SuperPave

2026

Proficiency Pack

Rev. 11/5/2025

Date: _____

Name: _____

Employer: _____

AASHTO T 209: Theoretical maximum Specific Gravity (Rice Test): "Weigh in Air" Method Rev: 10/02/2023

Pre-Procedure Checklist: (Note: State operation & frequency).	1	2	R
State the following requirements for routine testing of a particular mix:			
1. Pycnometer calibration required daily			
2. Sample moisture content must be <0.1%: Verify by either a. Oven drying until mass repeats within 0.1%, or b. Use results of AASHTO T329			
3. Perform "dry-back" procedure if ANY coarse aggregate fraction has Absorption >2.0% (use surface-dry weight "A2" in place of "A" in the denominator of the non-dry-back Gmm equation.			
Routine Rice Test Procedure: **(Demonstrate procedure, Proctor will shorten time frames)**			
4. Separate particles while cooling sample: a. Don't break aggregate b. Reduce sand-binder clumps to ≤ ¼ inch c. Cool until mix is at room temperature			
5. Determine and record empty weight of the pycnometer (without lid). a. Place and level sample in pycnometer. b. Record weight of sample + pycnometer. c. Calculate oven-dry weight of sample [A]			
6. Cover sample with approximately 1" of bath water			
7. Subject to specified vacuum of 30 ±5 mm Hg while agitating for 15 ± 1 min. (Manually agitate at intervals of 2 min for 15 ± 1 min using a rubber/plastic mat.)			
8. Immediately after the 15± 1 min. time period (i.e., the vacuum application stops), very slowly release vacuum at 60mm Hg/sec.			
9. Start 10 ± 1 minute time period in which the final weight must be obtained (i.e., finish the test). Disassemble apparatus.			
10. Being careful not to expose the mix to the air slowly submerge pycnometer in water bath at the specified temperature (is it?) and carefully place capillary lid on pycnometer.			
11. Just prior to end of 10 ± 1 min. time period, remove pycnometer, dry off the exterior, then determine and record total weight [E].			
12. After recording E, completely remove contents, re-submerge empty pycnometer in water bath, place capillary lid on pycnometer, wait 10 ± 1 min. for temperature stabilize, remove pycnometer, dry off the exterior, then determine and record total weight [D].			
13. Calculate non-dry-back Gmm = A / (A + D - E) : Nearest 0.001?			
14. Calculate dry-back Gmm = A / (A2 + D - E) : Nearest 0.001?			
PASS?			
FAIL?			

Proctor_____Date_____

Reviewer_____Date_____

AASHTO T 209: Theoretical Maximum Specific Gravity (Rice Test): "Weigh In Water" Method rev 01/05/2024

Trial#	1	2	R
Pre-Procedure Checklist: (State for proctor operation and frequency)			
State the following requirements for routine testing of a particular mix:			
1. Pycnometer calibration required daily			
2. Sample moisture content must be <0.1%: Verify by a) oven drying until mass repeats within 0.1% OR b) use results of AASHTO T 329			
3. Perform "dry-back" procedure if ANY coarse aggregate fraction has absorption > 2.0% (use surface-dry weight "A2" in place of "A" in the denominator of the non-dry-back Gmm equation			
Routine Rice Test Procedure: (Demonstrate procedure, proctor will shorten time frames where needed.)			
4. Separate particles while cooling sample: 1) Don't break aggregate; 2) Reduce sand-binder clumps to ≤ ¼"; 3) Cool until mix is at room temperature			
5. Determine and record empty weight of the pycnometer (without lid). Place and level sample in pycnometer. Record weight of sample + pycnometer. Calculate and record oven-dry weight of sample [A]			
6. Cover sample with approximately 1" of bath water			
7. Subject to specified vacuum of 30 ± 5 mm Hg while agitating for 15 ± 1 minutes			
8. Very slowly release vacuum at a rate not to exceed 60 mm Hg, then disassemble apparatus			
9. Confirm that water bath temperature is in spec. and water is at default level (are they?), then zero out the weigh-in-water system.			
10. Being careful not to expose the mix to the air, suspend pycnometer (without lid) and contents in water bath			
11. Determine and record combined mass of pycnometer and contents [C] after 10 ± 1 minutes of immersion			
12. After recording C, remove pycnometer from water bath, completely remove the contents, reset the weigh-in-water system to its default condition, re-suspend empty pycnometer (without lid) in water bath, then determine and record mass [B] after steady-state has been achieved (tank stops overflowing).			
13. Calculate non-dry-back Gmm = A / (A + B – C): Nearest 0.001?			
14. Calculate dry-back Gmm = A / (A2 + B – C): Nearest 0.001?			
PASS?			
FAIL?			

Proctor_____Date_____

Reviewer_____Date_____

AASHTO T 312: Specimen Compaction

Pre-Verification Checklist: (Note: State operation & frequency).	1	2	R
State required frequency of verification & calibration:			
Verify on a cold (powered up for 10-15 minutes) and clean machine 1) Daily during use, or 2) if gyro is moved			
Calibrate: 1) Annually, or 2) If verification fails			
Pre-Compaction Checklist: (Note: Proctor will tell you the type of specimen to be molded, you will explain the setting for the machine for that operation.)			
State & verify required parameters for compaction:			
1. Verify 150 mm specimen diameter			
2. Verify compaction pressure = 600 kPa			
3. For **Volumetric** pucks, SET GYRATIONS = N_{des} (from JMF)			
4. For **TSR** pucks, set SPEC. HT. (specimen height) = 95.0 mm			
5. Preheat gyratory mold and plates to molding temperature. (see JMF) for ≥ 30 minutes)			
6. Loose Mix sample must be reduced according to AASHTO R47. (see JMF for information)			
7. Place the mix in a preheated oven set to molding temp. (See JMF for temp.)			
8. Place a thermometer in the loose mix to check temperature.			
9. When loose mix is at molding temperature, move quickly to compaction.			
Compaction Procedure: (Mold specimen, proctor can assist with machine operation as needed.) CAUTION!! Use PPE, everything is HOT!			
10. Pull the hot mold items out of the oven.			
11. Assemble mold & bottom plate (If necessary) & insert a paper disk into the bottom of the mold and place a funnel on the top.			
12. Check if mix is at molding temperature, if so, take the loose mix from the oven, place it in the mold in 1 lift. a. Scrape pan and spatula clean to include all of the sample to the mold.			
13. Level the surface of loose mix in the mold, place 2nd paper disk on top.			
14. Place top plate on top beveled side up.			
15. Place mold in machine according to manufactures instructions.			
16. Verify setting are correct on the Gyro, Press START and let compaction proceed.			
17. When the compaction has completed, open door and move mold to puck extrusion station. a. Note: Some machines will automatically extrude the sample.			

18. Carefully remove the top plate and paper disk. a. If the mix is tender, may need to cool a few seconds before handling to avoid collapse.			
19. After minimum cooling period to assure puck stability, carefully set puck upside-down on cooling rack, and remove 2nd paper disk ASAP			
20. Mark the puck for identification purposes on the side of the sample.			
PASS?			
FAIL?			

Proctor_____Date_____

Reviewer_____Date_____