



Standard Test Method for Sand Content by Volume of Bentonitic Slurries¹

This standard is issued under the fixed designation D 4381; 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 sand content of bentonitic slurries used in slurry construction techniques. This test method has been modified from API Recommended Practice 13B.

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

2. Referenced Documents

2.1 ASTM Standards:

D 653 Terminology Relating to Soil, Rock, and Contained Fluids²

2.2 American Petroleum Institute (API) Standard:

API RP 13B Recommended Practice Standard Procedure for Testing Drilling Fluids³

3. Terminology

3.1 For definitions of terms relating to this test method, refer to Terminology D 653.

4. Summary of Test Method

4.1 The glass measuring tube of the sand-screen set (Fig. 1) is filled with bentonitic slurry and water to the appropriate marks and is shaken. The mixture is poured through the wet screen. The funnel is fitted over the top of the screen and the assembly inverted, inserting the tip of the funnel into the glass measuring tube. All material is washed from the screen and the amount of sand read in the graduated tube, as percent by volume.

5. Significance and Use

5.1 This test method evaluates the amount of sand by volume in bentonitic slurry. The significance of this test method mainly relates to bentonitic slurries used for concrete



NOTE 1—Photo courtesy of N. L. Baroid—N. L. Industries, Inc., Houston, TX.

FIG. 1 Sand-Content Set

wall construction. The range of measurement is too limited for use in cement bentonite wall construction.

¹ This test method is under the jurisdiction of ASTM Committee D18 on Soil and Rock and is the direct responsibility of Subcommittee D18.20 on Impermeable Barriers.

Current edition approved June 29, 1984. Published September 1984.

² *Annual Book of ASTM Standards*, Vol 04.08.

³ Available from the American Petroleum Institute, 2101 L St., NW, Washington, DC 20037.

6. Apparatus

6.1 *Sand-Content Set* (see Fig. 1), consisting of the following:

6.1.1 *Sieve*, No. 200 mesh (75- μm), 2 in. (50 mm) in diameter.

6.1.2 *Funnel*, to fit screen and glass measuring tube.

6.1.3 *Measuring Tube*, glass tube should be marked from 0 to 20 % by volume.

NOTE 1—Volume of sand, including void spaces between grain, is measured and expressed as percent by volume of bentonitic slurry.

7. Procedure

7.1 Fill the glass measuring tube to the designated mark with bentonitic slurry.

7.2 Add water to the next designated mark.

7.3 Close the mouth of the tube and shake vigorously.

7.4 Pour the mixture into the clean, wet No. 200 (75- μm) mesh sieve.

7.5 Discard the liquid which passes through the sieve.

7.6 Add more water to the tube, shake, and pour into the sieve. Repeat until the water which passes through the sieve is clear.

7.7 Wash the sand retained on the sieve to clean any remaining slurry.

7.8 Attach the funnel upside down over the top of the sieve.

7.9 Carefully invert the assembly and insert the tip of the funnel into the mouth of the glass measuring tube.

7.10 With a fine spray of water, wash the sand retained on the sieve back into the measuring tube.

7.11 Allow the sand to settle.

7.12 Read the volume of sand from the graduations on the glass tube as a percent of the volume of bentonitic slurry originally added in 7.1.

7.13 Wash and dry all equipment thoroughly after each test.

8. Precision and Bias

8.1 No information or data has been developed to determine the precision of the sand-content test.

8.2 Results are usually repeatable within 1 or 2 %.

9. Keywords

9.1 bentonite; sand; slurry

The ASTM International takes no position respecting the validity of any patent rights asserted in connection with any item mentioned in this standard. Users of this standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, are entirely their own responsibility.

This standard is subject to revision at any time by the responsible technical committee and must be reviewed every five years and if not revised, either reapproved or withdrawn. Your comments are invited either for revision of this standard or for additional standards and should be addressed to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend. If you feel that your comments have not received a fair hearing you should make your views known to the ASTM Committee on Standards, at the address shown below.

This standard is copyrighted by ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, United States. Individual reprints (single or multiple copies) of this standard may be obtained by contacting ASTM at the above address or at 610-832-9585 (phone), 610-832-9555 (fax), or service@astm.org (e-mail); or through the ASTM website (www.astm.org).