

Calculating Bulk Density

1. What is the bulk density of a 765 g dry soil sample that has an undisturbed volume of 510 cm³ ?

2. What is the porosity of the soil in Question #1? (assume Particle Density (D_p). = 2.65 g/cm³)

3. Use the data below to answer the following questions.

- Weight of wet soil = 70.5 g
- Weight of dry soil = 62.5 g
- Volume of water before adding soil = 70 mL
- Final volume of soil-water mixture = 93 mL
- Total soil volume = 40 cm³

a. Calculate the bulk density (in Mg/m³)

$$D_b = W_s/V_t \quad (D_b = \text{bulk density})$$

b. Calculate the particle density (in Mg/m³).

$$D_p = W_s/V_s \quad (D_p = \text{particle density})$$

c. Calculate the percent pore space.

$$\text{PS} = 1 - (\text{Db}/\text{Dp})100\% \quad (\text{PS} = \text{pore space})$$