AERONAUTICAL MATERIAL SPECIFICATION

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AMS 4360B

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MAGNESIUM ALLOY FORGINGS
AZ80X
Precipitation Heat Treated

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:

Aluminum	7.80 - 9.20
Zinc	0.20 - 0.80
Manganese	0.12 min
Silicon	0.30 max
Copper	0.05 max
Nickel	0.005 max
Iron	0.005 max
Other Impurities, total	0.30 max
Magnesium	Remainder

4. CONDITION: (a) Die and Hand Forgings.- Unless otherwise specified, forgings shall be precipitation heat treated. Cooling from forgings temperature may be accelerated but shall be no faster than by quenching in 160 F water, and the practice in this respect shall be consistent for each type of forging.

(b) Stock for forging.- As fabricated.

5. TECHNICAL REQUIREMENTS:

(a) Die Forgings.-

(1) Forgings less than 2 in. in thickness or weighing less than 50 lb.- Test specimens, machined after heat treatment from forgings with the axis approximately parallel to the forging flow lines or from prolongations on the forgings, shall conform to the following requirements:

Tensile Strength, psi	42,000 min
Yield Strength at 0.2% offset or at 0.0132 inch in 2 in. extension under load, psi	30,000 min
Elongation, % in 4D	2.0 min

(2) Forgings 2 in. and over in thickness and weighing 50 lb. and over.- When forgings are cut for examination, not less than eight specimens, equally divided between parallel to and perpendicular to the forging flow lines, shall be taken from thick and thin sections of the forgings and shall conform to the following individual and average requirements, unless otherwise specified:

	Individual	Average
Tensile Strength, psi	34,000 min	40,000 min
Yield Strength at 0.2% offset, psi	22,000 min	26,000 min
Equivalent extension under load, inch in 2 in.	0.0108	---
Elongation, % in 4D	2.0 min	3.0 min

Note: When a forging does not have a forged hole at the center, individual specimens taken from the center may have yield strength as low as 18,000 psi at 0.2% offset or at 0.0095 inch in 2 in. extension under load.

(3) Forgings and test specimens shall have hardness not lower than Brinell 75, using 500 kg load and 10 mm ball or the equivalent, or not lower than Brinell 82, using 1000 kg load and 10 mm ball.

(4) When the size of the forging is such that test specimens cannot be taken and the use of prolongations is impractical, the method of test shall be as agreed upon by purchaser and vendor.

(b) Hand Forgings.-

(1) Test specimens in accordance with ASTM E8 are acceptable and shall be taken parallel to the flow lines of the hand forging in such a manner as to represent the center of the forging and shall conform to the following requirements. If physical properties other than parallel to the forging flow lines are required, the properties shall be as agreed upon by purchaser and vendor.

Tensile Strength, psi	42,000 min
Yield Strength at 0.2% offset or at 0.0126 inch in 2 in. extension under load, psi	28,000 min
Elongation, % in 4D	2.0 min

Note: These physical properties apply to hand forgings 6 in. and under in thickness.

(2) Hand forgings and test specimens shall have hardness not lower than Brinell 65, using 500 kg load and 10 mm ball or the equivalent, or not lower than Brinell 70, using 1000 kg load and 10 mm ball.

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

(c) Stock for Forging.-

(1) 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 above requirements as applicable, but this test is not required in routine inspection. If a test specimen taken from the stock after proper heat treatment shows the above requirements as applicable, the test shall be accepted as equivalent to the test of the forged coupon, but this test is not required.

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

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

7. REPORTS: (a) Unless otherwise specified, the vendor of forgings shall furnish with each shipment three copies of a notarized report stating that the physical properties and chemical composition of the forgings conform to the requirements specified. This report shall include the purchase order number, material specification number, size or part number, and quantity.