



GLOBE

Soil Particle Density

Data Sheets

Print the Particle Density Data Sheet:

- [Particle Density Data Sheet](#)
 - The data sheet has space to record particle density for one soil horizon. Print out a copy for each horizon you are sampling.
 - **Data Entry Note:** You will need to add information about each horizon you are sampling before entering your fertility data, from the “Create/Edit My Sites” button. For complete site definition, see the [Soil Characterization Protocol](#).

Or print the Particle Density Data Sheet with the field guide incorporated:

- [Particle Density with field guide](#) (3 pages)

GLOBE Soil Particle Density Data Sheet

Name: _____ Site Name: _____

Date: _____ Time (local): _____

Date soil is mixed with water: year _____ month _____ day _____

Length of time since soil was dried: _____

Storage since remove from oven: Plastic bag Airtight container

Soil Particle Density Measurements

All rows in gray are calculated automatically during data entry but can also be calculated by hand.

Horizon #: _____ Top depth: _____ cm Bottom depth: _____ cm	Sample Number		
	1	2	3
A. Mass of empty flask (g)			
B. Mass of soil + empty flask (g)			
C. Mass of soil (g) = B - A			
D. Mass of water + soil + empty flask (g)			
E. Mass of water (g) = D - A			
Temperature of water (°C)			
F. Density of water (g/mL)	1	1	1
G. Volume of water (mL) = E / F			
H. Volume of soil (mL) = 100 mL - G			
I. Soil Particle Density (g/mL) = C / H			

Record comments on the back of this page!

GLOBE Soil Particle Density Data Sheet and Field Guide (page 1)

Name: _____ Site Name: _____

Date: _____ Time (local): _____

Soil Particle Density Measurements: In the Lab

Horizon # : _____

1. Record the soil horizon the sample came from.

2. Record the horizon depths.

Top: _____ cm **Bottom:** _____ cm

3. Record the length of time since the soil was dried and how it has been stored.

Length of time since dried: _____

Stored in a: plastic bag
 airtight container

4. Place distilled water in squirt bottle.

5. Measure the mass of each empty flask without its cap.

Mass of empty flask

Sample 1: _____ g | **Sample 2:** _____ g | **Sample 3:** _____ g

6. For each sample, measure 25 g of dried, sieved soil. Place soil in the flask using the funnel. Be careful to transfer all the soil into the flask and not to spill any soil outside the flask. If soil is spilled outside the flask, repeat this step with another 25 g sample.

7. Measure the mass of the flasks containing the soil (without the stopper/cap).

Mass of soil + empty flask

Sample 1: _____ g | **Sample 2:** _____ g | **Sample 3:** _____ g

8. Use the squirt bottle to wash any soil sticking to the neck of the flask down to the bottom of the flask. Add about 50 mL of distilled water to the soil in each flask.

9. Bring the soil/water mixture to a gentle boil by placing the flask on a hot plate or holding it over a Bunsen burner. Gently swirl the flasks for 10 seconds once every minute to keep the soil/water mixture from foaming over. Boil for 10 minutes to remove air bubbles.

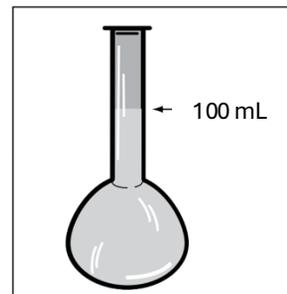
10. Remove the flasks from the heat and allow the mixture to cool.

11. Once the flasks have cooled, cap the flasks and let them sit for 24 hours.

GLOBE Soil Particle Density Data Sheet and Field Guide (page 2)

Soil Particle Density Measurements Continued

12. After 24 hours, remove the stopper/caps and fill the flasks with distilled water so that the bottom of the meniscus is at the 100 mL line.
13. Weigh the 100 mL-soil/water mixture in the flask (without the stopper/cap).



Mass of water + soil + empty flask

Sample 1: _____ g | **Sample 2:** _____ g | **Sample 3:** _____ g

14. Place the bulb of the thermometer in the flask for 2–3 minutes. When the temperature has stabilized, record the temperature.

Temperature of water

Sample 1: _____ °C | **Sample 2:** _____ °C | **Sample 3:** _____ °C

15. Particle size density is calculated automatically during data entry. If you would like to calculate it by hand, use the table on page 3.

Comments:

GLOBE Soil Particle Data Sheet and Field Guide (page 3)

Particle Density Measurements: Calculations

Transfer data from your data sheets on page 1 and 2 to the rows in white. Use the equations to calculate the rows in gray.

	Sample Number		
	1	2	3
A. Mass of empty flask (g)			
B. Mass of soil + empty flask (g)			
C. Mass of soil (g) = B - A			
D. Mass of water + soil + empty flask (g)			
E. Mass of water (g) = D-A			
Temperature of water (°C)			
F. Density of water (g/mL)	1	1	1
G. Volume of water (mL) = E / F			
H. Volume of soil (mL) = 100 mL - G			
I. Soil Particle Density (g/mL) = C / H			