
Test Procedure for

DETERMINING SOIL pH

**TxDOT Designation: Tex-128-E****Effective Date: August 1999**

1. SCOPE

- 1.1 This method describes the procedure for determining the pH of soils in an aqueous solution.
 - 1.2 The values given in parentheses (if provided) are not standard and may not be exact mathematical conversions. Use each system of units separately. Combining values from the two systems may result in nonconformance with the standard.
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2. APPARATUS

- 2.1 *pH meter*, with glass electrode, pH range 0–14 ± 0.1.
 - 2.2 *Buffer solutions*, such as pH 4.0, 7.0, and 9.0.
 - 2.3 *Glass stirring rod*.
 - 2.4 *Glass beaker*, 250 mL (8.5 fl. oz.)
 - 2.5 *Balance*, Class G1 in accordance with Tex-901-K.
 - 2.6 *Thermometer*, 0–100°C (32–212°F).
 - 2.7 *Stirring device*, mechanical or magnetic.
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3. MATERIALS

- 3.1 *Distilled or deionized water*.
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4. PREPARING SAMPLES

- 4.1 *Soil Sample:*
 - 4.1.1 The pH test is performed on the soil binder, minus 425 µm (No. 40) material prepared in accordance with Tex-101-E, Part I.
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- 4.2 *Compost Sample:*
- 4.2.1 The pH test is performed on minus 4.75 mm (No. 4) material prepared according to the following:
- 4.2.1.1 Obtain a representative sample of approximately 200 g and dry to constant weight at 60°C (140°F).
- 4.2.1.2 Dry sieve material over a 4.75 mm (No. 4) sieve and test material passing.
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5. **PROCEDURE**

- 5.1 Heat sample and approximately 200 mL (7 fl. oz.) of distilled water to 45–60°C (112–140°F) in separate containers.
- 5.2 Add 30 g of the prepared dry soil binder to 150 mL (5 fl. oz.) of distilled water.
- 5.3 Stir the sample vigorously and disperse the soil well.
- 5.3.1 Stir the sample every 15 minutes for one hour to disperse the soil and make sure all soluble material is in solution.
- 5.4 After the sample has been added to the water for a period of one hour, record the temperature of the mixture and adjust the pH meter to that temperature.
- 5.5 Standardize the meter (buffer solution of pH 7.0) according to the manufacturer's recommendations.
- 5.6 Clean electrode with water.
Note 1—If scratches are noticed on glass bulb of electrode, replace with new electrode.
- 5.7 Immediately before immersing electrode into mixture, stir and remove glass stirring rod. Place electrode into solution and use stirring bar to make good contact between the solution and the electrode.
- 5.8 Place the tip of the electrode approximately 76 mm (3/4 in.) into the mixture. Allow reading to stabilize.
- 5.9 Read and record the pH value to the nearest tenth of a whole number.
Note 2—If the pH reading appears unstable, leave the electrode immersed until the reading has stabilized, approximately five minutes.
- 5.10 Remove electrode and rinse with water.
- 5.11 If the pH of sample is below 5 or above 9, standardize meter with appropriate buffer and repeat Sections 5.4 through 5.9.

6. REPORT

6.1 Report the pH to the nearest 0.1.