manganese	0.15 max
Titanium	0.15 max
Other Impurities, each	0.05 max
Other Impurities, total	0.15 max
Aluminum	remainder

5. CONDITION: Rolled or cold finished as ordered, and solution heat treated.

6. TECHNICAL REQUIREMENTS:

6.1 Tensile Properties:

Tensile Strength, psi	30,000 min
Yield Strength at 0.2% Offset or at 0.0072 in. in 2 in. Extension Under Load (E = 9,900,000), psi	16,000 min
Elongation, % in 4D	18 min

6.1.1 When a dispute occurs between purchaser and vendor over the yield strength value, yield strength determined by the offset method shall apply.

6.1.2 Tensile properties shall be as agreed upon by purchaser and vendor on material under 0.125 in., on rounds over 8.0 in. in diameter, and on rectangles and squares with an area over 50 sq inches.

6.2 Hardness: Brinell 50 - 80 using 500 kg load and 100 mm ball or 1000 kg load and 9/16 in. ball or Brinell 55 - 85 using 1000 kg load and 10 mm ball, but the product shall not be rejected on the basis of hardness if the requirements for tensile properties are met.

6.3 Properties After Precipitation Heat Treatment: Material after proper precipitation heat treatment shall conform to the following requirements:

6.3.1 Tensile Properties:

Tensile Strength, psi	42,000 min
Yield Strength at 0.2% Offset or at 0.0110 in. in 2 in. Extension Under Load (E = 9,900,000), psi	35,000 min
Elongation, % in 4D	10 min

6.3.1.1 When a dispute occurs between purchaser and vendor over the yield strength value, yield strength determined by the offset method shall apply.

6.3.2 Hardness: Not lower than Brinell 80 using 500 kg load and 10 mm ball or 1000 kg load and 9/16 in. ball or not lower than Brinell 85 using 1000 kg load and 10 mm ball, but shall not be rejected on the basis of hardness if the requirements for tensile properties are met.

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

8. TOLERANCES: Unless otherwise specified, tolerances shall conform to the latest issue of AMS 2201 as applicable.

9. REPORTS:

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

9.2 Unless otherwise specified, 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, contractor or other direct supplier of material, part number, and quantity. When material for making parts is produced or purchased by the parts vendor, that vendor shall inspect each lot of material to determine conformance to the requirements of this specification, and shall include in the report a statement that the material conforms, or shall include copies of laboratory reports showing the results of tests to determine conformance.

10. IDENTIFICATION: Unless otherwise specified, the product shall be identified as follows:

10.1 Each straight bar and rod 0.500 in. and over in diameter or distance between parallel sides shall be marked with the alloy number and temper, or AMS 4116, and manufacturer's identification. The characters shall be of such size as to be clearly legible, shall be applied recurring at intervals not greater than 3 ft using a suitable marking fluid, and shall not be obliterated by normal handling.