Designation: B 215 – 96

# Standard Practices for Sampling Finished Lots of Metal Powders [1]

This standard is issued under the fixed designation B 215; 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.

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

## 1. Scope

1.1 These practices cover two procedures for selecting representative samples of metal powders for subsequent testing:

1.1.1 *Practice A*—For powders in the process of being packaged from blenders or storage tanks.

1.1.2 *Practice B*—For powders already packaged in containers.

1.2 *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:*

B 243 Terminology of Powder Metallurgy[2]

## 3. Terminology

3.1 *Definitions* —Definitions of powder metallurgy terms can be found in Terminology B 243. Additional descriptive information is available in the Related Materials section of Vol 02.05 of the *Annual Book of ASTM Standards* .

3.2 *Description of Terms:*

3.2.1 *composite sample*—the blended entire gross sample or a representative part thereof.

3.2.2 *gross sample*—a quantity of powder consisting of all the increments taken from a single lot.

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

3.2.4 *lot*—a definite quantity of powder processed or produced under uniform conditions.

3.2.5 *test portion (test specimen)*—a defined quantity of powder actually drawn from the test sample and on which the test is actually performed.

3.2.6 *test sample*—a quantity of powder taken from the composite sample for determining a single property or for preparing the test pieces. It normally should be taken by splitting the composite sample.

## 4. Significance and Use

4.1 Since many tests are performed using very small amounts of powder, it is most important that the test portion be obtained in a standardized manner. The practices described here take into account the possibility of segregation of the metal powder during the filling of containers and after the containers are full.

## PRACTICE A

## 5. Apparatus

5.1 *Rectangular Receptacle*, capable of being moved completely across the stream of flowing powder at a constant speed and having a length and width greater than the stream of powder. It must be large enough that there is no overflow when collecting the sample.

5.2 *Small Blender*.

5.3 *Sample Splitter* (+).

## 6. Procedure

6.1 Pass the rectangular receptacle completely through the stream of flowing powder at a constant speed. If the entire contents of one lot of powder is being packed in a single container, take increments when the container is ¼ , ½ , and ¾ filled. If several containers are to be filled by one lot of powder, take the first increment when the first container is ½ filled, the second increment in the middle of the run, and the third increment near the end of the run. Additional increments may be agreed upon by the parties concerned. The total of all increments shall be at least 5000 g.

6.2 Blend the gross sample composed of at least 5000 g in a small blender for 10 to 15 revolutions.

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[1] These practices are under the jurisdiction of ASTM Committee B-9 on Metal Powder and Metal Powder Products and are the direct responsibility of Subcommittee B09.02 on Base Metal Powders.

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[2] *Annual Book of ASTM Standards* , Vol 02.05.

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FIG. 1 Keystone Sampler

6.3 Pass the blended gross sample or composite sample through a sample splitter to form a number of test samples depending on the design of the splitter. Then use these test samples to supply the test portions for subsequent testing.

## 7. Frequency of Increments

7.1 Take at least three increments for each lot of powder. The actual number depends on the size of the lot and the powder involved and shall be agreed upon by the parties involved.

## PRACTICE B

## 8. Apparatus

8.1 *Keystone Sampler* [3] (Fig. 1).

8.2 *Sample Splitter* (Fig. 2).

## 9. Procedure

9.1 Insert the Keystone sampler in the closed position into the contained powder through a point 70 % of the distance between the center of the cross section and the periphery down to the bottom of the container. Then twist the sampler to open the slots allowing powder to flow into the sampler. When filled, the slots are closed. Remove the sampler, and empty the contents into a suitable container.

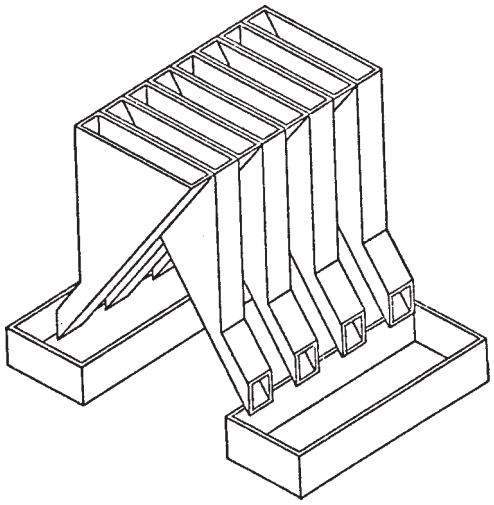

FIG. 2 Sample Splitter

9.2 When a suitable number of increments have been taken, blend them for 10 to 15 revolutions to obtain a composite sample.

9.3 Pass the composite sample through a sample splitter to obtain the test samples.

9.4 Obtain the test portion from the test sample by using a micro sample splitter or by quartering.

## 10. Frequency of Increments

10.1 See Table 1.

## 11. Keywords

11.1 blender; composite sample; Keystone sampler; sample splitter; sampling segregation

**TABLE 1 Frequency of Increments**

| No. of Containers in the Lot | No. of Containers to be Sampled |
|---|---|
| 1 to 5 | all |
| 6 to 15 | 5 |
| 16 to 35 | 7 |
| 36 to 60 | 8 |
| 61 to 99 | 9 |
| 100 to 149 | 10 |
| 150 to 199 | 11 |
| 200 to 299 | 12 |
| 300 to 399 | 13 |
| More than 400 | 13 + 1 per 100 additional containers |

[3] The Keystone Sampler is available from Gamet Mfg. Co., 6237 Penn Ave., Minneapolis, MN 55423.

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