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.

Designation: D1140 – 17

Standard Test Methods for Determining the Amount of Material Finer than 75-µm (No. 200) Sieve in Soils by Washing[1]

This standard is issued under the fixed designation D1140; 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 U.S. Department of Defense.

1. Scope*

1.1 These test methods cover the determination of the amount of material finer than a 75-µm (No. 200) sieve by washing of material with a maximum particle size of 75 mm (3 in.).

1.2 The methods used in this standard rely on the use of water or a dispersant to separate and remove materials finer than a 75-µm (No. 200) sieve. During these processes soluble substances, such as salts and other minerals, may also be removed. It is not within the scope of this standard to differentiate between the removal of fine particles and soluble substances. It is recommended that materials containing significant amounts of soluble substances be tested using other methods of separation.

1.3 Two methods for determining the amount of material finer than the 75-µm (No. 200) sieve are provided. The method to be used shall be specified by the requesting authority. If no method is specified, the choice should be based upon the guidance given in 5.2, 5.3, and 5.4.

1.3.1 *Method A*—Test specimen is dispersed by soaking in water prior to wash sieving.

1.3.2 *Method B*—Test specimen is dispersed by soaking in a dispersing solution prior to wash sieving.

1.4 *Units*—The values stated in SI units are to be regarded as standard. Except the sieve designations are typically identified using the "alternative" system in accordance with Specification E11, such as 3 inch and No. 200, instead of the "standard" of 75-mm and 75-µm, respectively. Reporting of test results in units other than SI shall not be regarded as nonconformance with this test method. The use of balances or scales recording pounds of mass (lbm) shall not be regarded as nonconformance with this standard.

1.5 All observed and calculated values shall conform to the guidelines for significant digits and rounding established in Practice D6026, unless superseded by this test method.

1.5.1 The procedures used to specify how data are collected/recorded and calculated in this standard are regarded as the industry standard. In addition, they are representative of the significant digits that generally should be retained. The procedures used do not consider material variation, purpose for obtaining the data, special purpose studies, or any considerations for the user's objectives; and it is common practice to increase or reduce significant digits of reported data to be commensurate with these considerations. It is beyond the scope of these test methods to consider significant digits used in analysis methods for engineering design.

1.6 *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]

C702 Practice for Reducing Samples of Aggregate to Testing Size

D75 Practice for Sampling Aggregates

D422 Test Method for Particle-Size Analysis of Soils (Withdrawn 2016)[3]

D653 Terminology Relating to Soil, Rock, and Contained Fluids

D1586 Test Method for Penetration Test (SPT) and Split-Barrel Sampling of Soils

D1587 Practice for Thin-Walled Tube Sampling of Fine-Grained Soils for Geotechnical Purposes

D2216 Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

[1] These test methods are under the jurisdiction of ASTM Committee D18 on Soil and Rock and is the direct responsibility of Subcommittee D18.03 on Texture, Plasticity and Density Characteristics of Soils.

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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.

[3] The last approved version of this historical standard is referenced on www.astm.org.

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

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D2487 Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
D2488 Practice for Description and Identification of Soils (Visual-Manual Procedure)
D3740 Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
D4753 Guide for Evaluating, Selecting, and Specifying Balances and Standard Masses for Use in Soil, Rock, and Construction Materials Testing
D6026 Practice for Using Significant Digits in Geotechnical Data
D6913 Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis
E11 Specification for Woven Wire Test Sieve Cloth and Test Sieves
E145 Specification for Gravity-Convection and Forced-Ventilation Ovens
E177 Practice for Use of the Terms Precision and Bias in ASTM Test Methods
E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

3. Terminology

3.1 *Definitions:*

3.1.1 For definitions of common technical terms in this standard, refer to Terminology D653.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *guard sieve*—a sieve or sieves that are placed over the actual wash sieve and are constructed of wire mesh instead of wire cloth.

3.2.1.1 *Discussion*—The guard sieve(s) acts to prevent coarse particles from contacting the wire cloth of the wash sieve resulting in punctures, tears, and damage that may require the sieve to be replaced.

4. Summary of Test Method

4.1 A soil specimen is washed over a 75-µm (No. 200) sieve. Clay, silt, and other particles that are dispersed by the wash water, as well as water-soluble materials, are removed from the soil during the test. The loss in mass resulting from the wash treatment is calculated as mass percent of the original sample specimen and is reported as the percentage of material finer than a 75-µm (No. 200) sieve by washing.

5. Significance and Use

5.1 Material finer than the 75-µm (No. 200) sieve can be separated from larger particles or soil aggregations can be broken down much more efficiently and completely by wet sieving than with dry sieving. Therefore, when accurate determinations of material finer than a 75-µm (No. 200) sieve are desired, these test methods are used on the test specimen prior to dry sieving, or as a determination of the percent of material that is finer than a 75-µm (No. 200) sieve. Usually the additional amount of material finer than a 75-µm (No. 200) sieve obtained in the dry sieving process is a small amount. If it is large, the efficiency of the washing operation should be checked, as it could be an indication of degradation of the soil (see Note 2).

5.2 Method A shall be used with non-cohesive soils containing fine material with little or no plasticity. The specimen is soaked in water to facilitate the separation of the fine and coarse fractions prior to washing through the 75-µm (No. 200) sieve.

5.3 Method B shall be used with soils, particularly clayey soils, where the fine material demonstrates plastic behavior and tends to adhere to the larger particles. To provide adequate fine grain dispersal, it is necessary to soak the specimen in a dispersing solution prior to washing through the 75-µm (No. 200) sieve.

5.4 To facilitate determination of which method to utilize, the sample may be classified as non-cohesive or having plastic characteristics based upon procedures outlined in Practice D2488 or other means of determining the soil properties.

NOTE 1—The quality of the result produced by this standard is dependent on the competence of the personnel performing it, and the suitability of the equipment and facilities used. Agencies that meet the criteria of Practice D3740 are generally considered capable of competent and objective testing/sampling/inspection/etc. Users of this standard are cautioned that compliance with Practice D3740 does not in itself ensure reliable results. Reliable results depend on many factors; Practice D3740 provides a means of evaluating some of those factors.

NOTE 2—As outlined in 5.1, if the sample is dry sieved after washing, such as for Test Methods D422 or D6913, some material may pass the 75-µm (No. 200) sieve that did not pass during washing operations. The material passing the 75-µm (No. 200) sieve may be a significant amount for samples with a high percentage of silt or clay.

6. Apparatus

6.1 *Balance*—A balance or scale conforming to the requirements of Specification D4753, having a readability with no estimation to four significant digits. The mass of the specimen may be determined in parts if necessary.

6.2 *Wash Sieve*—A 75-µm (No. 200) sieve with a diameter sufficient to handle the required size of specimen in 9.4. Usually 203-mm (8-in.) diameter sieves are adequate for the washing process. The 75-µm (No. 200) sieve shall have a minimum height above the screen of 50 mm (2 in.) to prevent loss of retained material while washing. The sieve may be reinforced with a larger mesh supporting the 75-µm (No. 200) mesh cloth. The reinforcing mesh shall be bonded to the sieve frame below the point where the 75-µm (No. 200) cloth is attached. It is recommended that the sieve cloth be stainless steel to offer more resistance to wear and damage. The sieve shall conform to the requirements of Specification E11 for compliance sieves.

6.3 *Guard Sieves (optional)*—A sieve or multiple sieves having a sieve opening of 425-µm (No. 40) or larger. The diameter of the guard sieve(s) frame shall be equal to or less than the 75-µm (No. 200) wash sieve when stacked. Guard sieves do not need to conform to the requirements of Specification E11.

6.4 *Drying Oven*—An oven of sufficient size, thermostatically controlled and capable of maintaining a uniform temperature of 110 ± 5°C (230 ± 9°F). The oven shall meet the criteria of Specification E145 and preferably be a forced draft oven.

6.5 *Specimen Containers*—The specimen containers shall be made of smooth walled, corrosion resistant material and of

sufficient size to accommodate the test specimen. The containers shall be without tight corners that may allow for material to lodge or become trapped.

6.6 *Washing Sink with Water Delivery System*—A sink having a mechanism to deliver a stream of water directly to the wash sieve. The delivery system may be a rigid or flexible line to facilitate the washing and transfer processes. The system preferably will include a spray nozzle capable of easily adjusting the flow of water used in the washing process. The water delivery system must have the ability to regulate the temperature of the water.

6.6.1 Water used for the washing process shall be maintained close to room temperature to avoid expansion or contraction of the sieve mesh cloth.

6.7 *Splitter or Riffle Box (optional)*—A device to obtain a representative smaller portion (specimen) from a larger portion (sample). This device has an even number of equal width chutes but not less than eight, which discharge alternately to each side of the splitter. For dry material having particles coarser than the 9.5 mm (⅜ in.), the minimum width of the chutes shall be approximately 1-½ times the largest particle in the material being split, but not less than 12.5 mm (½ in.).

6.8 *Quartering Accessories*—A hard, clean, level surface and a durable nonporous fabric or plastic sheet having approximate dimensions of 2 to 2.5 m (6 to 8 ft): a straight edge scoop, shovel or trowel; a broom or brush.

6.9 *Dispersion Shaker (optional)*—A device to hold and vibrate the washing sieve nest while the water spray is directed onto the specimen contained in the sieve nest.

6.10 *Wash Bottle*—Used for transferring washed material from the wash sieve into a drying container.

7. Reagents

7.1 *Dispersant*—Sodium hexametaphosphate (may be referred to as sodium metaphosphate) used in Method B to facilitate separation of fine grained particles in soils during the soaking period.

7.1.1 Sodium hexametaphosphate shall be mixed with water at a concentration sufficient to disperse fine grained soil particles. Dispersant that has not fully dissolved shall not be washed through the wash sieve with the specimen.

8. Sieve Verification

8.1 Prior to initial use, the 75-µm (No. 200) wash sieve must be examined for general condition and opening size of wire cloth for a compliance sieve as specified in Specification E11. Prior to each use, a visual examination of the wash sieve shall be made to check for tears, separations of the wire cloth from the rim or visible stretching of the wire cloth. If one of these conditions exists, the sieve must be removed from service.

8.2 Verification of the 75-µm (No. 200) wash sieve outlined in Specification E11 shall be performed and documented on a 12-month interval.

9. Sampling

9.1 Procurement of the sample(s) shall be conducted in accordance with Practice D75, D1586, D1587, or other standard methods of sample collection, providing that the collection process obtains a representative sampling of the soil (see Note 3).

9.1.1 The specimens may be obtained from bulk samples (bag or bucket samples), jar samples, tube (intact) samples or from samples or specimens that have been tested for other properties, such as consolidation, compressive strength or hydraulic conductivity.

9.2 Thoroughly mix the soil sample and reduce the quantity for testing to a mass meeting the requirements listed in 9.4. The test specimen shall be the end result of the reduction.

9.3 The sample may be reduced to an acceptable size by using one of several methods.

9.3.1 For non-cohesive soils the sample can be placed on a solid surface, thoroughly mixed and quartered until the correct specimen size is obtained.

9.3.2 The use of a splitter may also be used to separate non-cohesive soils, as described in Practice C702. If a splitter is used, it must be limited to only two passes per sample and only on soils that have little or no fines. If during the splitting process dust is created, indicating the loss of fines, the spitting process should be stopped and the quartering method of sample reduction should be used to complete the process.

9.3.3 For jar samples it may be necessary to use the entire sample for the test.

9.3.4 Intact samples may be non-cohesive soils but will normally demonstrate cohesive properties. A representative section of the sample should be selected. If additional sample reduction is necessary, the sample may be cut lengthwise into quarters.

9.4 Reduction to an exact predetermined mass is not permitted. The dry mass of the test specimen, shall conform to the values in Table 1 except as noted in 9.4.1.

9.4.1 When sufficient material is not available to meet the minimum mass requirement, a smaller mass specimen may be used. The report shall record the mass used for the test and indicate that sufficient material was not available to meet the minimum mass requirement.

NOTE 3—Sampling following Test Method D1586 may crush or fracture granular soil particles, possibly influencing the test results.

NOTE 4—The applicable minimum dry mass requirements listed above also comply with the minimum dry mass requirements for Test Methods D422 and D6913 should the same specimen be tested for sieve analysis.

10. Procedure

10.1 After obtaining a representative specimen of sufficient size in accordance with 9.2, transfer the test specimen into a pre-weighed container. Dry the entire test specimen to a constant mass at a temperature of 110 ± 5°C (230 ± 9°F) and determine the mass to four significant digits.

10.1.1 To determine the balance needed, multiply the mass by 0.001, check the resultant number with Table 1 of Specification D4753 for the required balance.

10.1.2 For example: Minimum readability = 276 g (mass) × 0.001 = 0.3 g. A GP-2 with a readability of 0.1 g would be suitable. A more sensitive balance could also be used.

10.1.3 As an alternative method, select an auxiliary water content specimen and determine the water content (nearest

TABLE 1 Minimum Mass Requirements of the Specimen

Maximum Particle Size (100 % Passing) mm	Alternative Sieve Size	Minimum Dry Mass of Test Specimen for Results Reported to the Nearest 1 %	Minimum Dry Mass of Test Specimen for Results Reported to the Nearest 0.1 %
0.425	No. 40	–	75 g
2.00	No. 10	–	100 g
4.75	No. 4	–	200 g
9.5	⅜ in.	165 g	–
19.0	¾ in.	1.3 kg	–
25.4	1 in.	3 kg	–
38.1	1½ in.	10 kg	–
50.8	2 in.	25 kg	–
76.2	3 in.	70 kg	–

0.1 %) in accordance with Test Method D2216. Calculate the oven-dry mass of the test specimen from the moist mass (nearest 0.1 %) of its mass, or better and the water content. This alternative method of determining specimen dry mass may be used for samples that contain large amounts of organic material that may be adversely affected by the drying process, or samples that contain highly plastic soils that can be difficult to hydrate and wash after drying.

10.2 *Method A—Non-cohesive Soils:*

10.2.1 After preparing the specimen in accordance with 10.1, and it is determined that the specimen is a non-cohesive soil, fully inundate the specimen with water and allow to soak for a minimum of ten minutes.

10.3 *Method B—Cohesive Soils:*

10.3.1 A dispersing solution shall be prepared by adding sodium hexametaphosphate to water. The sodium hexametaphosphate solution may be prepared as a solution to be added to the sample, or may be added dry directly to the specimen and water added afterward. The solution shall be mixed thoroughly until the sodium hexametaphosphate is fully dissolved in the water for either application (see Note 5).

10.3.2 Fully inundate the specimen with the dispersant and allow to soak for a minimum of 2 h (see Note 6).

10.4 During the soaking period for either method A or B, the specimen shall be periodically manually agitated or by mechanical means to facilitate complete separation of the particles.

10.5 Following the soaking period, agitate the contents of the container vigorously and immediately transfer the specimen from the container onto the 75-µm (No. 200) wash sieve or guard sieve if used. The transfer process may be done by transferring the entire specimen in a single operation or may be accomplished in multiple transfers. The specimen size must be maintained to a volume that will not overload the wash sieve and cause overflowing.

10.5.1 Wash the specimen on the sieve(s) by means of a stream of water from the water delivery mechanism (see Note 7). When the final transfer is completed, make sure all the material has been transferred from the container onto the sieve(s). The material may be lightly manipulated by hand, to facilitate the washing process, taking care not to lose any of the retained material. No downward pressure shall be exerted on the retained material or sieve to avoid the forcing of particles through or causing damage to the sieve. Continue washing the specimen until the water coming through the sieve(s) is clear (see Note 8).

10.5.2 To facilitate ease of washing, material retained on the guard sieve(s), if used may be transferred to the tare prior to completion of the washing process, providing all fine material has been removed from the coarse particle surfaces. By doing so, access to the 75-µm (No. 200) wash sieve will be facilitated.

NOTE 5—Normally a concentration of 40 g of sodium hexametaphosphate to 1000 mL of water has proven to be sufficient for adequate soil dispersal. The user may determine that a concentration higher or lower is necessary for the specific soil type being tested.

NOTE 6—It may also be easier to separate the particles if the specimen is not dried prior to soaking. The moist mass can be adjusted to a dry mass by using the water content determination procedure from 10.1.3.

NOTE 7—A spray nozzle or a piece of rubber tubing attached to a water faucet may be used for the washing. The velocity of the water, which may be increased by pinching the tubing if used, should not cause any splashing of the material over the sides of the sieve. The water temperature shall not exceed 32°C (90°F) to avoid expanding the sieve fabric.

NOTE 8—Care should be taken to prevent water from accumulating on the 75-µm (No. 200) sieve due to clogging of the screen. The clogging can cause overflow of the sieve and loss of material. Lightly hand tapping the sides of the sieve should prevent clogging. Directing a stream of water up from below the screen is another method to unplug the sieve without physically damaging it. Care should be exercised to prevent overloading the screen by washing too large a specimen, or portion of a specimen, at any one time.

10.6 When the coarse fraction of material has been thoroughly washed by either Method A or B, the material retained on the 75-µm (No. 200) sieve, and all the guard sieves if used, shall be transferred back into the specimen container by rinsing the contents retained on the sieve(s) into the container. The transfer shall be done by inverting the sieve over the specimen container and rinsing the coarse fraction of material out of the sieve (see Note 9).

10.7 Excess water may be removed by decanting, demonstrating care not to lose any of the retained material.

10.8 Dry the residue from all of the sieves to a constant mass at a temperature of 110 ± 5°C (230 ± 9°F) and determine the mass using a balance having the same accuracy as described in 10.1 and 10.1.2.

NOTE 9—Striking the frame of the sieve, from the side with an open palm, may help dislodge some of the grains wedged in the sieve mesh. A stream of water from a hose, spray nozzle, or wash bottle may also aid in

removing the material adhering to the sieve mesh.

11. Calculation

11.1 Calculate the amount of material passing the 75-μm (No. 200) sieve by washing using the following formula:

$$A = [(B - C)/B] \times 100 \quad (1)$$

where:

A = percentage of material finer than the 75-μm (No. 200) sieve by washing, nearest 0.1 % for material passing the 4.75-mm (No. 4) sieve and nearest 1 % for material retained on the 4.75-mm (No. 4) sieve and passing the 76.2-mm (3-in.) sieve,

B = original dry mass of sample, g, and

C = dry mass of specimen retained on the 75-μm (No. 200) sieve including the amount retained on an upper sieve(s) after washing, g.

12. Report: Test Data Sheet(s)/Form(s)

12.1 The methodology used to specify how data are recorded on the test data sheet(s) form(s), as given below, is covered in 1.5 and in Practice D6026.

12.2 Record as a minimum the following information (data):

12.2.1 Project information such as project number, project name, location, contract number if available.

12.2.2 Identification of the material being tested such as boring number, sample number, depth, unique location.

12.2.3 Identification of the technician performing the test.

12.2.4 Date the test was performed.

12.2.5 Record which method was used either Method A or Method B.

12.2.6 Record the length of time the specimen was allowed to soak to the nearest 10 minute interval.

12.2.7 Record the initial dry mass of the sample.

12.2.8 If the dry mass of the specimen was determined by using the alternative method in 10.1.3, record the water content of the specimen.

12.2.9 Record the percentage of material finer than the 75-μm (No. 200) sieve by washing to the nearest 0.1 % for materials with a maximum particle size passing the 4.75 mm (No. 4) sieve.

12.2.10 Record the percentage of material finer than the 75-μm (No. 200) sieve by washing to the nearest 1 % for materials with a maximum particle size retained on 4.75 mm (No. 4) sieve and passing the 75 mm (3 in.) sieve.

13. Precision and Bias

13.1 *Precision*—Criteria for judging the acceptability of test results obtained by these test methods on a range of soil types using Method B are given in Tables 2 and 3. These estimates of precision are based on the results of the interlaboratory program conducted by the ASTM Reference Soils and Testing Program[4]. In this program, some laboratories performed three replicate tests per soil type (triplicate test laboratory), while other laboratories performed a single test per soil type (single test laboratory). A description of the soils tested is given in 13.1.4. The precision estimates may vary with soil type and method used (Method A or B). Judgment is required when applying these estimates to another soil or method.

13.1.1 The data in Table 2 are based on three replicate tests performed by each triplicate test laboratory on each soil type. The single operator and multilaboratory standard deviation shown in Table 2, Column 4 were obtained in accordance with Practice E691, which recommends each testing laboratory perform a minimum of three replicate tests. Results of two properly conducted tests performed by the same operator on the same material, using the same equipment, and in the shortest practical period of time should not differ by more than the single-operator d2*s* limits shown in Table 2, Column 5. For definition of d2*s* see Footnote C in Table 3. Results of two properly conducted tests performed by different operators and on different days should not differ by more than the multilaboratory d2*s* limits shown in Table 2, Column 5.

TABLE 2 Summary of Test Results from Triplicate Test Laboratories (Percent of Fines)

(1) Soil Type	(2) Number of Triplicate Test Laboratories	(3) Average Value[A] (Percentage Points)	(4) Standard Deviation[B] (Percentage Points)	(5) Acceptable Range of Two Results[C] (Percentage Points)
Single-Operator Results (Within- Laboratory Repeatability):				
CH	13	98.83	0.15	0.4
CL	13	88.55	0.14	0.4
ML	14	99.00	0.12	0.3
SP	13	2.47	0.20	0.5
Multilaboratory Results (Between- Laboratory Reproducibility): :				
CH	13	98.83	0.22	0.6
CL	13	88.55	0.40	1.1
ML	14	99.00	0.13	0.4
SP	13	2.47	0.36	1.0

[A]The number of significant digits and decimal places presented are representative of the input data. In accordance with Practice D6026, the standard deviation and acceptable range of results cannot have more decimal places than the input data.
[B]Standard deviation is calculated in accordance with Practice E691 and is referred to as the 1s limit.
[C]Acceptable range of two results is referred to as the d2s limit. It is calculated as $1.960\sqrt{2}\cdot 1s$, as defined by Practice E177. The difference between two properly conducted tests should not exceed this limit. The number of significant digits/decimal places presented is equal to that prescribed by this test method or Practice D6026. In addition, the value presented can have the same number of decimal places as the standard deviation, even if that result has more significant digits than the standard deviation.

TABLE 3 Summary of Single-Test Result from Each Laboratory (Percent of Fines)[A]

(1) Soil Type	(2) Number of Test Laboratories	(3) Average Value (Percentage Points)	(4) Standard Deviation (Percentage Points)	(5) Acceptable Range of Two Results (Percentage Points)
Multilaboratory Results (Single Test Performed by Each Laboratory):				
CH	25	98.74	0.22	0.6
CL	24	88.41	0.52	1.4
ML	25	99.00	0.18	0.5
SP	25	2.647	0.60	1.7

[A]See footnotes in the Table 2.

[4] Supporting data have been filed at ASTM International Headquarters and may be obtained by requesting Research Report RR:D18-1010.

13.1.2 In the ASTM Reference Soils and Testing Program, many of the laboratories performed only a single test on each soil type. This is common practice in the design and construction industry. The data for each soil type in Table 3 are based upon the first test results from the triplicate test laboratories and the single test results from the other laboratories. Results of two properly conducted tests performed by two different laboratories with different operators using different equipment and on different days should not vary by more than the d2s limits shown in Table 3, Column 5. The results in Table 2 and Table 3 are dissimilar because the data sets are different.

13.1.3 Table 2 presents a rigorous interpretation of triplicate test data in accordance with Practice E691 from pre-qualified laboratories. Table 3 is derived from test data that represents common practice.

13.1.4 *Soil Types*—Based on the multilaboratory test results, the soils used in the program are described below in accordance with Practice D2487. In addition, the local names of the soils are given.

CH—Fat clay, CH, 99 % fines, LL=60, PI=39, grayish brown, soil had been air dried and pulverized. Local name—Vicksburg Buckshot Clay
CL—Lean clay, CL, 89 % fines, LL=33, PI=13, gray, soil had been air dried and pulverized. Local name—Annapolis Clay
ML—Silt, ML, 99 % fines, LL=27, PI=4, light brown, soil had been air dried and pulverized. Local name—Vicksburg Silt
SP—Poorly graded sand; SP, 20 % coarse sand, 48 % medium sand, 30 % fine sand, 2 % fines, yellowish brown. Local name—Frederick sand

13.2 *Bias*—There is no accepted reference value for these test methods, therefore, bias cannot be determined.

14. Keywords

14.1 dispersant; fines; particle sizes; sieve analysis; washing

SUMMARY OF CHANGES

Committee D18 has identified the location of selected changes to this standard since the last issue (2014) that may impact the use of this standard. (February 1, 2017)

(1) The Minimum Mass Requirement Table in 9.4 has been revised to clarify the minimum mass values that are listed.
(2) Old Table 1 and Table 2 in Section 13 were renamed to Table 2 and Table 3 as well as the references throughout Section 13 of the two tables to accommodate renaming Table 1 in 9.4.

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