AERONAUTICAL MATERIAL SPECIFICATION

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ALUMINUM ALLOY FORGINGS
5.6Zn - 2.5Mg - 1.6Cu - 0.25Cr (75S)

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 forging.

3. COMPOSITION:

Zinc	5.10 - 6.10
Magnesium	2.10 - 2.90
Copper	1.20 - 2.00
Chromium	0.18 - 0.40
Iron	0.70 max
Silicon	0.50 max
Manganese	0.30 max
Titanium	0.20 max
Other Impurities, each	0.05 max
Other Impurities, total	0.15 max
Aluminum	remainder

4. CONDITION:

4.1 Die 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.

4.2 Hand Forgings: As forged.

4.3 Forging Stock: As fabricated.

5. TECHNICAL REQUIREMENTS:

5.1 Die Forgings:

5.1.1 Tensile test specimens, machined after heat treatment from separately forged coupons or from forging stock representing the forgings and heat treated with the forgings, or machined from prolongations on the heat treated forgings, shall conform to the following requirements.

Tensile Strength, psi	75,000 min
Yield Strength at 0.2% offset or at 0.0165 inch in 2 in. extension under load, psi	65,000 min
Elongation, % in 4D	10 min

5.1.2 When tensile test specimens are machined from heat treated forgings not over 3 in. thick with the axis approximately parallel to the forging flow lines, the physical properties shall conform to those specified in 5.1.1, except that elongation may be as low as 7.0%, unless otherwise agreed upon by purchaser and vendor.

5.1.3 Heat treated die forgings and tensile test specimens shall have hardness not lower than Brinell 135, using 500 kg load and 10 mm ball or the equivalent, or not lower than Brinell 140, using 1000 kg load and 10 mm ball.

5.2 Hand Forgings:

5.2.1 Hand forgings 3 in. and under in thickness, and test coupons not more than 3 in. in thickness from larger hand forgings, shall, after proper solution and precipitation heat treatment, conform to the following requirements, based on the cross-sectional area of the forging. Tensile test specimens shall be taken parallel to and perpendicular to the length of the hand forging in such a manner as to represent the center of the forging.

Ident. Class.	Cross-Sectional Area	Length Ranges	Tensile Strength psi, min		Yield Strength psi, min (0.2% Offset)		Elongation % in 2 in. or 4D min	
	Square inches		Longi-tudinal	Long Trans-verse	Longi-tudinal	Long Trans-verse	Longi-tudinal	Long Trans-verse
CL 1	16 & under, incl.	up to 3 times width, incl.	75,000	75,000	64,000	63,000	9.0	4.0
CL 2	16 & under, incl.	over 3 times width	73,000	73,000	62,000	61,000	8.0	3.0
CL 3	Over 16 to 36, incl.	up to 3 times width, incl.	73,000	71,000	61,000	60,000	7.0	3.0
CL 4	Over 16 to 36, incl.	over 3 times width	71,000	69,000	59,000	58,000	6.0	2.0
CL 5	Over 36 to 144 incl.	up to 3 times width, incl.	71,000	69,000	60,000	58,000	4.0	2.0
CL 6	Over 36 to 144 incl.	over 3 times width	69,000	67,000	58,000	56,000	3.0	1.0

NOTE 1: Routine testing for longitudinal properties is not required.

5.2.2 Heat treated hand forgings not over 3 in. thick shall have hardness not lower than Brinell 135, using 500 kg load and 10 mm ball or the equivalent, or not lower than Brinell 140, using 1000 kg load and 10 mm ball.

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

5.3 Forging Stock:

5.3.1 If a test coupon is forged from a sample of the stock, a test specimen taken from the coupon after proper heat treatment shall show the physical properties in 5.1.1 and 5.1.3, 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 5.1.1 and 5.1.3, the test shall be accepted as equivalent to the test of a forged coupon, but this test is not required.