AERONAUTICAL MATERIAL SPECIFICATION

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ALUMINUM ALLOY FORGINGS
Zinc Magnesium Copper (75S-T)

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, hand forgings, and stock for forgings.

3. COMPOSITION:

Zinc	5.1 - 6.1
Magnesium	2.1 - 2.9
Copper	1.2 - 2.0
Chromium	0.15 - 0.40
Manganese	0.10 - 0.30
Iron	0.70 max
Silicon	0.50 max
Titanium	0.20 max
Other Impurities, each	0.05 max
Other Impurities, total	0.15 max
Aluminum	Remainder

4. CONDITION: Die and Hand Forgings:- Solution and precipitation heat treated. Quenching from the solution temperature shall be at a rate fast enough for the material to meet the following requirements, but shall be as slow as practicable in order to keep the internal stresses at a minimum.

(a) Die Forgings.-

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

Tensile Strength, psi	75,000
Yield Strength (0.2% Offset), psi	65,000
Equivalent Extension Under Load, Inch in 2 In.	0.0165
Elongation, % in 4D	10

(2) 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 (1) above, except the elongation may be as low as 7.0%, unless otherwise agreed between purchaser and vendor.

(3) Heat treated forgings and test specimens shall have hardness of not less than Brinell 135, using 500 kg load and 10 mm ball or the equivalent, nor not less than Brinell 140, using 1000 kg load and 10 mm ball.

(b) HandForgings.-

(1) Test specimens from billets three inches and under in thickness or from test coupons not more than three inches in thickness cut from larger billets and reheat treated, taken parallel to and perpendicular to the length of the billet in such a manner as to represent the center of the billet, shall conform to the following minimum physical properties:-

Cross Sectional Square Inches	Direction of Test	Tensile Strength psi	Yield Strength at 0.2% Offset or at Extension Indicated psi	Extension Under Load Inch in 2 in.	Elongation % in 4D
9 and under	Long	75,000	65,000	0.0165	10
	Trans.	75,000	65,000	0.0165	5
Over 9 to 16, incl	Long	74,000	64,000	0.0163	8
	Trans.	72,000	62,000	0.0159	3
Over 16 to 36, incl	Long	73,000	62,000	0.0159	7
	Trans.	71,000	60,000	0.0155	3
Over 36 to 64, incl	Long	72,000	61,000	0.0157	6
	Trans.	70,000	59,000	0.0154	2

(2) Unless otherwise specified, tolerances shall be in accordance with commercial practice.

(c) Stock for Forging.-

(1) The composition shall conform to that of section 3.

(2) When a sample of the stock is forged to a test coupon, a test specimen taken from the coupon after proper heat treatment shall show the physical properties in paragraphs 4(a)(1) and 4(a)(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 4(a)(1) and 4(a)(3), the test shall be accepted as equivalent to the test of the forged coupon, but this test is not required.

(3) Stock shall be furnished in the as-fabricated condition.

(4) Tolerances shall be in accordance with commercial practice for the class ordered, unless otherwise specified.

5. QUALITY: (a) Forgings shall be uniform in quality and condition, clean, sound, and free from foreign material and from internal and external defects detrimental to fabrication or to performance of parts. Material in which defects are revealed during fabrication will be subject to rejection.

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