



Performance Examination - Aggregate

Standard Test Method for Lightweight Particles in Aggregate (ASTM C123 / C123M-14) [AASHTO T 113-18]

Candidate Name: _____ NICET ID: _____

Apparatus	Trial 1	Trial 2
Balance For fine aggregate: Capacity at least 500 g and sensitive to 0.1 g For coarse aggregate: Capacity at least 5000 g and sensitive to 1 g		
Sieves 300- μ m (No. 50) and 4.75-mm (No. 4)		
Hot plate or oven Capable of maintaining a temperature of 110 ± 5 °C (230 ± 10 °F)		
Specific gravity measurement A suitable device for measuring the specific gravity of heavy liquid within ± 0.01 (Hydrometer, Pycnometer)		
Skimmer Piece of 300- μ m (No. 50) sieve cloth Suitable size and shape		
Containers (a) Suitable drying containers (b) Suitable containers for holding the heavy liquids		
Heavy liquid A heavy liquid with an appropriate specific gravity and that can readily be removed from the aggregate such as one of the following: Solution of zinc chloride in water for materials with specific gravity less than 2.0 or (b) solution of zinc bromide in water for material with specific gravity less than 2.4 Mixture of heavy organic liquids proportioned to achieve the desired specific gravity (suggested: tetrabromoethane, dibromoethane, tetrachloroethane, or dichloromethane)		

Procedures	Trial 1	Trial 2
1. Test sample obtained by C702		
2. 4.75 mm (No. 4) or smaller - 200 g; 9.5 mm ($\frac{3}{8}$ in.) – 1.5 kg; 12.5 to 19.0 mm ($\frac{1}{2}$ to $\frac{3}{4}$ in.) - 3 kg; 25 to 37.5 mm (1 to $1\frac{1}{2}$ in.) – 5 kg; 50 mm (2 in.) or larger – 10 kg.		
3. Aggregate dried to constant mass at 110 ± 5 °C (230 ± 10 °F) and cooled to room temperature		
Fine Aggregate		
4. Sieved on a 300- μ m (No. 50) sieve		
5. Sieving continued until less than 1% of the material on sieve passes in 1 minute of continuous hand sieving		
6. Mass of plus 300- μ m material determined to nearest 0.1 g		
7. Aggregate brought to the saturated surface-dry condition by C128 or amount of water that aggregate will absorb added, covered for 30 minutes, and tested		
8. The sample placed in a container holding heavy liquid		
9. Volume of heavy liquid at least three times the volume of aggregate tested		

Examiner Name: _____ Examiner Signature: _____ Date: _____



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Procedures (continued)	Trial 1	Trial 2
10. Liquid poured into the second container through the skimmer		
11. Only floating particles decanted		
12. Heavy liquid recovered and poured back into starting a container		
13. Aggregate agitated by stirring		
14. Steps 7 through 10 repeated until all floaters are removed		
15. Lightweight particles on skimmer washed free of heavy liquid using alcohol (for tetrabromoethane) or water (for zinc chloride or zinc bromide)		
16. Lightweight particles allowed to air dry or dried to constant mass at no greater than 115 °C (240 °F)		
17. Mass of lightweight particles determined to nearest 0.1 g		
Coarse Aggregate		
18. Sieved on a 4.75-mm (No. 4) sieve		
19. The mass determine to the nearest 1 g		
20. Aggregate brought to the saturated surface-dry condition by C127		
21. The sample placed in a container holding heavy liquid		
22. Volume of heavy liquid at least three times the volume of aggregate tested		
23. Skimmer used to remove the floating particles and particles saved		
24. Aggregate in container agitated		
25. All floating particles removed by the above process		
26. Lightweight particles on skimmer washed free of heavy liquid using an appropriate solvent		
27. Lightweight particles allowed to air dry or dried to constant mass at no greater than 115 °C (240 °F)		
28. Mass of lightweight particles determined to the nearest 1 g		
29. % Lw = (dry mass of floating / sample mass) x 100		

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

Comments:

Examiner Name: _____ Examiner Signature: _____ Date: _____