# Soil organic content

This is basically just a trimmed down version of the method in the Kellogg Soil Survey Laboratory Methods Manual, Soil Survey Investigations Report No. 42 Version 5.0

## Authorship

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## Application

The mineral content consists of the plant ash and soil particles that remain after removal of organic matter. The determination of organic matter by loss on ignition is a taxonomic criterion for organic soil materials (Soil Survey Staff, 2014).

## Summary of Method

* Dry sample overnight at 110oC.
* Cool and weigh.
* Place sample in a cold muffle furnace and raise the temperature to 400oC.
* Heat sample overnight (16 h), cool, and weigh.
* The ratio of the weights (400oC/110oC) is the mineral content percentage.
* The Organic content % can be derived from the mineral content %.

## Interferences

The sample must be placed in a cold muffle furnace to prevent rapid combustion and sample splattering

## Safety

Use caution when the muffle furnace is hot. Wear protective clothing and goggles. Handle the heated material with tongs.

## Equipment

* Metal weighing tins
* Oven, 110oC
* Muffle furnace, 400oC
* Electronic Balance, 0.01-g sensitivity
* A lab notebook for recording values

## Procedure

1. Place a 10 to 15 g sample in a tared weighing tin.
2. Dry sample at 110oC overnight.
3. Remove sample from oven, cap, and cool in a desiccator.
4. When cool, record weight to nearest 0.01 g
5. Place sample and weighing tin in a cold muffle furnace. Raise temperature to 400oC. Heat overnight (16 h).
6. Remove sample from oven, cap, and cool in a desiccator.
7. When cool, record sample weight to nearest 0.01 g.

## Calculations

* Mineral\_Content\_(%) = RW / ODW \* 100
  + Where:
    - RW = Residue\_weight\_after\_ignition
    - ODW = Oven\_dry\_soil\_weight
* Organic matter percent can then be calculated as follows:
  + Organic\_Content\_(%) = 100 - Mineral\_Content\_(%)

# Report

Report mineral content to the nearest whole percent.

# Precision and Accuracy

Precision and accuracy data are available from the KSSL upon request.

# References

Soil Survey Staff. 2014. Keys to soil taxonomy. 12th ed. USDA-NRCS