AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
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AMS4650B

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BERYLLIUM COPPER ALLOY BARS AND FORGINGS
Solution Treated

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

2. FORM: Rods, bars and forgings.

3. COMPOSITION:

Beryllium	1.9 - 2.15
Nickel + Cobalt	0.15 min
Nickel + Cobalt + Iron	0.50 max
Copper	remainder
Total Named Elements	99.6 min

4. CONDITION: (a) Unless otherwise specified, material shall be supplied solution treated, and cold finished if necessary, in a suitable condition for precipitation hardening and conforming to the following:

Nominal Diameter or Thickness Inches	Brinell Hardness (1000 kg load)
1.5 and under	160 - 223
Over 1.5	200 max

(b) Bars ordered for forging shall be supplied as ordered by the forging manufacturer.

5. PHYSICAL PROPERTIES: (a) As-received material, after precipitation hardening at 600 F ± 5 for 3 hours, shall have hardness of Rockwell C 35-42.

(b) Material re-solution treated and precipitation hardened at 600 F ± 5 for 3 hours shall have hardness not higher than Rockwell C 40.

6. GRAIN SIZE: The average grain size shall be not larger than 0.050 mm.

7. QUALITY: (a) Material shall be uniform in quality and condition, clean, sound, smooth, and free from foreign materials and from internal and external defects detrimental to fabrication or to performance of parts. Material shall not distort excessively during precipitation hardening due to residual stresses caused by mill operations. Material in which defects are revealed during fabrication will be subject to rejection.

(b) Material and parts shall be subject to inspection by any method which will reveal harmful defects.

(c) The cross-sectional area of rods and bars shall be less than one-half that of the ingots from which they were formed, i.e., rods and bars must have been subjected to over 50% reduction of area during formation.