AASHTO re:source (formerly AMRL)

2022 Soil Classification and Compaction Proficiency Samples 185 and 186 Instructions for Testing and Reporting

Closing Date: May 5th, 2022

All tests should be conducted on each of the two samples according to the AASHTO or ASTM methods indicated. Report the results of a single determination only, not the average of two or more. For any tests you do not choose to perform, leave the appropriate spaces on the data sheet blank.

Note: The outside of the shipping boxes are labeled 185 (A) and 186 (B). The samples inside the boxes are labeled only (A) or (B). The sample labeled (A) is sample 185. The sample labeled (B) is sample 186.

Also Note: Please note that samples 185 (A) and 186 (B) are not perfectly identical. The program is designed to obtain two independent test results, one for each numbered sample, for each test method that the laboratory chooses to perform.

Treat each sample as you would treat a typical "production-type" sample. Any special handling or preparation needs will be included below.

Preparation of Samples: Prepare the soil in accordance with Practice R58-11 e1 ASTM D421-85 or Method R74-16.

Particle Size Analysis of Soils T88-20 or D422-63(2007)e2: Determine the hygroscopic moisture and perform the sieve and hydrometer analysis. Report the sieve and hydrometer analysis as a percent passing. *Use the same nest of sieves for both samples* and report the results to the nearest 0.1 percent.

Particle Size Distribution (Gradation) of Fine-Grained Soils Using the Sedimentation (Hydrometer) Analysis D7928-17: Determine the hydrometer reading for each specified time interval within ± 10 seconds for the 4-minute reading and within 1 ± minute for the 30, 60, 240, and 1440-minute readings. **When calculating the particle diameter in suspension at each time interval, use a specific gravity value of 2.65 (*reference value for this test only*).** When reporting particle diameter, report the diameter (D) to the nearest 0.001 mm for the 4-minute reading and to the nearest 0.0001 mm for the 30, 60, 240, and 1440-minute readings. Report the total percent finer (N_m) at the specified time intervals to the nearest 0.1%.

Liquid Limit of Soils T89-13 or D4318-17e1: Determine the liquid limit by Method A (multipoint method). Report the results to the nearest 0.1 percent.

Plastic Limit of Soils T90-20 or D4318-17e1: Determine the plastic limit and report the results to the nearest 0.1 percent. *Do not report the plasticity index*. If the material is determined to be non-plastic, leave the space blank on the data sheet.

Shrinkage Factors of Soils by the Wax Method D4943-18: Determine the shrinkage limit and report the results to the nearest 0.1 percent.

Specific Gravity of Soils T100-15 or D854-14: Determine the specific gravity of material passing the 2.00-mm (No. 10) sieve [or passing the 0.425-mm (No. 40) sieve, if T146 was used]. Oven dry the soil in accordance with Section 8.3 (T100) or Section 9.3 (D854) and determine the specific gravity based on water at 20°C. Report the results to the nearest 0.001 specific gravity unit.

Determination of Organic Content by Loss on Ignition T267 or D2974: Determine the percentage of organic material in the specimens in accordance with the test procedures. When testing in accordance with ASTM D2974, perform the test in accordance with Method A. Report the percentage of organic material to the nearest 0.1%.

re:
P: 240.436.4900 | F: 240.436.4899
4441 Buckeystown Pike, Suite A
Frederick, Maryland 21704-7507

Testing for Compaction (Below): Testing for Moisture-Density Relations of Soils may be performed using either the Standard Effort (T99/D698) or the Modified Effort (T180/D1557). It is not necessary to perform both types of testing. A 4-in. mold (Method A) must be used.

Moisture-Density of Soils (Standard Effort) Using a 2.5-kg (5.5-lb) Rammer T99-19, D698-12e2: Determine the moisture-density relations using a 101.6-mm (4-in.) diameter mold (AASHTO Method A or ASTM Method A). Report the optimum moisture content to the nearest 0.1 percent. Report the maximum dry density to the nearest 0.1 lb/ft^3. **(Note: If performing D698, the material must be reused. There is not sufficient soil to prepare a separate sample at each trial moisture content. After each compaction, take a moisture content specimen and thoroughly break up the remainder of the compacted soil into particles small enough to pass a 4.75-mm (No. 4) sieve as judged by eye and proceed by adding the next water increment. Mix each water increment thoroughly with the soil sample prior to compaction.)**

Moisture-Density of Soils (Modified Effort) Using a 4.54-kg (10-lb) Rammer T180-20, D1557-12e1: Determine the moisture-density relations using a 101.6-mm (4-in.) diameter mold (AASHTO Method A or ASTM Method A). Report the optimum moisture content to the nearest 0.1 percent. Report the maximum dry density to the nearest 0.1 lb/ft^3. **(Note: If performing D1557, the material must be reused. There is not sufficient soil to prepare a separate sample at each trial moisture content. After each compaction, take a moisture content specimen and thoroughly break up the remainder of the compacted soil into particles small enough to pass a 4.75-mm (No. 4) sieve as judged by eye and proceed by adding the next water increment. Mix each water increment thoroughly with the soil sample prior to compaction.)**

Determining Minimum Laboratory Soil Resistivity T288-12: Determine the minimum soil resistivity of material passing the 2.00 mm (No. 10) sieve in units of (ohm) x (cm). ***When preparing the test specimen, add 150mL of distilled water to the specimen and allow the sample to cure for 12 hours. After taking the first resistivity measurement, remove and retain the soil from the box and add 100 mL of distilled water between each test until the minimum resistivity is determined.*** Report the resistivity to five significant digits and ***do not apply a temperature correction***.

Measurement of Soil Resistivity Using the Two-Electrode Soil Box G187-18: Prepare the specimen in accordance with the standard. Determine the minimum soil resistivity of material passing the 2.00 mm (No. 10) sieve in units of (ohm) x (cm). Report the resistivity to five significant digits and ***do not apply a temperature correction***.

Determining pH of Soil for Use in Corrosion Testing T289-91: Using a pH meter, determine the soil pH of material passing the 2.00 mm (No. 10). Report the pH value to the nearest 0.1.

Standard Test Methods for pH of Soils D4972-19: Using a pH meter, determine the soil pH of material passing the 2.00 mm (No. 10). Report the pH values of the soil and water slurry and the Calcium Chloride and soil slurry to the nearest 0.1.

Determining Water-Soluble Sulfate Ion Content in Soil T290-95: Determine the sulfate ion content by using Method A or Method B for the material passing the 2.00 mm (No. 10) sieve in mg/kg. On the data sheet, indicate the method that was used. Report the value to the nearest 0.1 mg/kg.

Determining Water-Soluble Chloride Ion Content in Soil T291-94: Determine the chloride ion content by using Method A or Method B for the material passing the 2.00 mm (No. 10) sieve in mg/kg. On the data sheet, indicate the method that was used. Report the value to the nearest 0.1 mg/kg.

Contact AASHTO re:source at psp@aashtoresource.org or call 240-436-4900 if there are questions.

re:
P: 240.436.4900 | F: 240.436.4899
4441 Buckeystown Pike, Suite A
Frederick, Maryland 21704-7507