Soil Texture –
Determined by the size and type of particles that make up the soil. During the testing procedure, sand particles are retained on a sieve while silt and clay pass through. Silt and clay are separated via particle settlement.

Stoke’s Law –
Can be used to determine the rate of sedimentation. Thanks to Stoke’s Law, we know silt particles settle to the bottom of our texture beaker within two hours while clay particles remain suspended in the solution.

\[(F_d) = 6\pi\eta rv\]

Textural Triangle –
Used to classify soil types based on the sand, silt, and clay distribution.
HAND TEXTURE

START

Place approximately 25 g soil in palm. Add water dropwise and knead the soil to break down all aggregates. Soil is at the proper consistency when plastic and moldable, like moist putty.

Add dry soil to soak up water

Does soil remain in a ball when squeezed?

Yes

Is soil too dry?

Yes

Is soil too wet?

Yes

SAND

Place ball of soil between thumb and forefinger gently pushing the soil with the thumb, squeezing it upward into a ribbon. Form a ribbon of uniform thickness and width. Allow the ribbon to emerge and extend over the forefinger, breaking from its own weight.

Does soil form a ribbon?

Yes

LOAMY SAND

Does soil make a weak ribbon less than 2.5 cm long before breaking?

Yes

Excessively wet a small pinch of soil in palm and rub with forefinger.

No

SANDY LOAM

Does soil feel very gritty?

Yes

SANDY CLAY

Does soil feel very gritty?

Yes

SANDY CLAY LOAM

Does soil feel very gritty?

Yes

SANDY CLAY

Does soil feel very gritty?

Yes

SILT LOAM

Does soil feel very smooth?

Yes

SILTY LOAM

Does soil feel very smooth?

Yes

SILTY CLAY

Does soil feel very smooth?

Yes

SILTY CLAY

Does soil feel very smooth?

Yes

LOAM

Neither grittiness nor smoothness predominates

CLAY LOAM

Neither grittiness nor smoothness predominates

CLAY

Neither grittiness nor smoothness predominates

Source: USDA - NRCS
TEXTURE... Why measure texture?

Soil particles are the main building blocks of soil, and affect all processes. Without knowing the texture of a soil, it is hard to interpret the values measured for other soil properties. For example, a sandy soil with an organic matter content of 2.5% and aggregate stability of 40% would be considered pretty healthy, while a clayey soil with those same numbers would not. Texture itself is not an indicator of soil health, because it generally can’t be changed by human management (at least not on a large scale!)

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Total Dry Soil Weight (g)</th>
<th>Tin 1 (SAND) Can ID</th>
<th>Tin 1 (SAND) Weight (g)</th>
<th>Tin 1 + Dry SAND Weight (g)</th>
<th>Tin 2 (SILT) Can ID</th>
<th>Tin 2 (SILT) Weight (g)</th>
<th>Tin 2 + Dry SILT Weight (g)</th>
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Sand % = (oven dried sand mass / original sample mass) x 100%
Silt % = (oven dried silt mass / original sample mass) x 100%
Clay % = 100% - (Sand % + Silt %)

Sand and Silt Tins Ready for Drying Oven

Rapid Texture Station