



Designation: D 4512 – 03

## Standard Test Method for Vibrated Apparent Packing Density of Fine Catalyst and Catalyst Carrier Particles and Powder<sup>1</sup>

This standard is issued under the fixed designation D 4512; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### 1. Scope

1.1 This test method covers the determination of the apparent packing density of fine catalyst and catalyst carrier powders smaller than 0.8 mm in diameter.

1.2 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

1.3 *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:*<sup>2</sup>

- D 3766 Terminology Relating to Catalysts and Catalysis
- E 177 Practice for Use of the Terms Precision and Bias in ASTM Test Methods
- E 456 Terminology Relating to Quality and Statistics
- E 691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

### 3. Terminology

3.1 *Definitions*—See Terminology D 3766.

### 4. Significance and Use

4.1 This test method is for measuring the apparent packing density of catalyst or catalyst carrier powders that are smaller than 0.8 mm in diameter.

### 5. Apparatus

5.1 *Glass Cylinders*, capacity 100 mL, feed and measuring.

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee D32 on Catalysts and is the direct responsibility of Subcommittee D32.02 on Physical-Mechanical Properties.

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<sup>2</sup> 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.

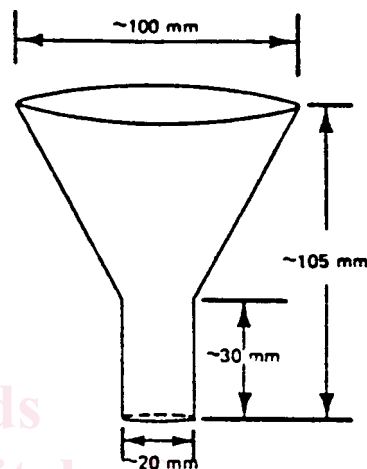


FIG. 1 Feed Funnel

5.2 *Vibrator*,<sup>3</sup> conventional hand-held, with hard rubber or metal impactor.

5.3 *Feed Funnel*, plastic, glass, or metal as shown in Fig. 1.

5.4 *Ring Stand*, vibrator holder and clamps as shown in Figs. 2 and 3.

5.5 *Desiccator*, with a desiccant grade molecular sieve such as 4A.

5.6 *Balance*, having sensitivity of 0.1 g.

5.7 *Drying Oven*.

### 6. Procedure

6.1 Heat an adequate amount of sample(s) at  $400 \pm 15^\circ\text{C}$  for not less than 3 h. Normally, this treatment can take place in air; however, in the case of materials that might react with air at elevated temperatures (such as, prereduced catalysts) the heat treatment shall take place in an inert atmosphere. After heating, cool the test sample(s) in a desiccator or other suitable container to eliminate the possibility of moisture adsorption prior to testing.

<sup>3</sup> The sole source of supply of the Wahl, Model 4180, 4 in 1, 120 V60 Hz 11 W known to the committee at this time is Wahl Clipper Corp., Sterling, IL. If you are aware of alternative suppliers, please provide this information to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee,<sup>3</sup> which you may attend.