



Performance Examination - Soils

Standard Method of Test for Specific Gravity of Soils (AASHTO T 100-15) [ASTM D854]

Candidate Name: _____ NICET ID: _____

Apparatus	Trial 1	Trial 2
Pycnometer Calibrated for series of temperatures likely to prevail during testing		
Volumetric Flask Capacity at least 100 ml		
Stoppered Bottle Capacity at least 50 ml, stopper of the same material as bottle and permits the emission of air and surplus water		
Balance One of the following, depending on pycnometer type; accurate to requirements of M 231 a. Class G1 (readable to 0.01 g) for use with a volumetric flask b. Class B (readable to 0.001 g) for use with a stoppered bottle		
Oven Maintains 110 ± 5 °C (230 ± 9 °F)		
Distilled or Demineralized Water		
Thermometer The range within which test is being performed, graduated in 0.5 °C (1.0 °F) scale conforming to ASTM E1		
Method of Removing Entrapped Air (<i>one of the following</i>):		
Vacuum: absolute pressure less than 13.33 kPa (100 mm Hg or 4 inches Hg)		
Boiling: (hot plate or bunsen burner)		

Procedures	Trial 1	Trial 2
Sample Preparation		
1. Passes 2.00-mm (No. 10) sieve if specific gravity value is used for T88		
2. Otherwise passes 4.75-mm (No. 4) sieve		
3. Sample Mass (Oven-Dry Basis): at least 25 g (flask) or at least 10 g (bottle)		
Oven-Dried Samples		
1. Dried to constant mass or at least 12 hours in an oven at 110 ± 5 °C (230 ± 9 °F)		
2. Cooled to room temperature		
3. Weighed and transferred to pycnometer or transferred to pycnometer and then weighed		
4. All masses determined to the nearest 0.01 g (flask) or 0.001 g (bottle)		
5. Distilled water added to pycnometer to completely cover sample		
6. Soaked in distilled water for at least 12 hours		
Samples Containing Natural Moisture		
1. Dispersed in distilled water using T 88 dispersing equipment before placing in a 500-ml flask		

Examiner Name: _____ Examiner Signature: _____ Date: _____



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2. Distilled water added to cover soaked specimen in pycnometer to a maximum of about $\frac{3}{4}$ full (flask) or $\frac{1}{2}$ full (bottle)		
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Procedures (continued)	Trial 1	Trial 2
Entrapped Air Removed By		
1. Vacuum: (at < 100 mm Hg absolute pressure), while occasionally agitating the sample		
2. Boiling for at least 10 minutes while occasionally rolling the pycnometer		
3. Boiled samples cooled to room temperature		
4. Pycnometer filled with distilled water to calibrated capacity		
5. Outside of pycnometer cleaned and dried, and pycnometer and contents weighed		
6. Temperature of contents measured		
7. If tested as a sample with natural moisture, contents dried at $110 \pm 5 \text{ }^\circ\text{C}$ ($230 \pm 9 \text{ }^\circ\text{F}$)		
8. Specific gravity value calculated based on water at $20 \text{ }^\circ\text{C}$ (multiply by K), unless otherwise specified		
9. If plus 4.75-mm (No. 4) material, specific gravity taken as a weighted average of T 85 (for plus 4.75-mm material) and T 100 (for minus 4.75-mm material) values		

First Attempt: Pass: _____ Fail: _____ Second Attempt: Pass: _____ Fail: _____

Exam Administration: Remote _____ In-Person _____

Comments:

Examiner Name: _____ Examiner Signature: _____ Date: _____