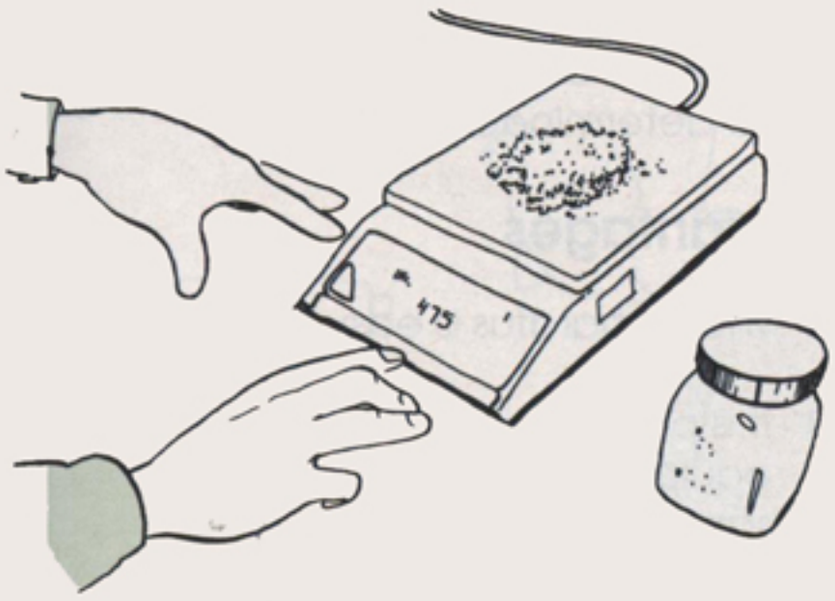
CALCIMETER

The prepared sample material is weighed.



The carbonate content of the soil is a sure indication of the fertility of the soil. To be able to determine the carbonate content of the soil Eijkelkamp (together with Dutch research institutes) developed a calcimeter that meets the standards NEN 5757 and DIN 19682 and 19684.

The calcimeter works in accordance with the method of Scheibler. The method Scheibler involves a determination of the carbonate content in the soil based on a volumetric method.
The carbonates present in the sample are converted into CO_2 by adding hydrochloric acid to the sample.
As a result of the pressure of the CO_2 released, the water in a burette that is de-aerated, rises. The difference in level measured is an indication for the released quantity of CO_2, from which the carbonate content can be calculated. The carbonate content is expressed as an equivalent calcium carbonate content.

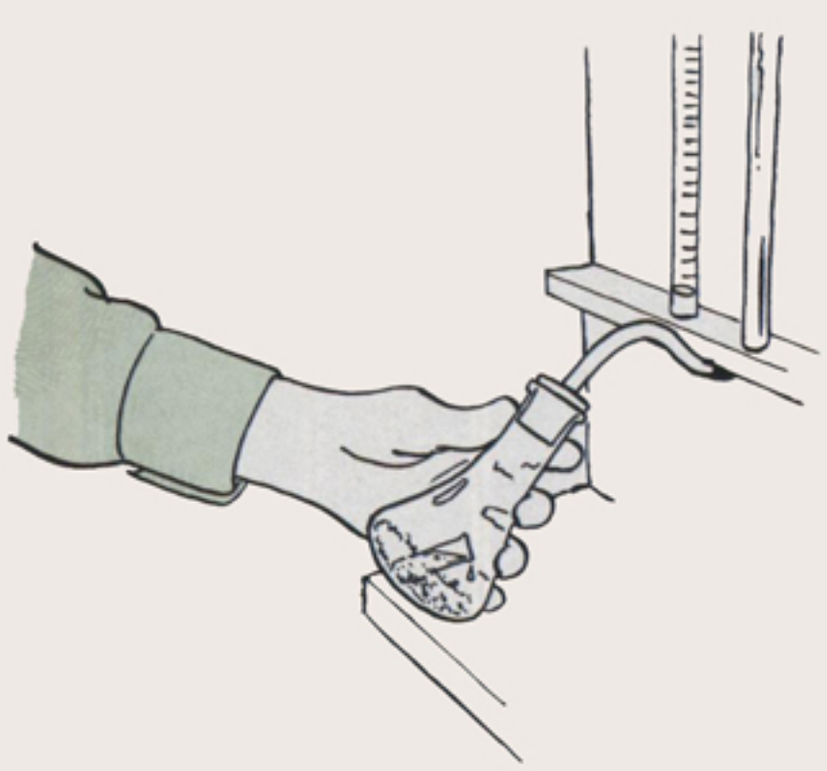
Advantages by comparison to other methods (for instance the Wesemael- and Anderson methods) are:

- No oven required to dry the silica gel.
- No other chemicals needed.
- No long waiting periods.
- No very accurate weighing equipment needed.
- Less vulnerable glass parts.
- It is easier to determine the content using the volumetric method then by weighing the gas.

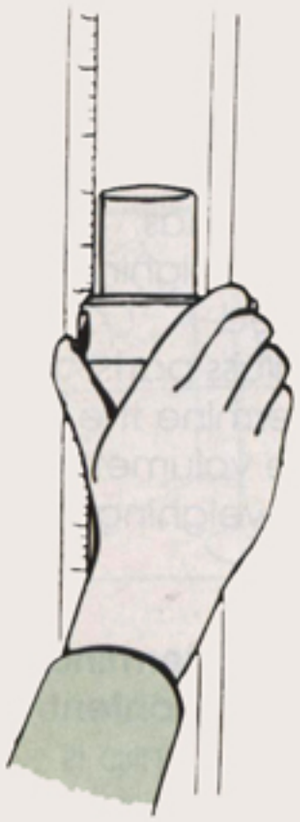
08.53 Calcimeter for determination of the carbonate content

The calcimeter by Eijkelkamp is suitable for the simultaneous determination of the carbonate content in 5 samples. Where possible the vulnerable glass was replaced by synthetic materials. Because hydrochloric acid is used a stable and ergonomic design was chosen. The calcimeter is delivered complete with reaction vessels and test tubes (without reagents).

By holding the reactor vessel under an angle the hydrochloric acid flows from the test tube across the sample.



Setting the zero level.



Per reaction approximately one hour is required. Carbonates that are hard to dissolve, such as sea shells, take more reaction time. The quantity of sample needed is determined beforehand by treating a part of the sample with hydrochloric acid on a watch glass. The carbonate content is estimated on the basis of the extend and the period of bubbling. Based on this estimate the quatity of sample for the analysis is determined.

With this calcimeter no balloon is used to keep the CO_2 separate from the water (to prevent any gas from dissolving in the water). This results in much more accurate measuring results.

As a consequence of the repeatability and the accuracy, a series of measurements should be executed in a room in which there are no differences in temperature exceeding 4 °C. In addition the reagents used must meet the standards for analysis.

It should also be considered that other gasses (for instance in polluted soils) may be released. The gas will then have to be purified first and the CO_2 will have to be determined otherwise.

Advantages

- The apparatus is easy to control.
- It is possible, by contrast to other equipment, to process multiple samples simultaneously.
- A very stable and gas-proof system.
- Compact, ergonomic design.
- Less vulnerable glass parts.
- Not tied to a fixed location in the laboratory (moveable).
- Adjusting is easy.
- Meets the standards NEN 5757 and DIN 19682 and 19684.