



Performance Examination - Aggregate

Standard Test Method for Bulk Density (“Unit Weight”) and Voids in Aggregate (ASTM C29 / C29M-17a) [AASHTO T 19M / T 19-14]

Candidate Name: _____ NICET ID: _____

Apparatus	Trial 1	Trial 2
Balance The capacity of 2 kg or more & sensitive to 0.5 g or less		
Unit weight measure The top rim is smooth, watertight, and plane to 0.25 mm (0.01 in) when measured with a feeler gauge Interior wall of measure is a smooth and continuous surface (no open seams, large welds) Height is 80 to 150% of the diameter Measure recalibrated at least annually or whenever the accuracy is called into question Capacity and design of measure conforms to requirements in the table below		
Tamping rod Round, straight steel rod approximately 600 mm (24 in.) long. 16 mm (5/8 in.) in diameter with hemispherical tip		
Piece of plate glass (larger than the measure's diameter)		
Grease such as chassis or water pump grease suitable for forming a water-tight seal.		
Balance Accurate to 0.1% of the test load		
Thermometer with a range of at least 10 to 32 °C (50 °F to 90 °F) and that is readable to at least 0.5 °C (1 °F)		

Capacity of measure	Nominal Max. Size of Aggregate	Min. thickness bottom	Min. thickness top 38 mm (1.5 inches) of wall	Min. thickness the remainder of the wall
2.8 L (1/10 ft ³)	12.5 mm (1/2 in.)	5.0 mm	2.5 mm	2.5 mm
9.3 L (1/3 ft ³)	25.0 mm (1 in.)	5.0 mm	2.5 mm	2.5 mm
14 L (1/2 ft ³)	37.5 mm (1.5 in.)	5.0 mm	5.0 mm	3.0 mm
28 L (1 ft ³)	75 mm (3 in.)	5.0 mm	5.0 mm	3.0 mm

Procedures	Trial 1	Trial 2
Sample Preparation		
1. The sample obtained by ASTM C702, approx. 125 to 200% of the quantity needed to fill the measure		
2. Sample dried to essentially constant mass or at 110 ± 5 °C (230 ± 9 °F)		
Jigging procedure (37.5 to 150-mm (1 ½ to 5-in.) particles)		
1. Measure filled 1/3 full and leveled with fingers		
2. Layer compacted by raising alternate sides about 50 mm (2 in.) and dropping on floor 25 times on each side (a total of 50)		
3. Measure filled with two more similar layers and third layer filled to overflowing (before compaction)		
4. Surface leveled with the fingers or the straightedge (tamping rod)		

Examiner Name: _____ Examiner Signature: _____ Date: _____



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Procedures (continued)	Trial 1	Trial 2
5. Average level surface obtained (aggregate projections above the rim balance the voids below the rim)		
6. Net mass determined to the nearest 0.05 kg (1 lb)		
7. Net mass of aggregate multiplied by calibration factor or divided by the volume of the measure		
8. Bulk density reported to the nearest 10 kg/m ³ (1 lb/ft ³)		
9. Void content (if determined) reported to the nearest 1%		
Shoveling procedure (up to 150-mm (6-in.) particles)		
1. Measure filled to overflowing with scoop or shovel		
2. Aggregate discharged from a height not exceeding 50 mm (2 in.) above the top of the measure		
3. Care taken to prevent segregation of the particle size 4. Surface leveled with the fingers or the straightedge (tamping rod)		
4. Average level surface obtained (aggregate projections above the rim balance the voids below the rim)		
5. Net mass determined to the nearest 0.05 kg (0.1 lb)		
6. Net mass of aggregate multiplied by calibration factor or divided by the volume of the measure		
7. Bulk density reported to the nearest 10 kg/m ³ (1 lb/ft ³)		
8. Void content (if determined) reported to the nearest 1%		

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

Exam Administration: Remote _____ In-Person _____

Comments:

Examiner Name: _____ Examiner Signature: _____ Date: _____