

Nitrogen determination in soil

*KjelDigester K-449, KjelMaster K-375 with KjelSampler K-376:
Nitrogen determination in soil according to the Kjeldahl method*

1. Introduction

An easy and reliable method for the determination of nitrogen in soil, according to EN 13342 and DIN ISO 11261, is introduced below.

2. Experiment

Sample:

Urea stock solution, 1.0560 g Urea/L → 0.4925 mg N/mL

Soil 1 (CRM from University of Wageningen (NL)), nitrogen content declared as "Acid extractable (So-called Totals)" 2.04 g/kg

Soil 2 (CRM from University of Wageningen (NL)), nitrogen content declared as "Acid extractable (So-called Totals)" 1.57 g/kg

Equipment:

KjelDigester K-449 (the parameters used are also valid for K-446)

Scrubber K-415 TripleScrub^{ECO}.

KjelMaster K-375 with KjelSampler K-376

Procedure:

The Sample is digested and afterwards titrated and distilled.

Table 1. Parameters and Settings for K-375 / K-376.

Parameters	Settings
Reaction time	5 s
Distillation time	180 s
Titration type	Boric acid
Sensor type	Potentiometric



3. Results

The Results of the determination of nitrogen in different soil samples are shown in Table 2.

Table 2. Results of the determination of nitrogen in different soil samples (n=5).

Sample	Ø Nitrogen content [%]	RSD [%]	Ø g N/kg	RSD [%]
Soil 1	0.2095	3.1	2.09	3.1
Soil 2	0.1584	1.6	1.58	1.6

4. Conclusion

The determination of nitrogen in soil using the KjelDigester K-449 and KjelMaster system K-375 / K-376 provides reliable and reproducible results. These results correspond well to the certified values of the different sample with low relative standard deviation (RSD). For further information please download the full application note from the website.

5. References

Application Note No. 124/2013: Nitrogen determination in soil
 Application Note 100/2013, Nitrogen Determination in Reference Substances –Operational Quality Check Procedure
 DIN ISO 11261:1995 Soil quality –Determination of total nitrogen –Modified Kjeldahl Method
 EN 13342:2000 Characterization of sludges –Determination of Kjeldahl nitrogen
 Kjeldahl Calculator App
 Operation Manual of KjelDigester K-446 / K-449
 Operation Manual of Scrubber K-415
 Operation Manual of KjelMaster system K-375 / K-376