AEROSPACE
MATERIAL SPECIFICATIONS
SOCIETY OF AUTOMOTIVE ENGINEERS, Inc. 485 Lexington Ave., New York 17, N.Y.

AMS 7806

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Revised

MOLYBDENUM FORGINGS
Powder Metallurgy, Sintered, Stress Relieved

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

2. FORM: Forgings and forging stock.

3. APPLICATION: Primarily for forged parts requiring high modulus and uniform strength characteristics up to at least 1700 F (925 C). This material is not recommended for use in oxidizing atmospheres at 1000 F (540 C) and above unless protected by a suitable coating.

4. COMPOSITION:

		Check Analysis Over Max
Molybdenum	99.90 min (1)	
Iron	0.020 max	0.002
Carbon	0.010 max	0.002
Silicon	0.010 max	0.002
Nickel	0.010 max	0.001
Oxygen	0.0070 (70 ppm) max (2)	-
Nitrogen	0.0020 (20 ppm) max (2)	0.0005 (5 ppm)

(1) Determination not required for routine acceptance.
(2) Pending establishment of approved methods of analysis, deviation from these limits alone shall not be cause for rejection.

5. CONDITION:

5.1 Forgings: Hot-cold forged, descaled, and stress relieved.

5.2 Forging Stock: Isostatic pressed and sintered.

5.2.1 Density: Shall be not less than 0.349 lb per cu inch.

6. TECHNICAL REQUIREMENTS:

6.1 Forgings: The product shall conform to the following requirements, and shall be capable of meeting these requirements after being heated to 1700 F ± 25 (926.7 C ± 14), held at heat for 30 min. in a suitable, controlled atmosphere, and cooled rapidly.

6.1.1 Hardness: Not lower than Brinell 182 (1500 kg) or equivalent.

6.1.2 Tensile Properties: Unless otherwise specified, specimens cut with the axis approximately parallel to the forging flow lines and tested at room temperature using strain rates of 0.003 - 0.007 in. per in. per min. through the 0.6% offset and 0.03 - 0.07 in. per in. per min. to the ultimate shall conform to the following requirements; the location of the test specimen in the forging shall be as agreed upon by purchaser and vendor.

Tensile Strength, psi	75,000 min
Yield Strength at 0.2% Offset or at 0.0066 in. in 2 in. Extension Under Load (E = 46,000,000), psi	60,000 min
Elongation, % in 4D	7 min
Reduction of Area, %	10 min

6.2 Forging Stock:

6.2.1 Hardness: Shall be not higher than Brinell 182 (1500 kg) or equivalent.

7. QUALITY: The product shall be uniform in quality and condition, clean, sound, smooth, and free from foreign materials and from internal and external imperfections detrimental to fabrication or to performance of parts.

7.1 When specified, ultrasonic and other nondestructive inspection techniques and acceptance standards for forgings shall be as agreed upon by purchaser and vendor.

8. TOLERANCES:

8.1 Forging Stock: Unless otherwise specified, forging stock shall be furnished in random lengths and shall have a uniform section along the entire length within ± 2%. In addition, removal of local surface imperfections by turning, spot grinding, or hand filing will be permitted provided depths of spots is not greater than 2% of the nominal diameter or distance between parallel sides and spots are smoothly blended into adjacent surfaces.

8.1.1 Forging stock specified cut to length or weight shall meet the following tolerances:

8.1.1.1 Cut to Specified Length: ± 1/4 inch.

8.1.1.2 Cut to Specified Weight: ± 5%.

9. REPORTS:

9.1 Unless otherwise specified, the vendor of the product shall furnish with each shipment three copies of a report of the results of tests for chemical composition of each powder lot in the shipment and for tensile properties and hardness of each part number from each lot. This report shall include the purchase order number, powder lot number, material specification number, part number, size of forging stock used, and quantity from each powder lot.