

# Adobe Engineering Challenge

## Pre-field trip soil testing



The foundation of any good adobe is the soil that it comes from. The size of particles and their proportions in the soil will determine the quality of the adobe. Too much clay (smallest particles) will cause cracking. Too much sand (largest particles) will cause crumbling. Skilled adobe craftsmen learn to do these tests through feel, instinct, and experience. **Start with a sample of soil from your schoolyard or home.**

### The Smell Test:

Take a whiff. Is it  
 musty?

It contains **organic matter**.

### The Touch Test:

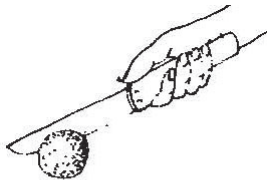
Crumble the soil between the fingers and palm of the hand. Is it  
 rough and without cohesion when moist?  
 slightly rough and somewhat cohesive when moist?  
 lumpy and resist crushing and sticky when moist?

The soil is **sandy**.  
 The soil is **silty**.  
 The soil is **clayey**.

### The Washing Test:

Wash your hands with the moistened soil. Can you  
 easily rinse your hands clean?  
 somewhat easily rinse your hands and the soil seems powdery?  
 only rinse with difficulty and with a soapy sensation?

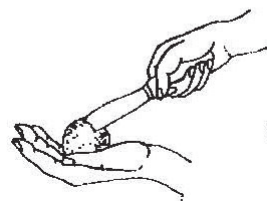
The soil is **sandy**.  
 The soil is **silty**.  
 The soil is **clayey**.



### The Luster Test:

Form a ball of moistened dirt and cut in two with a knife. Is the revealed surface  
 dull?  
 shiny?

The soil is **silty**.  
 The soil is **clayey**.



### The Adhesion Test:

Form of a ball of moistened dirt and stick a knife into it. Does the knife goes in  
 very easily?  
 without much difficulty?  
 only with difficulty?

The soil contains **little clay**.  
 The soil contains **some clay**.  
 The soil contains **lots of clay**.

### The Sedimentation Test:

Fill the jar 1/4 full of soil, then fill the remaining 3/4 with water. Cover, then shake the jar vigorously. Let the contents settle over several hours or days.

The total depth of sediment (T) is \_\_\_\_\_ centimeters.

The depth of sand (A) is \_\_\_\_\_ centimeters.  
 The sample has  $(A \div T \times 100)$  \_\_\_\_\_ % **sand**.

The depth of silt (B) is \_\_\_\_\_ centimeters.  
 The sample has  $(B \div T \times 100)$  \_\_\_\_\_ % **silt**.

The depth of clay (C) is \_\_\_\_\_ centimeters.  
 The sample has  $(C \div T \times 100)$  \_\_\_\_\_ % **clay**.

