

Determining soil texture in the field

Soil texture depends on the relative proportions of the three main types of mineral particles in the soil. These vary in size as shown in the table below. Gravel or other larger particles should be removed before testing for texture.

Sand	2.0 – 0.02 mm
Silt	0.02 – 0.002 mm
Clay	< 0.002 mm

Take a small quantity of soil, about the size of a marble, and moisten if necessary. The soil should be damp, not waterlogged or dry – add some moisture if needed (or extra dry soil if you get it too wet). Work between the fingers until it is reasonably uniform, then run through these questions:

1. Can the soil be rolled into a ball?
 yes.....go to 2
 no.....Sand

2. On further moistening can the soil be rolled into a thick (10-15 mm) sausage between the palms?
 yes.....go to 3
 no.....Loamy Sand

3. On further moistening can the soil be rolled into a thin (5 mm) sausage between the palms?
 yes.....go to 4
 no.....Sandy Loam

4. Can the thin sausage be bent into a U-shape without cracking?
 yes.....go to 5
 no, and feels gritty..... Sandy Silt Loam
 no, and feels doughy.....Silt Loam

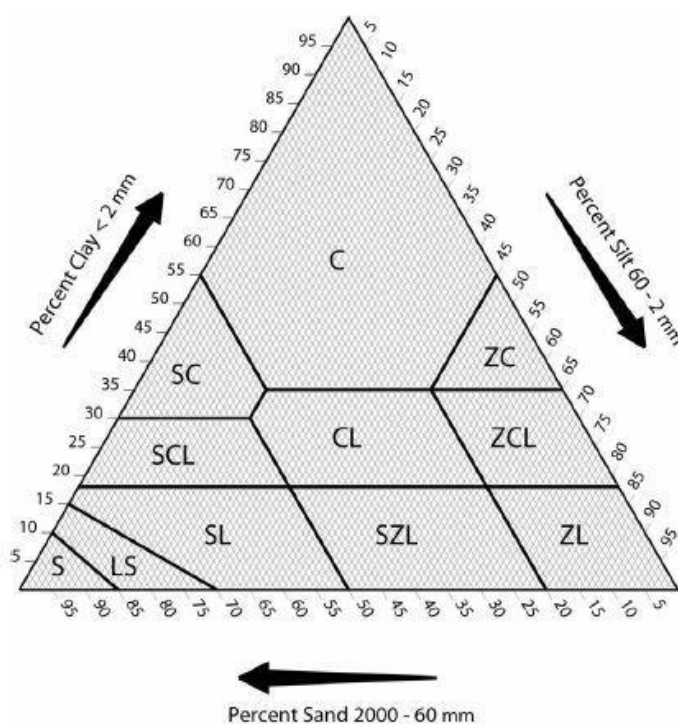
5. Can the thin sausage be bent into a ring without cracking?
 yes.....go to 7
 no..... go to 6

6. Does the soil feel:
 very gritty?..... Sandy Clay Loam
 slightly gritty? Clay Loam
 like dough?Silty Clay Loam

7. Does a surface rubbed with finger and thumb become:
 very smooth and very polished?..... Clay
 smooth and slightly polished?.....Silty Clay
 smooth with sand grains visible?.....Sandy Clay

When the soil texture has been determined using the key the result can be compared with the description of the properties of a soil of that texture given overleaf.

The approximate composition of the soil in terms of percentages of the three mineral components can be read from the soil texture triangle shown below.



Based on:-

Historic England (2015) *Geoarchaeology. Using Earth Sciences to Understand the Archaeological Record.*
<https://historicengland.org.uk/research/methods/archaeology/geoarchaeology/>

The following textural descriptions for each class can help confirm the decision from the key:

S – Sands do not stain the fingers when wet. They feel gritty, lacking cohesion when wet and are loose when dry. Any water squirted onto the surface quickly disappears and the surface returns to matt.

LS – Loamy Sands feels gritty but when moist can form a weak fragile ball, but are not sticky. The ball quickly collapses. Unlike sands the surface will retain a glistening wet look when water is applied.

SL – Sandy Loams feel gritty, but easily mould to form an easily deformed ball. Rolling causes the soil to break into short threads. The wet soil is slightly sticky, unlike loamy sands.

SZL – Sandy Silt Loams when moist mould more easily than sandy loams because of the silt content. They feel equally gritty and soapy. The wet soil clings to fingers.

ZL – Silt Loams when moist form an easily deformed ball, but the soapy feel of the silt predominates. The wet soil clings to fingers.

CL – Clay Loams usually easily moulded and rolled into threads. Balls are moderately robust and depending on the clay content either smear or ruck. Stickier than sandy loams and sandy silt loams, but are not as sticky as clays.

SCL – Sandy Clay Loams are distinctly more sticky than a sandy loam, but still gritty. The moist soil moulds into a deformable coherent ball which smears when rubbed. The sand particles are usually visible in the smeared surface.

ZCL – Silty Clay Loams have a smooth soapy feel. The moist soil forms an easily deformed ball. The soil smears slightly. When wet, silty clay loams are more sticky than silt loams, but like silt loams, they cling to the fingers.

C – Clays mould to form durable balls, which are difficult to deform. The soil smears to give a polished surface. The soil can be rolled into long threads provided it is sufficiently moist. Wet clays are very sticky but do not adhere to fingers. They do not feel smooth and soapy.

SC – Sandy Clays bind together strongly. Deformation of a ball is difficult. Sand is obvious on the smeared surface. When wet it is very sticky.

ZC –Silty Clays are similar to clays but feel smoother and more buttery when moist. They adhere to the fingers and are very sticky.