~~Designation:D4180–99~~ Designation: D 4180 – 03 (Reapproved 2008)

Standard Test Method for Vibratory Packing Density of Formed Catalyst Particles and Catalyst Carriers[1]

This standard is issued under the fixed designation D 4180; 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 the determination of the vibratory packing density of formed catalyst and catalyst carriers. For the purpose of this test, catalyst particles are defined as extrudates, spheres, or formed pellets of 0.8 to 4.8-mm (1/32 to 3/16-in.) nominal diameter.

~~1.2~~

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:* [2]

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. Summary of Test Method

~~3.1~~

4.1 A preconditioned sample of formed catalyst or catalyst carrier is vibrated in a cylinder. The vibratory packing density is determined from a known mass and vibrated volume. ~~A preconditioned sample of formed catalyst or catalyst carrier is vibrated in a cylinder. The vibratory packing density is determined from a known weight and vibrated volume.~~

~~**4.Significance and Use**~~

~~4.1This test method is to be used for measuring the vibratory packing density of formed particles that will not break up during sampling, filling, or vibrating of the measuring cylinder under test conditions.~~

5. Significance and Use

5.1 This test method is to be used for measuring the vibratory packing density of formed particles that will not break up during sampling, filling, or vibrating of the measuring cylinder under test conditions.

6. Apparatus

~~5.1~~

6.1 *Glass Cylinders*, capacity 250 mL, feed~~,~~ and measuring.~~,~~

~~[1] This test method is under the jurisdiction of ASTM Committee D-32 on Catalysts and is the direct responsibility of Subcommittee D32.02 on Physical-Mechanical Properties.~~

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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* ~~, Vol 14.02.~~volume information, refer to the standard's Document Summary page on the ASTM website.

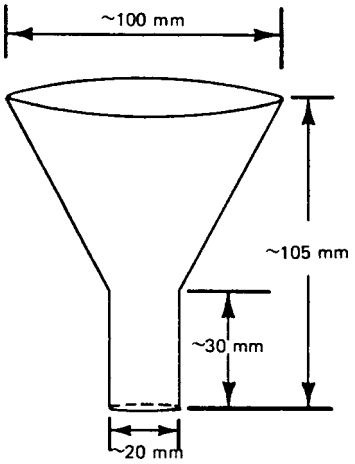

FIG. 1 Feed Funnel

~~5.2~~6.2 *Vibrator*, ~~,~~[3] conventional hand-held, with hard rubber or metal impactor.

~~5.3~~6.3 *Feed Funnel*, plastic, glass, or metal as shown in Fig. 1.

~~5.4~~

6.4 *Ring Stand, Vibrator Holder and Clamps* as shown in ~~Fig. 2~~Figs. 2 and ~~and Fig. 3~~3.

~~5.5~~

6.5 *Desiccator*, with a desiccant grade molecular sieve such as a No. 4A.

~~5.6~~

6.6 *Balance* having sensitivity of 0.1 g.

~~[3] If you are aware of alternative suppliers, please provide this information to ASTM Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend.~~

[3] The sole source of supply of the Wahl Vibrator, Model 4180, 4 in 1, 120-V 60-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, which you may attend.

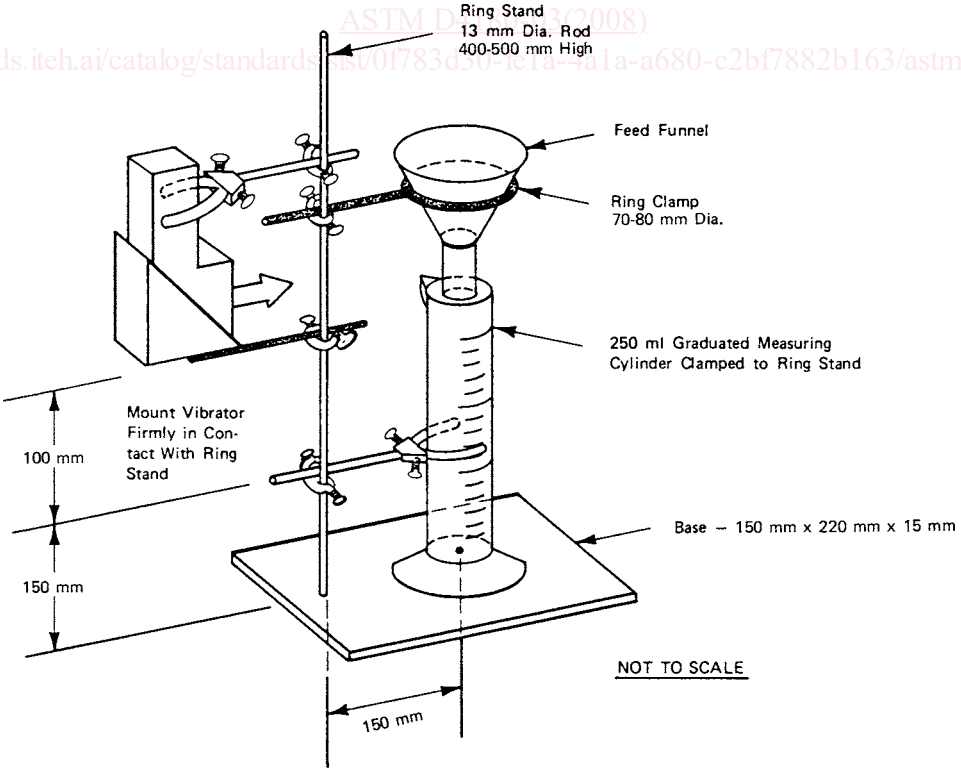

FIG. 2 Assembly of Apparatus