

# Performance Examination Checklist – ASTM C231 Air Content (TYPE A METER)

Examinee Name (please print): \_\_\_\_\_

Last four digits of Social Security Number: \_\_\_\_\_

This checklist forms the basis of the performance evaluation; it does not necessarily reflect all of the detail necessary to conduct the procedures in complete compliance with the governing test method. Evaluation of performance may refer to relevant procedural details contained in the published test method but which are not included in this checklist.

**NOTE: This checklist is for a Type A meter.**

It is assumed that a sample of concrete has been obtained in accordance with Practice C172. It is also assumed that the test is being conducted on a level rigid surface free of any vibrations. If the concrete contains coarse aggregate that would be retained on a 2 in. [50 mm] sieve, wet sieve a sufficient amount of material over a 1-1/2 in. [37.5 mm] sieve. It is also assumed that a value for the Aggregate Correction Factor (ACF) is known.

	<i>First Trial</i>		<i>Second Trial</i>		<i>Re-Trial</i>	
1. Dampen the interior of the bowl and place on a flat, level, firm surface. (Para. 8.1.1)	PASS	FAIL	PASS	FAIL	PASS	FAIL
2. Using a scoop, place the concrete in the measuring bowl in the required number of layers, moving the scoop around the perimeter of the bowl opening to ensure an even distribution of the concrete. For the first layer:						
A.) Fill the bowl to approximately 1/3 of its volume. (Para. 8.1.2)	PASS	FAIL	PASS	FAIL	PASS	FAIL
B.) Rod the layer 25 times throughout its depth, using care not to damage the bottom of the measuring bowl. Distribute the roddings uniformly over the cross section of the bowl. (Para. 8.1.2)	PASS	FAIL	PASS	FAIL	PASS	FAIL
C.) Tap the outside of the bowl smartly 10 to 15 times with the mallet to close voids left by the tamping rod. (Para. 8.1.2)	PASS	FAIL	PASS	FAIL	PASS	FAIL
3. For the second layer:						
A.) Fill the bowl to approximately 2/3 of its volume. (Para. 8.1.2)	PASS	FAIL	PASS	FAIL	PASS	FAIL
B.) Rod the layer 25 times, penetrate the first layer about 1 in. [25 mm], evenly distribute the roddings over the cross section of the bowl. (Para. 8.1.2)	PASS	FAIL	PASS	FAIL	PASS	FAIL
C.) Tap the outside of the bowl smartly 10 to 15 times with mallet to close voids left by the tamping rod. (Para. 8.1.2)	PASS	FAIL	PASS	FAIL	PASS	FAIL

**CHECKLIST CONTINUED ON NEXT PAGE ⇨**

## Performance Examination Checklist – ASTM C231 Air Content (TYPE A METER)

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|----|--|------|------|------|------|
| 4. | For the third layer:   |      |      |      |      |
|    | A.) Add concrete in a manner to avoid excessive overfilling. (Para. 8.1.2)   | PASS | FAIL | PASS | FAIL |
|    | B.) Rod the layer 25 times, penetrate the second layer about 1 in. [25 mm], evenly distribute the roddings over the cross section of the bowl. (Para. 8.1.2) | PASS | FAIL | PASS | FAIL |
|    | C.) Tap the outside of the bowl smartly 10 to 15 times with mallet to close voids left by the tamping rod. (Para. 8.1.2)                                     | PASS | FAIL | PASS | FAIL |

***When a strike-off plate is used, proceed with Step 5A and skip Step 5B. When a strike-off bar is used, mark only Step 5B.***

- |    |  |      |      |      |      |
|----|--|------|------|------|------|
| 5. | Strike-off the top layer of concrete:  |      |      |      |      |
|    | A.) <u>If using a strike-off plate:</u>  |      |      |      |      |
|    | i.) Press the strike-off plate on the top surface of the measure to cover 2/3 of the surface and withdraw the plate with a sawing motion to finish only the area originally covered. (Para. 8.1.4)   | PASS | FAIL | PASS | FAIL |
|    | ii.) Place the plate on top of the measure to cover the original 2/3 of the surface and advance it with a vertical pressure and a sawing motion to cover the whole surface of the measure and continue to advance it until it slides completely off the measure. (Para. 8.1.4) | PASS | FAIL | PASS | FAIL |
|    | iii.) Incline the plate and perform several strokes with the edge of the plate to produce a smooth finish. (Para. 8.1.4)   | PASS | FAIL | PASS | FAIL |
|    | B.) <u>If using a strike-off bar:</u> Strike-off the top surface by sliding the strike-off bar across the top flange or rim of the measuring bowl with a sawing motion until the bowl is just level full. (Para. 8.1.4)  | PASS | FAIL | PASS | FAIL |
| 6. | Thoroughly clean the flange/rim of the bowl and cover assembly. (Para. 8.2.1)  | PASS | FAIL | PASS | FAIL |
| 7. | Clamp the cover to the bowl ensuring a pressure-tight seal. (Para. 8.2.1)  | PASS | FAIL | PASS | FAIL |
| 8. | Add water over the concrete by means of the tube until it rises to about the halfway mark in the standpipe. (Para. 8.2.1)  | PASS | FAIL | PASS | FAIL |

**CHECKLIST CONTINUED ON NEXT PAGE ⇨**

## Performance Examination Checklist – ASTM C231 Air Content (TYPE A METER)

9. Incline the apparatus assembly about 30 degrees from vertical and, using the bottom of the bowl as a pivot, describe several complete circles with the upper end of the column, simultaneously tapping the cover lightly to remove any entrapped air bubbles above the sample. (Para. 8.2.1)	PASS	FAIL	PASS	FAIL	PASS	FAIL
10. Return the apparatus assembly to a vertical position and fill the water column slightly above the zero mark, while lightly tapping the sides of the bowl. (Para. 8.2.1)	PASS	FAIL	PASS	FAIL	PASS	FAIL
11. Bring the water level to the zero mark of the graduated tube before closing the vent at the top of the water column. (Para. 8.2.1)	PASS	FAIL	PASS	FAIL	PASS	FAIL
12. Apply more than the desired test pressure by means of the small hand pump, relieving local restraints by tapping the sides of the measure sharply. (Para. 8.2.3)	PASS	FAIL	PASS	FAIL	PASS	FAIL
13. When the pressure gauge indicates the exact test pressure, read the water level and record to the nearest division or half-division on the gauge of the standpipe. (Para. 8.2.3)	PASS	FAIL	PASS	FAIL	PASS	FAIL
14. Gradually release the air pressure through the vent at the top of the water column and tap the sides of the bowl lightly for about 1 min. (Para. 8.2.3)	PASS	FAIL	PASS	FAIL	PASS	FAIL
15. Record the water level to the nearest division or half-division on the gauge of the standpipe. (Para. 8.2.3)	PASS	FAIL	PASS	FAIL	PASS	FAIL
16. Calculate the apparent air content by subtracting the initial gauge reading from the gauge reading at zero pressure after release of pressure. (Para. 8.2.3)	PASS	FAIL	PASS	FAIL	PASS	FAIL
<b><i>Provide the Aggregate Correction Factor to the examinee when requested.</i></b>						
17. Report the air content to the nearest 0.1% using the aggregate correction factor (or to the nearest ½ scale division if the gauge reading exceeds 8%). (Para. 10.1.1)	PASS	FAIL	PASS	FAIL	PASS	FAIL

**CHECKLIST CONTINUED ON NEXT PAGE ⇒**

## Performance Examination Checklist – ASTM C231 Air Content (TYPE A METER)

In order to merit a passing overall score on the performance examination, each individual step must be passed on either the first or second trial, or on the re-trial following a voluntary suspension.

**OVERALL SCORE (circle one for each trial)**

PASS FAIL

PASS FAIL

PASS FAIL

Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
Supplemental Examiner (First Trial)

Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
Supplemental Examiner (Second Trial)