



Designation: A146 – 04 (Reapproved 2025)

Standard Specification for Molybdenum Oxide Products¹

This standard is issued under the fixed designation A146; 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 reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This specification covers four grades of molybdenum oxide, designated as A, B1, B2, and molybdenic oxide briquets.

1.2 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.3 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*²

A1025/A1025M Specification for Ferrous Alloys and Other Alloying Materials, General Requirements

3. General Conditions for Delivery

3.1 Materials furnished to this specification shall conform to the requirements of Specification A1025/A1025M, including any supplementary requirements that are indicated in the purchase order. Failure to comply with the general requirements of Specification A1025/A1025M constitutes nonconformance with this specification. In case of conflict between the requirements of this specification and Specification A1025/A1025M, this specification shall prevail.

4. Chemical Requirements

4.1 The various grades shall conform to the requirements as to chemical composition specified in Table 1.

¹ This specification is under the jurisdiction of ASTM Committee A01 on Steel, Stainless Steel and Related Alloys and is the direct responsibility of Subcommittee A01.18 on Castings.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at www.astm.org/contact. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

4.2 The manufacturer shall furnish an analysis of each shipment showing the percentage of each element specified.

5. Sampling

5.1 *Sampling Small Bags*—When packed in the standardized small packages, each holding contained molybdenum, the material shall be sampled by selecting at random one twentieth of the bags that may bear the same manufacturing lot number, and the combined content of these bags shall be reduced and analyzed as a separate sample. When a shipment cannot be divided by lot numbers, one twentieth of the total number of bags constituting the shipment shall be selected and treated as one sample. The material forming a sample shall be crushed if necessary, and in any event passed through a No. 10 (2.00 mm) sieve. The sample after sieving shall be thoroughly mixed by coning and then reduced to about 2 lb (0.9 kg) by quartering or by means of a riffle sampler. The reduced sample shall then be crushed and passed through a No. 60 (250 μ m) sieve. The sample after sieving shall again be mixed by coning and then divided through a riffle, preferably a Jones divider, into the required number of analytical samples.

5.2 *Sampling Large Containers*—When packed in drums or large bags or cartons, the material shall be sampled by selecting about one twentieth of the content of each package that may bear the same manufacturing lot number, and the combined material selected shall be reduced and analyzed as a separate sample. When a shipment cannot be divided by lot numbers, about one twentieth of the content of each package in the shipment shall be selected, and the combined material selected shall be treated as one sample. The material comprising a sample shall be thoroughly mixed by coning and reduced by half-shoveling, alternating the operations until the residual weight reaches about 40 lb (18.1 kg). Segregation of sizes shall be carefully avoided. The sample thus reduced shall be crushed, if necessary, to pass through a No. 10 (2.00 mm) sieve, and the subsequent sampling procedure shall be as prescribed in 5.1.

5.3 *Correcting Sample to Dry Net Weight*—Absorption of moisture by the material would depress the analytical percentages with respect to the dry basis, on which the product was analyzed when packaged. Accordingly, any analytical sample shall be dried at 110 °C, before analysis, and the sampler's moist net weight of the shipment, of a manufacturing lot, or of