

ATT-44/96 MOISTURE CONTENT, Speedy Moisture Teller**1.0 SCOPE**

This method describes the procedure for determining the moisture content of soil using a Speedy Moisture Teller.

2.0 EQUIPMENT

speedy moisture teller	
cleaning brush	measuring spoon
2 steel balls, 32 mm diameter	cleaning cloth
counter weight, 13 grams	sample container
calibration graph	sample container hanger
4 cans of calcium carbide	

3.0 PROCEDURE**3.1 Sand**

1. Rotate the scale into position in the Speedy case by releasing the catch.
2. Make sure the inside of the Speedy and the Speedy's cap are clean.
3. Weigh the soil into the sample container (balance pan), breaking up any large lumps, until the scale balances.
4. Place the weighed soil sample in the cap of the Speedy.
5. Place three full measures of Speedy absorbent (calcium carbide) in the body of the Speedy.
6. Place the cap in position while holding the Speedy horizontal, to prevent the material and absorbent from mixing before the instrument is sealed.
7. Bring the stirrup around the cap and tighten the top screw.
8. With the dial downwards, shake the Speedy up and down violently for 3 seconds, then quickly turn the Speedy so that the dial is facing upwards.
9. Give a tap to the body of the Speedy to ensure that all of the contents fall into the cap. Hold or stand the Speedy in this position for 1 minute.
10. Repeat steps 8 and 9 two more times.
11. After the third mixing, once more invert the Speedy and shake it up and down violently to cool the gas.

12. Turn the Speedy to a horizontal position with the dial facing you at eye level. Lightly tap the dial with your finger. When the dial comes to rest, record the dial reading.
13. Slowly loosen the screw on the stirrup, and release the pressure within the Speedy away from you. Empty out the contents, and clean the instrument with the brush provided.
14. Refer to the calibration graph supplied with the instrument and convert the Speedy dial reading to moisture content in percent.

3.2 Clayey Soils

1. Repeat steps 1 to 5 of Section 3.1.

NOTE: Where a moisture content in excess of the maximum reading indicated on the gauge dial is expected, hook the small brass weight supplied with the equipment through the link holding the scale pan cradle, and weigh in the normal manner. The brass weight reduces the sample size by half. Therefore, to determine the correct dial reading at the end of a test, the observed reading must be multiplied by 2.

2. Place two steel ball pulverizers in the body of the Speedy.
3. Place the cap in position while holding the Speedy horizontal, to prevent the material and absorbent from mixing before the instrument is sealed.
4. Bring the stirrup around the cap and tighten the top screw.
5. Turn the Speedy vertical so that the soil falls into the Speedy body. Then quickly turn the Speedy horizontal and rotate it for 10 seconds so that the pulverizers revolve around the inside circumference of the body.
6. Rest for 20 seconds, repeat the rotate-rest cycle, until the dial reading is constant, (usually within 3 minutes).
7. Repeat steps 12 to 14 of Section 3.1.

NOTE: If the brass weight was used, multiply the dial reading by 2 and use this corrected reading to determine the % moisture content from the calibration graph.

4.0 HINTS AND PRECAUTIONS

1. Turn the Speedy quickly while performing steps 8 and 9 of Section 3.1 to ensure that all of the heat given off by the reaction is confined and liberates all of the moisture in the material.
2. If the instrument is cold, your first test will be slightly low. It is advisable to warm the instrument before testing or take a second test. The Speedy body should feel slightly warm for accurate and consistent test results.
3. For anticipated low moisture contents, two or more complete weighings can be tested at the same time, and the dial reading divided by the number of weighings.
4. When running 3 or more successive moisture contents, wait approximately 5 minutes between runs to cool the equipment. A speedy that is hot to the touch will give high readings.
5. The Speedy calibration should be checked at the beginning of the project against oven moisture contents for each material on the job. Small variations can be adjusted on the calibration graph. The equipment should be recalibrated when wide variations between the actual and Speedy moisture contents exist ($\pm 5\%$ in moisture content).
6. Calcium carbide reacts with water and releases a dangerous gas, acetylene. The calcium carbide containers shall be tightly sealed and stored away from moisture.
7. The instrument is not as accurate as the oven method but can be used to obtain a moisture content in a minimum amount of time.
8. Calcium carbide is controlled by the Dangerous Goods Act. The proper documentation and signing must accompany calcium carbide when it is shipped.