



## Standard Specification for MOLYBDENUM AND MOLYBDENUM ALLOY FORGINGS<sup>1</sup>

This Standard is issued under the fixed designation B 384; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reappraisal.

### 1. Scope

1.1 This specification covers semifinished shapes of molybdenum and molybdenum alloy forgings as follows:

1.1.1 *Molybdenum 360*—Unalloyed arc-cast molybdenum.

1.1.2 *Molybdenum 361*—Unalloyed powder metallurgy molybdenum.

1.1.3 *Molybdenum Alloy 362*—Arc-cast molybdenum-0.5 % titanium alloy.

1.1.4 *Molybdenum Alloy 363*—Arc-cast molybdenum-0.5 % titanium-0.1 % zirconium (TZM) alloy.

1.1.5 *Molybdenum Alloy 364*—Powder metallurgy molybdenum-0.5 % titanium-0.1 % zirconium (TZM type) alloy.

1.1.6 *Molybdenum 365*—Unalloyed arc-cast molybdenum, low carbon.

NOTE—The values stated in U.S. customary units are to be regarded as the standard.

### 2. Applicable Documents

#### 2.1 ASTM Standard:

B 385 Specification for Molybdenum and Molybdenum Alloy Billets for Reforging<sup>2</sup>

### 3. Basis of Purchase

3.1 Orders for material under this specification shall include the following information as applicable:

3.1.1 Material designation (Section 1),

3.1.2 Restrictive chemistry (Tables 1 and 2),

3.1.3 Mechanical properties (Section 6),

3.1.4 Workmanship and quality level re-

quirements (Section 7),

3.1.5 Marking (Section 11),

3.1.6 Certification and reports (Section 9), and

3.1.7 Disposition of rejected material (Section 8).

### 4. Manufacture

4.1 The semifinished forged shapes covered by this specification shall be forged from re-forging billets conforming to Specification B 385, or from rods, plates, or preforms with conventional equipment normally found in forge shops. The forged shapes shall be stress-relieved at the completion of the forging operations, unless otherwise specified.

### 5. Chemical Requirements

5.1 The molybdenum and molybdenum alloy ingots and billets for conversion to the semifinished shapes covered by this specification shall conform to the requirements as to chemical composition specified in Table 1.

#### 5.2 Check Analysis:

5.2.1 Check analysis is an analysis made by the purchaser or the manufacturer of the metal after it has been processed into finished mill forms, and is either for the purpose of verifying

<sup>1</sup>This specification is under the jurisdiction of ASTM Committee B-10 on Reactive and Refractory Metals and Alloys.

Current edition approved March 27, 1974. Published May 1974. Originally published as B 384 - 62 T. Last previous edition B 384 - 69.

<sup>2</sup>Annual Book of ASTM Standards, Part 8.