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Fundamentals of Soil Science

3. Physical Properties of Soils .

3.1. Soil Texture . .

... The relative size of the soil particles is expressed by the term **texture**, which refers to the fineness or coarseness of the soil. More specifically, texture is the relative proportions of sand, silt, and clay. .

... Sand and silt consist mainly of particles resulting from the physical breakdown of rocks and minerals. ...  
Chemical weathering on the surfaces of rocks, sand, and silt particles results in ions that recombine to form fine-sized particles of clay size. .

3.2.1. Soil Separates . . .

The mineral soil particles have been divided into groups entirely on the basis of size. The groups of particles are termed soil separates. These soil separates are: sand (2.00 to 0.05 mm), silt (0.05 to 0.002 mm), clay (less than 0.002 mm).

Sand particles are comparatively large size and hence expose little surface compared to that exposed by an equal weight of silt or clay particles. Because of the small surface of the sand separates, the part they play in the chemical and physical activities of a soil is small. ... Silt has more surface area per gram and a faster weathering rate and release of soluble nutrients for plant growth than sand. Silt particles feel smooth like a powder and have little tendency to stick together or adhere to other particles. ... Clay may have thousands of times more surface area per gram than silt and nearly a million times more surface area than very coarse sand.

### 3.2.2. Texture Classes

Suppose the results of a mechanical analysis showed that a soil contained 15 percent clay, 65 percent sand and 20 percent silt. By using the textural

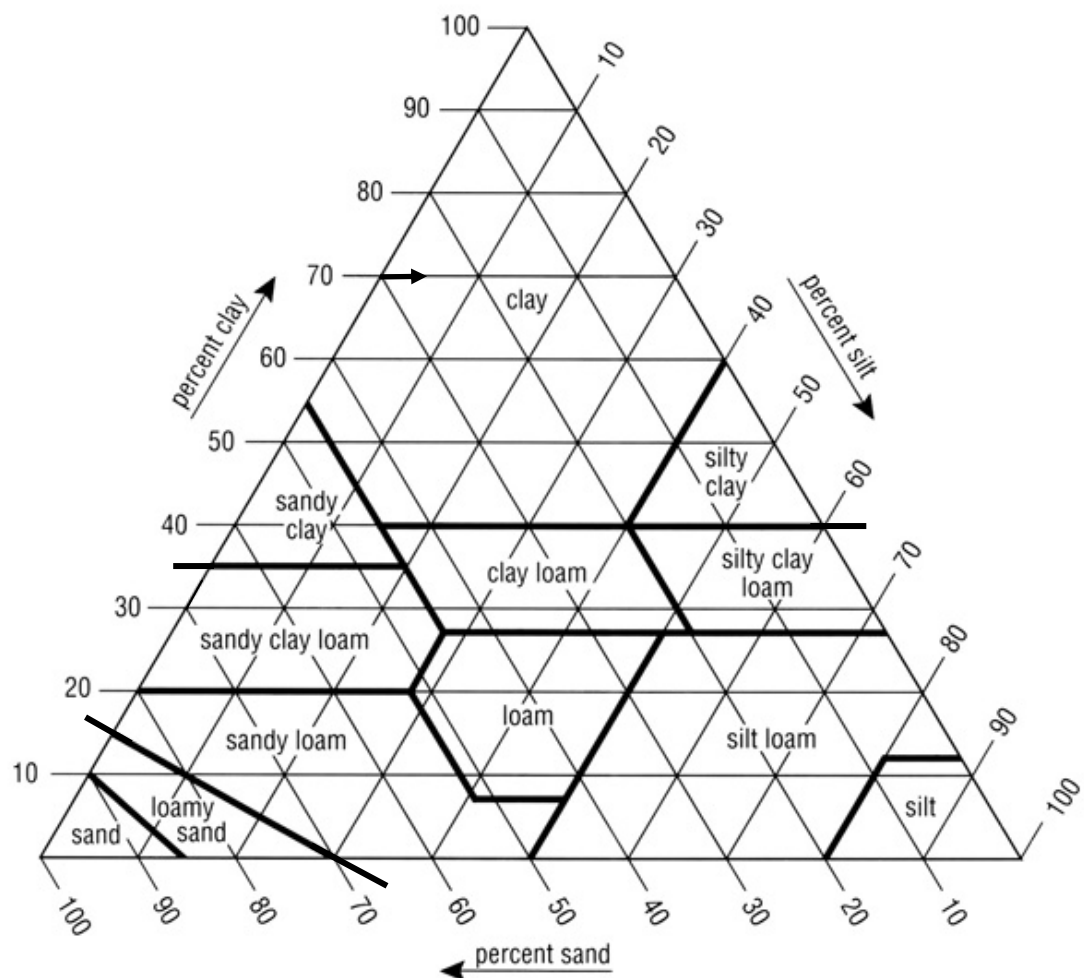
triangle (Figure 1), answer these question: What is the textural class of this soil?. What is the textural class of the soil containing equal amounts of the three separates?

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## References

Foth, H. D. 1978. Fundamentals of Soil Science. John Wiley & Sons, New York, USA

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