



# Performance Examination - Asphalt

## Standard Test Methods for Asphalt Content of Bituminous Mixtures by the Nuclear Method (ASTM D4125 / D4125M-10 (2016))

Candidate Name: \_\_\_\_\_ NICET ID: \_\_\_\_\_

Apparatus	Trial 1	Trial 2
<b>Neutron Source</b> An encapsulated and sealed radioactive source such as americium/beryllium		
<b>Thermal Neutron Detector</b> Such as helium-3 or boron trifluoride		
<b>Read-out Instrument</b>		
<b>Balance</b> Readable to 1 g		
<b>Oven</b> Capable of heating to 350 ± 5 °F (177 ± 3 °C)		
<b>Steel Straightedge</b> Approximately 18 in. (450 mm) long		
<b>Flat Plate</b> Metal: 10 mm thick; Wood: 20 mm thick		
<b>Thermometer</b> Range of 10 to 250 °C (50 to 482 °F)		
<b>Spoons and mixing bowls</b>		
<b>Stainless steel sample pans</b>		
<b>Additional apparatus for Test Method B</b>		
Apparatus necessary to prepare compacted specimens as specified in Test Methods D1559, D1561, D3387, or Practice D4013		
Molded laboratory specimen container		
<b>For 4 in. diameter specimens:</b> container has two holes for specimens, each hole having the diameter of 10.312 cm		
<b>For 6 in. diameter specimens:</b> container has one hole for specimens, the hole having the diameter of 15.392 cm		
<b>All Specimen Containers will be:</b>		
Length of the container is 24.689 cm		
The total height of the container is 6.985 cm		
Height from container bottom to specimen level is 5.715 cm		
Background radiation count checked daily		
Calibration curve developed according to each mix type		
Correlation factor greater than or equal to 0.995		

Examiner Name: \_\_\_\_\_ Examiner Signature: \_\_\_\_\_ Date: \_\_\_\_\_



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Procedures	Trial 1	Trial 2
1. Test sample obtained according to T168		
2. The moisture content of the test sample determined by AASHTO T110 or by drying the test sample to constant mass in an oven at 230 ± 9 °F (110 ± 5 °C) for no longer than two hours		
3. The sample heated to 250 – 300 °F (121 – 149 °C)		
4. Sample pan filled to half full, evenly distributing the sample		
5. Sample leveled with a trowel or spatula		
6. Additional sample added to the pan until the mass of mix in pan equals the mass of sample used for calibration		
7. Mass of mix in pan recorded		
8. Mixture leveled with spatula or trowel		
9. Mixture compacted with a plate until even with the top of the pan		
10. The temperature of the sample recorded		
11. The temperature within 10 °F (6 °C) of calibration temperature		
12. The sample placed in gauge		
13. Manufacturer's instructions followed to obtain sample counts		
14. Apparent asphalt content determined		
15. Corrected for moisture content, if necessary		
16. Background radiation count obtained each day before taking measurements		
17. Statistical stability test performed at least once a month		
18. Calibration curve developed according to Section 8 (for the method being presented) for each mix type and aggregate blend		
19. Correlation factor greater than or equal to 0.995		
20. Test sample obtained according to D979		
21. The moisture content of the test sample determined or by drying test sample to constant mass in an oven at 110 ± 5 °C (230 ± 9 °F)		
<b>Method A</b>		
1. Sample pan filled in three layers		
2. After each layer, pan lifted approx. 20 to 50 mm (1 to 2 in.) and tapped on the working surface two or three times to settle contents		
3. The last layer fills pan slightly above the top edge		
4. Material added or removed until the mass of mix in the pan is within 10 g of the calibration sample		

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Procedures (continued)	Trial 1	Trial 2
5. Mass of mix in pan recorded		
6. Sample compressed with a flat plate until level with the top edge of the pan		
7. The temperature of the sample recorded		
8. The temperature within 5 °C (9 °F) of calibration temperature unless the apparatus makes provision for temperature correction		
9. The sample placed in the chamber		
10. Manufacturer's instructions followed to obtain sample counts		
11. Asphalt content of mixture determined		
12. Corrected for moisture content, if necessary		
<b>Method B</b>		
1. Specimens prepared using Test Method D1559, D1561, D3387, or Practice D4013		
2. Two specimens used for 10-cm (4 in.) diameter specimens		
3. One specimen used for 15-cm (6 in.) diameter specimens		
4. For 10-cm specimens: the mass of the two test specimens are within 10 g of each other and the average of the two test specimens are within 10 g of the average of the calibration		
5. For 15-cm specimens: the mass of the test specimen is within 10 g of the calibration sample		
6. Sample(s) placed in the molded specimen container and then placed in the testing chamber		
7. Manufacturer's instructions followed to obtain sample counts		
8. Asphalt content of mixture determined		
9. Corrected for moisture content, if necessary		

First Attempt: Pass: \_\_\_\_\_ Fail: \_\_\_\_\_ Second Attempt: Pass: \_\_\_\_\_ Fail: \_\_\_\_\_

Exam Administration: Remote \_\_\_\_\_ In-Person \_\_\_\_\_

Comments:

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Examiner Name: \_\_\_\_\_ Examiner Signature: \_\_\_\_\_ Date: \_\_\_\_\_