CALCIUM & CHLORIDE SOIL TESTS

MODULE A

MODEL AM-32 • CODE 5938-01

QUANTITY	CONTENTS	CODE
5 mL	*Chloride Test Solution	*5111-S
30 mL	*Calcium Test Solution	*5108PS-G
1	Color Chart, Calcium in Soil	1303
1	Color Chart, Chloride in Soil	1304
2	Test Tubes, 1-8 mL, plastic, w/caps	0755
2	Test Tubes, plastic, filtrate	0749
1	Spoon, 0.5 g	0698
1	Funnel, plastic	0459
1	Filter Paper, 100/pk	0465
2	Pipets, transfer, plastic	0364
4	Test Tubes, glass	0242
1	Pipet, plain w/cap	0392
1	Pipet, plain, plastic	0352
1	Demineralizer Bottle	1151

***WARNING:** Reagents marked with a * are considered to be potential health hazards. To view or print a Material Safety Data Sheet (MSDS) for these reagents see MSDS CD or www.lamotte.com. To obtain a printed copy, contact LaMotte by email, phone or fax.

To order individual reagents or test kit components, use the specified code number.

The Demineralizer Bottle will be the source of all the deionized water in these tests. Read the Demineralizer Bottle Instructions before proceeding.

WARNING! This set contains chemicals that may be harmful if misused. Read cautions on individual containers carefully. Not to be used by children except under adult supervision

CHLORIDE IN SOIL TEST

1. Fill a 1-8 mL test tube (0755) to line 5 with deionized water from the Demineralizer Bottle (1151).
2. Use the 0.5 g spoon (0698) to add four level measures of soil. Cap and shake for one minute.
3. Fold a piece of filter paper (0465) in half. Fold in half again. Holding pointed end down, squeeze corners together to form a cone. Insert into funnel (0459).
4. Filter soil suspension through filter paper. The clear soil extract is used for the test.
5. Use a transfer pipet (0364) to add 5 drops of the extract to a test tube (0242).
6. Use the dropping pipet (0352) to add one drop of *Chloride Test Solution (5111). Gently swirl to mix.
7. Hold test tube about one-half inch above the black background in the center of the Chloride Color Chart (1304). Viewing down through the tube, match sample turbidity to a turbidity standard. Record as ppm Chloride.

INTERPRETATION OF CHLORIDE TEST RESULTS

Chlorides are present in small amounts in practically all soils. Large amounts of chlorides in soil may be toxic to growing plants, and may produce stunted plants.

REPLACEABLE CALCIUM IN SOIL TEST

1. Fill a 1-8 mL test tube (0755) to line 7 with *Universal Extracting Solution (5173PS).
2. Use the 0.5 g spoon (0698) to add four level measures of soil. Cap and shake for one minute.

   NOTE: When adding samples with high concentrations of carbonates to *Universal Extracting Solution (5173PS), swirl tube to mix for 30 seconds before capping to allow gases to escape.
3. Fold a piece of filter paper (0465) in half. Fold in half again. Holding pointed end down, squeeze corners together to form a cone. Insert into funnel (0459).
4. Filter soil suspension through filter paper. The clear soil extract is used for the test.
5. Use a transfer pipet (0364) to add 5 drops of the extract to a turbidity test tube (0242).

6. Use the pipet with the screw cap (0392) to add one drop of Calcium Test Solution (5108PS). Gently swirl to mix.
7. Hold test tube about one-half inch above the black background in the center of the Calcium Color Chart (1303). Viewing down through the tube, match sample turbidity to a turbidity standard. Record as ppm Calcium.

INTERPRETATION OF REPLACEABLE CALCIUM TEST RESULTS

A lack of calcium in the soil rarely limits plant growth, but it helps to provide a favorable equilibrium between the various constituents in the soil which affect fertility. If there is a deficiency in the replaceable calcium in the soil, the base exchange capacity is incompletely satisfied, resulting in acid soil. Valuable biological processes are dependent upon the important stabilizing effect of calcium in the soil, and without its beneficial effects the nitrification process would bring about a highly injurious acid condition.

Well-limed soils, those that are not naturally in need of lime, contain an abundance of replaceable calcium. Hence, this test can be used to confirm and supplement the interpretation of soil acidity measurements.

The amounts of calcium that are extracted from soil by the leaching solution provide a measure of the amount of calcium contained in the base exchange complex. Soils low in humus and clay give higher values than soils that have a high percentage of colliodal clay and organic matter, unless the latter are strongly acid and, consequently, have most of their calcium replaced by hydrogen-ions.

Normal sandy soils should give 500 ppm calcium; clay soils 1000 ppm; and humus soils, such as peats and forest mold, 500 ppm. Lower results indicate that much of the active calcium of the soil has been replaced by hydrogen or other ions, as in acid or highly alkaline soils.

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