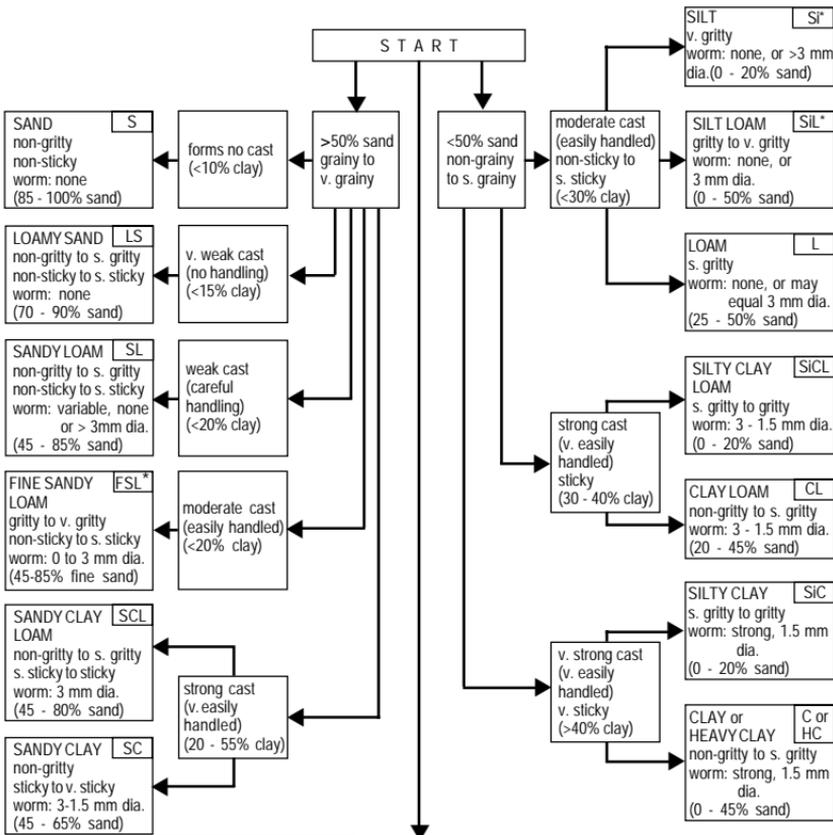




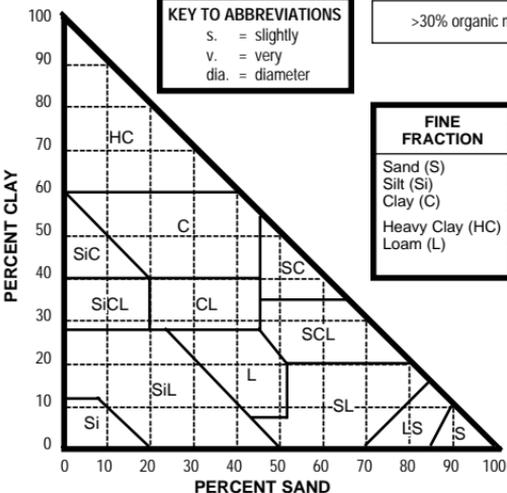
**Soil texture** is the relative proportion of various "size fractions" of a soil:

- **Coarse fragments** consist of particles greater than 2 mm in diameter. They are estimated visually as a percentage of the whole soil:  
 $\% \text{ stones} + \% \text{ cobbles} + \% \text{ gravels} + \% \text{ fine fraction} = 100\%$  (total soil)
- The **fine fraction** consists of particles less than or equal to 2 mm in diameter (for non-spherical particles, see accompanying figure):  
 $\% \text{ sand} + \% \text{ silt} + \% \text{ clay} = 100\%$  (fine fraction)
- Particles of the two size fractions are defined on the accompanying figure.
- The **relative proportion of fine fraction** particles (**sand**, **silt** and **clay**) are estimated through the use of their unique properties of "feel". **Sand** can always be felt as individual **grains**, but silt and clay generally cannot. Dry **silt** feels floury, and wet silt is **slippery** or soapy but not sticky. Dry **clay** forms hard lumps, is very sticky when wet, and plastic (like plasticene) when moist.
- Most soils are a mixture of sand, silt and clay, so the graininess, slipperiness or stickiness will vary depending upon how much of each particle size is present. As the amount of clay increases, soil particles bind together better, form stronger casts and longer, stronger worms. As sand and silt increase, the soil binding strength decreases, and only weak to moderately strong casts and worms can be formed. The various classes of soil texture (defined on the **textural triangle** in the accompanying figure) are named by a combination of the dominant particle size, the term **loam** meaning a relatively even mix of the three.
- The field determination of soil texture is subjective and can only be done consistently with training and experience. The field tests, outlined below, are used in sequence with the accompanying flow chart to assist in the field determination of soil texture:
  - 1) **Graininess Test:** Rub the soil between your fingers. If sand is present, it will feel "grainy". Determine whether sand comprises more or less than 50% of the sample.
  - 2) **Moist Cast Test:** Compress some moist soil by clenching it in your hand. If the soil holds together (i.e., forms a "cast"), then test the durability of the cast by tossing it from hand to hand. The more durable it is, the more clay is present.
  - 3) **Stickiness Test:** Wet the soil thoroughly and compress between thumb and forefinger. Degree of stickiness is determined by noting how strongly the soil adheres to the thumb and forefinger upon the release of pressure, and how much it stretches. Stickiness increases with clay content.
  - 4) **Worm Test:** Roll some moist soil between the palms of your hands to form the longest, thinnest worm possible. The more clay there is in the soil, the longer, thinner and more durable the worm will be.
  - 5) **Taste Test:** Work a small amount of soil between your front teeth. Silt particles are distinguished as fine "grittiness", unlike sand which is distinguished as individual grains (i.e., graininess). Clay has no grittiness at all.
- Well-decomposed **organic matter** (humus) imparts silt-like properties to the soil. It feels floury when dry and slippery when moist, but *not* sticky and *not* plastic. However, when subjected to the taste test, it feels non-gritty. It is generally very dark when moist or wet, and stains the hands brown or black. Humus-enriched soils often occur on wet sites in association with a heavy moss cover, and on grasslands. Humus is *not* used as a determinant of soil texture; an estimate of the silt content of any humus-enriched mineral soil should be reduced accordingly.
- "Organic" soil samples are those that contain more than 30% organic matter. Soil texture is *not* determined on organic samples. Most organic soils and deep organic horizons are found on wet sites, often in depressions or on flood plains; also in association with a dense moss cover (frequently *Sphagnum* spp.).

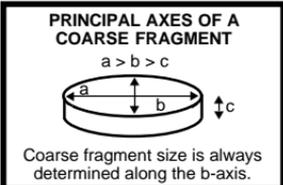
TASTE TEST STICKINESS TEST WORM TEST	MOIST CAST TEST	GRAININESS TEST (ORGANIC MATTER TEST)	MOIST CAST, STICKINESS TESTS	TASTE TEST WORM TEST
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**KEY TO ABBREVIATIONS**  
 s. = slightly  
 v. = very  
 dia. = diameter



FINE FRACTION	PARTICLE DIAMETER	COARSE FRAGMENTS	PARTICLE DIAMETER
Sand (S)	2 - .05 mm	Stones	>250 mm
Silt (Si)	.05 - .002 mm	Cobbles	250 - 75 mm
Clay (C)	<.002 mm	Gravels	75 - 2 mm
Heavy Clay (HC)	>60% clay		
Loam (L)	Mix of sand, silt and clay		



\* Silt feels slippery or soapy when wet; fine sand feels stiffer, like grinding compound or fine sandpaper.