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

AMS 7800

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Revised

MOLYBDENUM, SHEET, STRIP, AND PLATE
Powder Metallurgy, Sintered, Stress Relieved

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

2. APPLICATION: Primarily for parts requiring high modulus and uniform strength characteristics up to at least 1700 F. Because of its excessive oxidation rate, this material is not recommended for use in oxidizing atmospheres at 1000 F and above unless protected by a suitable coating.

3. 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) Routine determination not required.
(2) Pending establishment of approved methods of analysis, deviation from these limits alone shall not be cause for rejection.

4. CONDITION: Unless otherwise specified, material shall be hot-cold rolled, leveled, and fully stress relieved, having a surface appearance as close as possible to a commercial corrosion resistant steel No. 2D finish; standards for acceptance and rejection shall be as agreed upon by purchaser and vendor.

5. TECHNICAL REQUIREMENTS:

5.1 The product shall conform to the following requirements as applicable to the orientation of specimen axis with respect to direction of rolling and shall be capable of meeting these requirements after being heated to 1700 F ± 25, held at heat for 30 min. in a suitable controlled atmosphere, and cooled rapidly. Specimens shall be tested with axes both parallel and perpendicular to the direction of rolling, using strain rates of 0.003 - 0.007 in. per in. per min. through the yield strength and 0.010 - 0.030 in. per in. per min. between yield and ultimate.

Nominal Thickness Inches	Specimen Axis Orientation	Tensile Strength psi, min	Yield Strength at 0.2% Offset or at Extension Indicated (E = 46,000,000) psi, min	Extension Under Load in. in 2 in.	Elong. % in 2 in.
0.020 and under	Parallel	100,000	87,000	0.0078	7
	Perpendicular	100,000	87,000	0.0078	5
Over 0.020 to 0.1875, incl	Parallel	93,000	80,000	0.0075	8
	Perpendicular	95,000	82,000	0.0076	6
Over 0.1875 to 0.500, incl	Parallel	90,000	80,000	0.0075	3
	Perpendicular	93,000	82,000	0.0076	4

5.2 Bending: Sheet and strip 0.065 in. and under in thickness shall withstand, without cracking, bending at room temperature through an angle of 105 deg around a diameter equal to 4 times the nominal thickness of the material, with axes of bends both parallel and perpendicular to the direction of rolling, using a ram speed not less than 1 in. per min. and not greater than 10 in. per min. and deburred test specimens 0.5 in. wide and not less than 2 in. in length.

6. QUALITY: Material shall be consolidated and sintered in a suitable inert atmosphere using standard powder metallurgy techniques. 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. TOLERANCES: Unless otherwise specified, tolerances shown herein shall apply.

7.1 Thickness:

Nominal Thickness (T) Inches	Tolerance, Plus or Minus For Width Ranges Shown, Inches 18 and Under	Over 18 to 24 incl	Over 24 to 30 incl	Over 30 to 48 incl
0.010 and under	0.001	---	---	---
Over 0.010 to 0.017, incl	0.002	---	---	---
Over 0.017 to 0.040, incl	0.002	0.0025	0.003	---
Over 0.040 to 0.050, incl	0.05T	0.0025	0.10T	0.10T
Over 0.050 to 0.100, incl	0.05T	0.05T	0.10T	0.10T
Over 0.100	0.10T	0.10T	0.10T	0.10T

7.2 Width:

7.2.1 Sheared Flat Sheet and Plate:

	Tolerance, Inch Plus and Minus
All Widths	1/16

7.3 Length:

7.3.1 Sheared Flat Sheet and Plate:

	Tolerance, Inch Plus and Minus
All Lengths	3/32

7.4 Camber:

7.4.1 Sheared Flat Sheet:

Nominal Length Inches	Tolerance, Inch Plus and Minus
96 and under	3/32

7.5 Flatness: Unless otherwise specified, flatness tolerances shall conform to Table VI of the latest issue of AMS 2242, except that for material under 0.030 in. in thickness the permissible variation from flat shall be 3/4 inch.

8. REPORTS:

8.1 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 the results of tests on each thickness from each lot to determine conformance to the technical requirements of this specification. This report shall include the purchase order number, powder lot number, material specification number, thickness, size, and quantity from each heat.

8.2 Unless otherwise specified, the vendor of finished or semi-finished parts shall furnish with each shipment three copies of a report showing the purchase order number, material specification number, contractor or other direct supplier of material, part number, and quantity. When material for making parts is produced or purchased by the parts vendor, that vendor shall inspect each lot of material to determine conformance to the requirements of this specification and shall include in the report a statement that the material conforms, or shall include copies of laboratory reports showing the results of tests to determine conformance.

9. IDENTIFICATION: Shall be according to 9.1, unless purchaser permits a method from 9.2.

9.1 Each sheet, strip, and plate shall be marked, in the respective location indicated below, with AMS 7800, manufacturer's identification, and nominal thickness in inches. The characters shall be not less than 3/8 in. in height, shall be applied using a suitable marking fluid, and shall be capable of being removed in hot alkaline cleaning solution without rubbing. The characters shall be sufficiently stable to withstand ordinary handling.

9.1.1 Flat Sheet and Plate: Shall be marked in lengthwise rows of characters, recurring at intervals not greater than 2 ft, the rows being spaced not more than 3 in. apart and alternately staggered.

9.1.2 Flat Strip: Shall be marked near one end.

9.1.3 Coiled Sheet and Coiled Strip: Shall be marked near the outside end of the coil.