Designation: B873 – 23

Standard Test Method for Measuring Volume of Apparent Density Cup Used in Test Methods B212, B329, and B417[1]

This standard is issued under the fixed designation B873; 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 test method covers a procedure for measuring the volume of the apparent density cups used in Test Methods B212, B329, and B417.

1.2 The apparent density cup, particularly its rim, may become worn during use, and it is recommended that the volume of the cup be checked periodically (at least every 6 months) in order to ensure that it complies with the specified volume.

1.3 *Units*—With the exception of the values for density and the mass used to determine density, for which the use of the gram per cubic centimetre (g/cm^3) and gram (g) units is the long standing industry practice, the values in SI units are to be regarded as standard.

1.4 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.5 *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]

B212 Test Method for Apparent Density of Free-Flowing Metal Powders Using the Hall Flowmeter Funnel

B243 Terminology of Powder Metallurgy

B329 Test Method for Apparent Density of Metal Powders and Compounds Using the Scott Volumeter

B417 Test Method for Apparent Density of Non-Free-Flowing Metal Powders Using the Carney Funnel

E456 Terminology Relating to Quality and Statistics

E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

3. Terminology

3.1 *Definitions*—Definitions of powder metallurgy terms can be found in Terminology B243. Additional descriptive information is available under "General Information on PM" on the ASTM B09 web page.

4. Summary of Test Method

4.1 The apparent density cup is filled with water and weighed to obtain the mass of water contained, which is then converted to a volume.

5. Significance and Use

5.1 This test method enables the measurement of the volume of the apparent density cup to ensure that it complies with the specified volume of 25.00 cm^3 ± 0.03 cm^3 (cylindrical cup), or 16.39 cm^3 ± 0.05 cm^3 (square cup). Use of an out-of-specification cup will give erroneous apparent density values using the formulae in Test Methods B212, B329, and B417.

6. Apparatus

6.1 *Density Cup*—A cylindrical cup (see Fig. 1) designed to have a capacity of 25.00 cm^3 ± 0.03 cm^3 (as in Test Methods B212, B329, and B417) or a square cup designed to have a capacity of 16.39 cm^3 ± 0.05 cm^3 (as in Test Method B329).

6.2 *Balance,* readable to 0.001 g with a minimum capacity of 200 g.

6.3 *Microscope Slide*—A transparent microscope slide at least as wide as the outer diameter of the apparent density cup.

6.4 *Water*—Distilled or deionized water boiled to remove dissolved air.

6.5 *Alcohol*—Low residue ethyl alcohol.

[1] This test method is under the jurisdiction of ASTM Committee B09 on Metal Powders and Metal Powder Products and is the direct responsibility of Subcommittee B09.02 on Base Metal Powders.

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[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.

***A Summary of Changes section appears at the end of this standard**