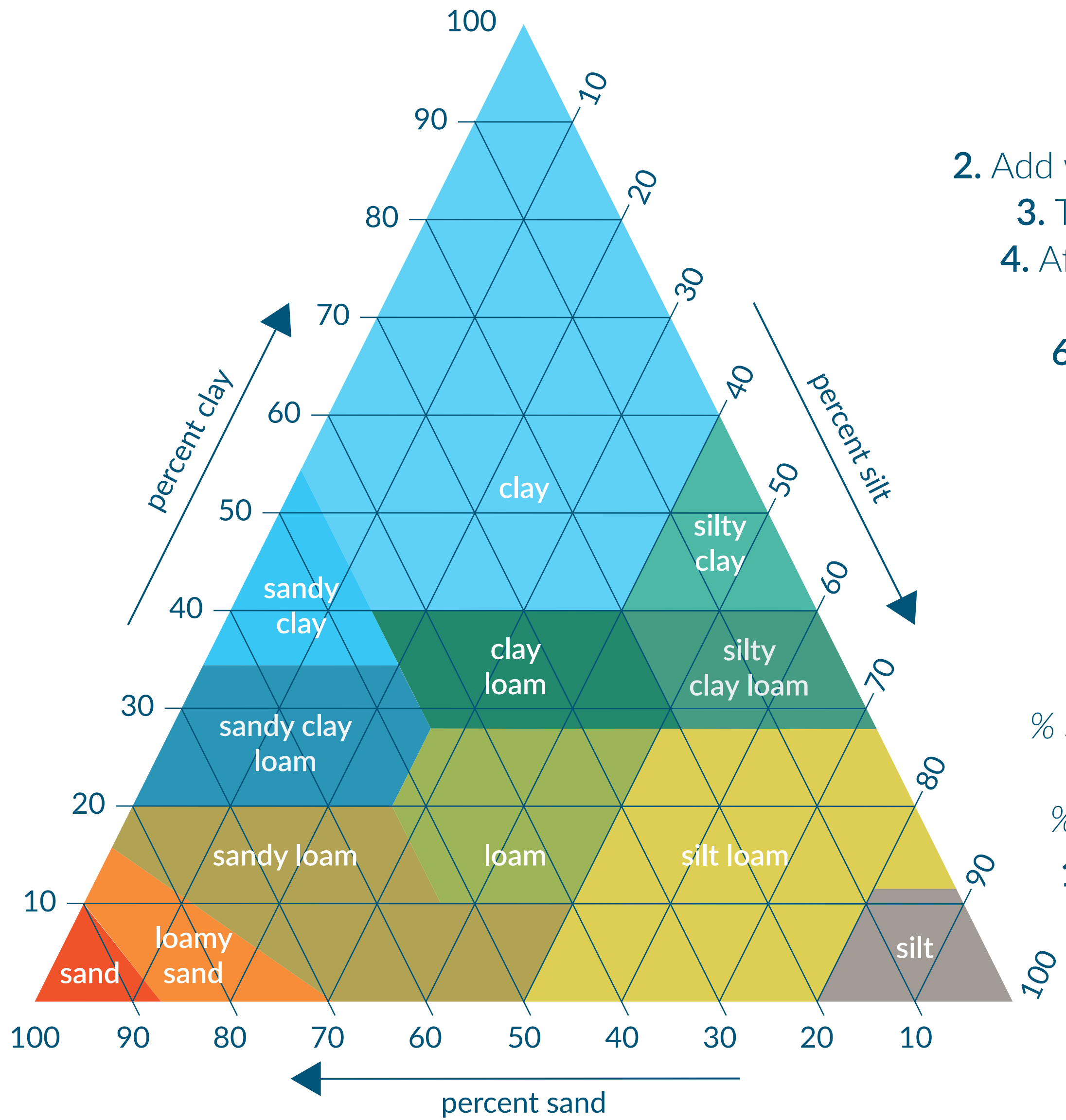


# SOIL STABILITY TEST

## MATERIALS

- Glass jar (a straight-sided jar with flat bottom is best)
- Water
- Ruler in millimeters
- Marker
- Stopwatch
- Pen and paper



## INSTRUCTIONS

1. Add soil to the jar until ½ full.
2. Add water. Leave some space at the top of the jar.
3. Tighten the lid and shake for about 3 minutes.
4. After one minute, draw a line to mark the sand.
5. After one hour, draw a line to mark the silt.
6. After 24 hours, draw a line to mark the clay.
7. Measure the distance between the lines in millimeters and record each value for sand, silt and clay.
8. Add up the values for sand, silt, and clay to find the total.
9. Calculate the percentage of each layer.  
*For example:*  
 $\% \text{ Sand} = \text{amount of sand in mm} \div \text{total soil} \times 100$   
 $\% \text{ Silt} = \text{amount of silt in mm} \div \text{total soil} \times 100$   
 $\% \text{ Clay} = \text{amount of clay in mm} \div \text{total soil} \times 100$
10. Trace the line for the percentage of sand, silt and clay on the soil triangle.
11. Look to see where the lines intersect - this is your soil type!

## ? WHAT DOES IT MEAN

● If your soil type is Sand, Loamy Sand or Sandy Loam, you must fully line your latrine pit.

# Soil types and pit lining

## Soil types that require lining

Soft sands and gravels

Unconsolidated soils (loose)

Filled land

Compressed mudstones and shales

## Soil types that do not require lining

Soils with a significant clay content\*

Most consolidated sedimentary rocks (strongly bonded)

Soils with a high proportion of iron oxides (laterites)

[Source: WEDC, Loughborough University, 2014](#)

## OTHER CONSIDERATIONS

\* **Clay soils:** Having high clay content does not necessarily mean a lining is not required. Soil stability can change with soil moisture. The characteristics of the soil when it is excavated may change as the soil dries out. This is especially true if the soil is subject to periodic wetting and drying, such as when the water table rises and falls at different times of the year.

**Layered soils:** Sometimes different soil types lay on top of each other. In layered soils, the "weakest link" will give way and cause a pit to collapse.

**Previously excavated soils:** Soils that have previously been disturbed by digging or moving are rarely as strong as undisturbed soils. Exercise caution if you suspect that the soil has been excavated before.

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**When in doubt, line the whole pit.**