Nitrogen & protein determination in corn, flour and soy

KjelDigester K-449, KjelMaster K-375 with KjelSampler K-376:
Nitrogen and Protein Determination in Corn, Flour and Soy according to the Kjeldahl Method

1. Introduction

An easy and reliable method for the determination of total nitrogen and protein in corn, flour and soy, according to ISO 20483:2006 and LFGB §64 L15.00-3, is introduced below.

2. Experiment

Sample:
Corn with a protein content of 9 g/100 g [1]
Wheat flour with a labelled protein content of 14 g/100g·
Soybeans with a protein content of 35 g/100g [1]

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:
First the sample is homogenized, then the sample is digested and in a last step the sample is distilled and titrated.

Table 1. Parameters and Settings for the 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 the protein content in different samples is shown in Table 2.

Table 2. Results of the determination of protein content in different samples (n=4).

Sample	Labelled protein content [g/100g]	Ø measured protein content [%]	RSD [%]
Corn	9	9.34	0.8
Wheat flour	14	14.50	0.0
Soybeans	35	36.23	0.5

4. Conclusion

The determination of nitrogen and protein in corn, wheat flour and soybeans using the KjelDigester K-449 and KjelMaster system K-375 / K-376 provides reliable and reproducible results. These results correspond well to the labelled values with low relative standard deviations (RSD). For further information please download the full application note from the website.

5. References

Application Note No. 110/2013: Nitrogen & protein determination in corn, flour and soy
[1] Souci Fachmann Kraut: Die Zusammensetzung der Lebensmittel. Nährwert-Tabellen, CRS Press, 7., revidierte und ergänzte Auflage. 2008
ISO 20483:2006 Cereals and pulses –Determination of the nitrogen content and calculation of the crude protein content –Kjeldahl method
LFGB §64 L15.00-3
Kjeldahl Calculator App
Operation Manual of KjelDigester K-446/K-449
Operation Manual of Scrubber K-415
Operation Manual of KjelMastersystem K-375/K376