

Obtaining Site Soil Texture and Percent Gravel

Soil sample processing (protocol from New Mexico State University, College of Agricultural, Consumer and Environmental Science). For each soil sample bag, run the following procedure one time.

1. Oven-dry soil samples in aluminum soil tins in a soil oven.
2. Take weight of entire sample.
3. Using a mortar and pestle, break up soil clumps and pass through a 2 mm sieve to remove gravel and large particles. Remove all organic matter and roots. Presence of organic matter in the sample will negatively impact hydrometer readings in steps 10-11.
4. Weigh the gravel and inorganic material that did not pass through the sieve to obtain percent gravel.
5. Weigh 40-50 g of the sieved, fine texture soil into a stirring cup.
6. Fill the cup half way with distilled water and add 100 mL of 5% solution of dispersing agent (Sodium hexametaphosphate).
 - a. To make dispersing agent solution: Dissolve 40 g of sodium hexametaphosphate into 1 L distilled water. Allow to stand 4 hours before using. Solution should be used within 1 month.
7. Using a mixer, stir the solution on low for at least 5 min. Presence of froth indicates not all organic material was removed. Small amounts of froth may be scraped off the top of the solution; otherwise, repeat steps 3-7.
8. Transfer the stirred mixture to a 1 L graduated cylinder and fill with distilled water to the 1000 mL mark.
9. Prepare a 1 L graduated cylinder which contains 100 mL of dispersing agent and 900 mL of distilled water. This will be referred to as the BLANK.
10. Using a plunger, carefully mix the soil solution thoroughly by pulling the plunger upwards in short jerks. When the suspension is well mixed, remove the plunger and record start time to the second.
11. Slowly insert the hydrometer into the suspension and read at the end of 40 seconds.
12. Repeat the entire plunger procedure (steps 10-11) two more times to obtain an average 40 second reading. Rinse the hydrometer with distilled water between uses.
13. After the third 40 second reading, carefully insert a digital thermometer into the solution and record the temperature. After the temperature reading, do not disturb the cylinder. It must remain undisturbed for reading at the 2 hour and 3 hour marks.
14. While the cylinder containing the soil suspension is settling, record the hydrometer and temperature readings of the BLANK solution
15. Two hours after the initial 40 second reading of the suspension, record the hydrometer and temperature readings again. Only one hydrometer reading needs to be taken. Also take readings for the BLANK solution.
16. Three hours after the initial 40 second reading of the suspension, record the hydrometer and temperature readings again. Only one hydrometer reading needs to be taken. Also take readings for the BLANK solution.

17. Processing is complete, and the sample may be disposed of.