



Standard Practices for Sampling Metal Powders¹

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This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope*

1.1 These practices cover sampling methods used to collect a small quantity of metal powder that is as representative of the entire starting material as possible, and details the procedures that are recommended for reducing this quantity into smaller test portions on which chemical, physical, and mechanical property data may be determined.

1.2 Several sampling practices are described, depending on their applicability to the conditions of storage and transport of the sampled powders:

1.2.1 *Practice 1A (Described in Section 6)*—Applicable to sampling moving powders, as when being transferred from one container to another or to a process stream; or when falling from a conveyor; or in a moving process stream. This is the preferred practice for obtaining the several increments that are combined to form the gross sample.

1.2.2 *Practice 1B (Described in Section 7)*—Applicable to sampling powders that have already been packaged for transport, as in a bag or drum. A hollow tubular slot sampler is the recommended way to sample these packaged powders to obtain the increments (7.1.1). Alternatively, when other methods are not possible or available, a procedure specified here (7.1.2) may be used to randomly scoop samples from the powder, using a scoop of specified material and configuration.

1.2.3 *Practice 2 (Described in Section 8)*—Applicable to obtaining test portions from the composite sample. For larger quantities of powder, a chute splitter is generally used, while a spinning riffler is used for smaller quantities.

1.3 These practices apply to particulate materials or mixtures of particulates with particle sizes generally less than one millimetre and include mixtures containing lubricant, with or without other non-metallic additives, that are ready for compacting.

1.4 These practices do not cover the sampling of flake powders or pastes. For procedures on the sampling and testing of flake metal powders and pastes, refer to Test Methods D480.

¹ These practices are under the jurisdiction of ASTM Committee B09 on Metal Powders and Metal Powder Products and are the direct responsibility of Subcommittee B09.02 on Base Metal Powders.

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1.5 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.

1.6 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*²

B243 Terminology of Powder Metallurgy

D480 Test Methods for Sampling and Testing of Flaked Aluminum Powders and Pastes

3. Terminology

3.1 *Definitions*—Definitions of powder metallurgy terms can be found in Terminology B243. Additional descriptive information is available in the Related Materials section of Vol 02.05 of the *Annual Book of ASTM Standards*.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 See Fig. 1 for the terms hereinafter defined.

3.2.2 *composite sample*—blended entire gross sample.

3.2.3 *increment*—quantity of powder obtained by a sampling device at one time from a larger quantity of powder.

3.2.4 *gross sample*—total quantity of powder adequate for the intended purpose(s), consisting of all the increments combined.

3.2.5 *test portion*—quantity of powder (generally taken from the composite sample) on which the test is performed, or from which a test piece is produced.

4. Significance and Use

4.1 Specifications and test methods for metal powders and metal powder products require the sampling, testing, and

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