

## IA Checklist

### T 209 Theoretical Maximum Specific Gravity and Density of Asphalt Mixtures

No.	Item	P	F	NA
1	Obtain the sample in accordance with OHD L-65.			
2	Reduce samples in accordance with AASHTO R47. Two samples are required to check for single operator precision.			
3	Determine sample size from Table 1 in AASHTO T 209, Section 6.3.			
4	Dry the sample to a constant mass at a temperature of 221+/- 9°F (105 +/- 5°C) until further drying does not alter the mass by more than 0.1 percent. Drying shall be combined with any warming described in Section 7.3.			
5	Separate the particles of the asphalt mixture sample by hand, so that the particles of the fine aggregate portion are not larger than ¼". If an asphalt mixture sample is not sufficiently soft to be separated manually, place it in a pan and warm it in an oven until it can be separated.as described.			
6	Determine and record the mass of the empty vacuum container.			
7	Was flask/container calibrated properly? Fill with water at approximately 77°F. Use a glass capillary stopper, capillary lid or glass plate to ensure all entrapped air is removed. Stabilize the flask or pycnometer at 77° F +/- 2° for 10 +/- 1 min. Dry outside of flask/container. Determine and record the mass of the flask or pycnometer, water and lid. Repeat this process three times. If the three masses are within 0.3 g, use the average of the three masses as D. If the variation of the masses is greater than 0.3 g, take corrective action and perform the standardization procedure again.			
8	Cool the sample to room temperature.			
9	Place the sample in the vacuum container. Determine and record the mass of the sample and container. Subtract the mass of the container from the mass of the sample and the container. Record the net mass of the sample as A.			
10	Add sufficient water at a temperature of approximately 77°F to cover the sample completely.			
11	Apply vacuum at 27.5, +/- 2.5mm Hg for 15 +/- 2 minutes, 730mm HG for mechanical vacuum gauge. Agitate sample during this period either by hand (about every 2 minutes) or mechanical device.			
12	Release vacuum by increasing pressure at a rate not to exceed 8kPa/second (60mm HG).			
13	<i>Mass Determination in Water</i> —Suspend the container and contents in a water bath at 25 ± 1°C (77 ± 2°F). Determine and record the mass after a 10 ± 1 min immersion. Designate the mass of the sample and container in water as C.			
14	<i>Mass Determination in Air</i> —Fill the flask or any one of the pycnometers with water and adjust the contents to a temperature of 25 ± 1°C (77 ± 2°F). When the water has reached the proper temperature, cap off and dry flask /container and lid. Determine and record the mass of the container and contents, completely filled, in accordance with Section A1.2.1 within 10 ± 1 min after the vacuum has been released. Designate this mass as E.			

15	Insure calculations are performed correctly to determine Theoretical Maximum Specific Gravity.			
16	Check for tolerances between the 2 tests. Hand agitated +/- 0.018. Mechanically agitated +/- 0.014.			
17	Insure that all equipment used meets the requirements shown in AASHTO T 209.			

**Remarks:**