

KT-73 Density, Absorption and Volume of Permeable Voids in Hardened Concrete 2023

Two attempts may be made by the applicant. The applicant may stop themselves once and not have that count as one of the two attempts. If the applicant stops voluntarily, draw a line at that point and note that the applicant stopped themselves then restart at the top of the next attempt.

Underlined items will be administered orally.

Applicant: _____

CIT #: _____

Employer: _____

| | | 1 st Test | | Stopped Test | | Re-Test | |
|-------------------------------|---|----------------------|------|--------------|------|---------|------|
| Preparation of Samples | | | | | | | |
| | Prepare 3 specimens per sample. Each specimen shall consist of a 2" thick by 4" diameter piece taken from the top portion of a cast concrete cylinder (KT-22) or core (KT-49). <u>No more than 3/8" can be removed from the top and obtain the specimen from the next 2"</u> . The specimen shall be free of <u>observable cracks, fissures, or shattered edges.</u> (4.1) | PASS | FAIL | PASS | FAIL | PASS | FAIL |
| Procedure | | | | | | | |
| 1. | Determine the mass of each specimen. (5.1) | PASS | FAIL | PASS | FAIL | PASS | FAIL |
| 2. | Place each specimen on its edge in a " forced draft " oven directly on the oven rack, and dry the sample at 230 +/- 9°F (110 +/- 5°C) <u>for not less than 24 hrs.</u> (5.1) | PASS | FAIL | PASS | FAIL | PASS | FAIL |
| | <i>*No pan or container is to be used.</i> | | | | | | |
| 3. | Remove the specimen from the oven and <u>allow to cool in "dry" air (preferably a desiccator) to a temperature of 72+/-5°F</u> (22+/-3°C). (5.1) | PASS | FAIL | PASS | FAIL | PASS | FAIL |
| 4. | If the specimen was comparatively dry when its mass was first determined, and the second mass agrees with the first mass within 0.05%, then consider it dry. <i>If the specimen was wet when the first mass was determined, place it in the oven for a second drying of 24 hours and again determine the mass. In case of any doubt, re-dry the specimen for 24-hour periods until check values of mass are obtained.</i> Determine the mass of the " dry " aired specimen, record as A. (5.1) | PASS | FAIL | PASS | FAIL | PASS | FAIL |

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|-----|---|----------------------|------|--------------|------|---------|------|
| 5. | Immerse specimen on its edge in water at 72+/- 5°F (22+/-3°C) and soak for not less than 48 hours and until 2 consecutive values of mass of the surface-dried samples at intervals of 24 hours show an increase in mass of less than 0.5% of the larger value. Surface-dry the specimen using a damp towel. (5.2) | PASS | FAIL | PASS | FAIL | PASS | FAIL |
| 6. | Determine the mass of the surfaced-dried specimen, record as B. (5.2) | PASS | FAIL | PASS | FAIL | PASS | FAIL |
| 7. | Bring tap water to a rapid boil prior to placing the specimen on its edge on a rack in the boiling water a minimum of 1/4 inch from the bottom of the container. <i>The water must return to boiling in less than 1 hour.</i> (5.3) | PASS | FAIL | PASS | FAIL | PASS | FAIL |
| 8. | Boil the specimen completely submersed for a minimum of 5 hours. Do not add additional water during the boiling process. (5.3) | PASS | FAIL | PASS | FAIL | PASS | FAIL |
| 9. | <u>Allow specimen and water to cool by natural loss of heat for not less than 14 hours to a final temperature of 72 ± 5°F (22 ± 3°C). Store the specimen on its edge in the boiled water until the final 2 steps are completed.</u> (5.3) | PASS | FAIL | PASS | FAIL | PASS | FAIL |
| 10. | Suspend the specimen in the bucket at a constant water level by the suitable apparatus, making sure the water is at 77 ± 2 ° F (25 ± 1 °C). (5.4) | PASS | FAIL | PASS | FAIL | PASS | FAIL |
| 11. | Determine the apparent mass and record as D. (5.4) | PASS | FAIL | PASS | FAIL | PASS | FAIL |
| 12. | Remove the specimen from the water, quickly damp-dry the sample with a damp absorbent cloth and determine the mass of the boiled surface-dried mass and record as C. (5.5) | PASS | FAIL | PASS | FAIL | PASS | FAIL |
| 13. | Calculations to report (6.1) | PASS | FAIL | PASS | FAIL | PASS | FAIL |
| | Record the Absorption to the nearest 0.01%. (6.1) | | | | | | |

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|--|--|----------------------------|------|---------------------|------|----------------|------|
| | Record the Densities to the nearest 0.1 lb/ft ³ (1kg/m ³). (6.1) | PASS | FAIL | PASS | FAIL | PASS | FAIL |
| | | | | | | | |
| | Record the Volume of Permeable Voids (pore space) to the nearest 0.01% and Report to the nearest 0.1%. (6.1) | PASS | FAIL | PASS | FAIL | PASS | FAIL |

Overall Score

Circle One

1st Test

2nd Test

3rd Test

PASS

PASS

PASS

FAIL

FAIL

FAIL

Witness Examiner:

(First Try)

Signature

Date

Witness Examiner:

(Stopped Try)

Signature

Date

Witness Examiner:

(Re-Test)

Signature

Date