AERONAUTICAL MATERIAL SPECIFICATION

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ALUMINUM ALLOY FORGINGS
Copper Nickel Magnesium (18S-T)

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

2. COMPOSITION:

Copper	3.50 - 4.50
Nickel	1.70 - 2.30
Magnesium	0.45 - 0.90
Iron	1.00 max
Silicon	0.90 max
Manganese	0.20 max
Zinc	0.25 max
Titanium	0.05 max
Chromium	0.10 max
Other Impurities, each	0.05 max
Other Impurities, total	0.15 max
Aluminum	remainder

3. CONDITION: (a) Solution and precipitation heat treated. Quenching from the solution temperature shall be at a rate not faster than that produced by immersion in water which is boiling at the time of immersion.

(b) Test specimens, machined after heat treatment from separately forged coupons representing the forgings and heat treated with the forgings, or machined after heat treatment from prolongations on the forgings, shall conform to the following minimum physical properties:

Tensile Strength, psi	55,000
Yield Strength (0.2% Offset), psi	40,000
Equivalent Extension Under Load, inch in 2 in.	0.0115
Elongation, % in 4D	10

(c) When 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 (b) above, except that elongation may be as low as 7.0%, unless otherwise agreed between purchaser and vendor.

(d) Heat treated forgings and test specimens shall have hardness of not less than Brinell 100, using 500 kg load and 10 mm ball or the equivalent, or not less than Brinell 106, using 1000 kg load and 10 mm ball.

(e) Pistons shall be capable of being heated at 450°F for 5 hours and retaining a hardness of not less than Brinell 90, using 500 kg load and 10 mm ball or the equivalent, or not less than Brinell 93, using 1000 kg load and 10 mm ball.

4. STOCK FOR FORGING: (a) The composition shall conform to that of section 2 above.