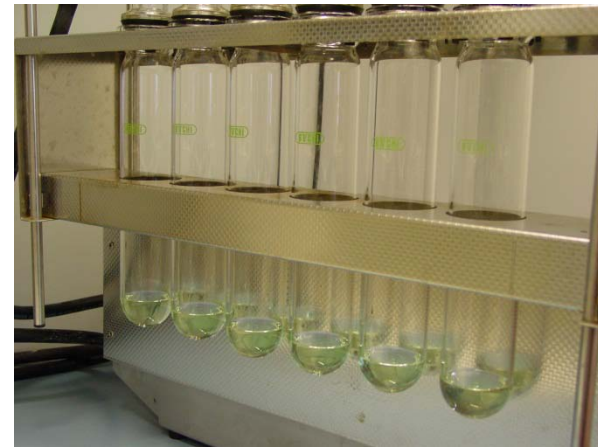
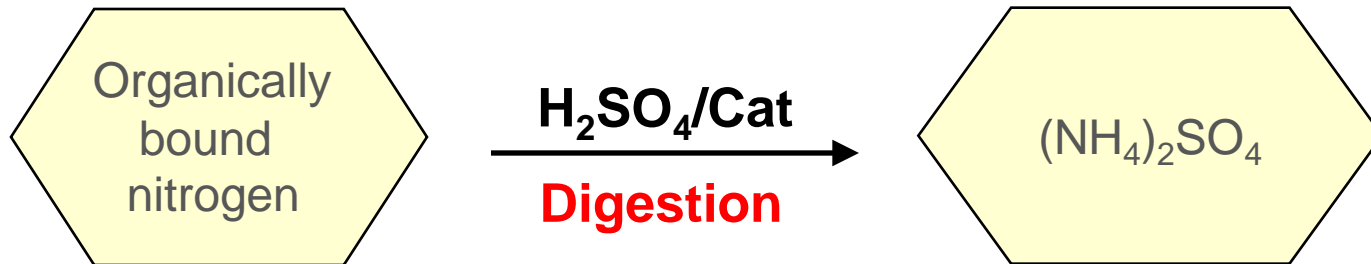


Kjeldahl- Digestion



Digestion units - two different techniques

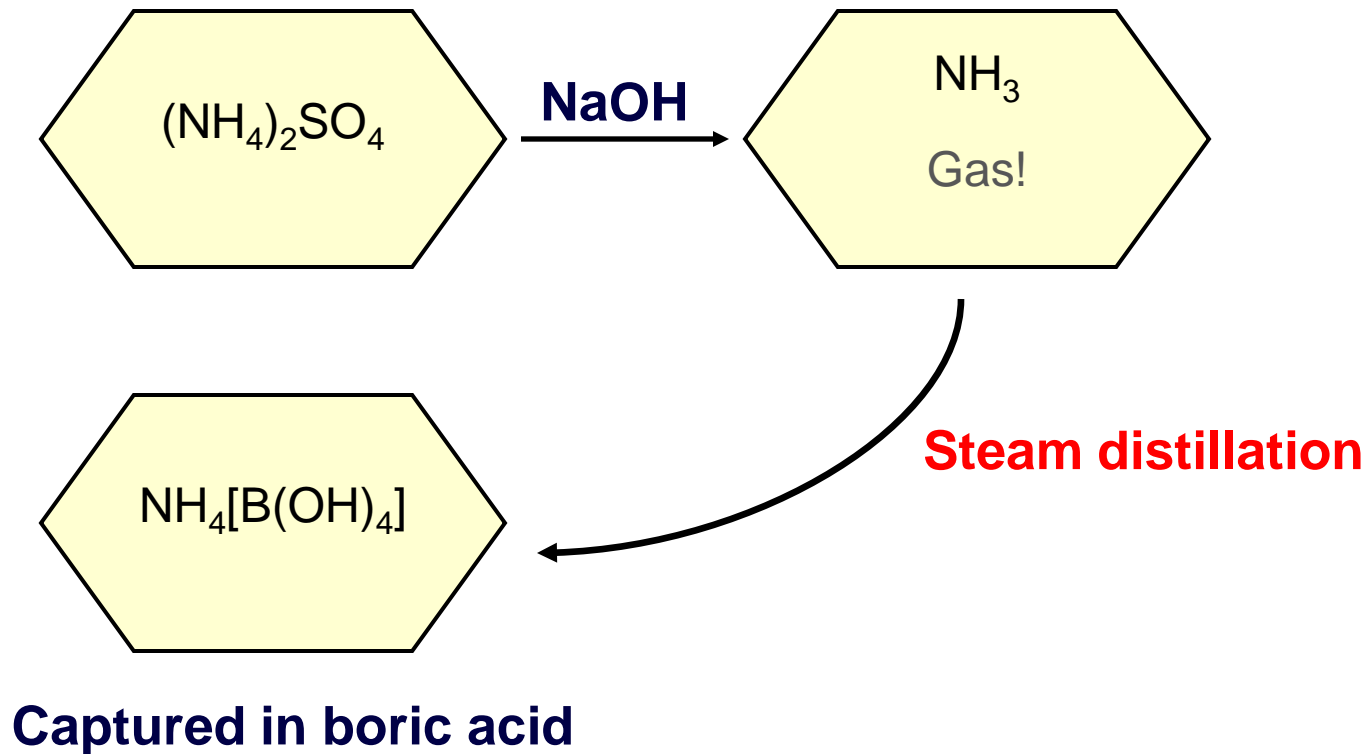


IR-Heating



Block heating

Steam Distillation



Range of distillation units



K-350



K-355

KjelFlex
K-360

KjelMaster
K-375

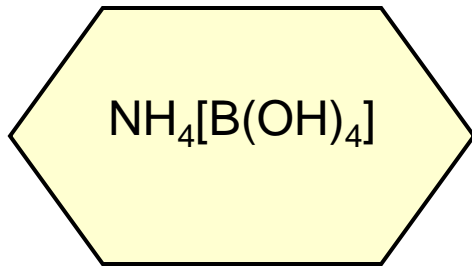


.... with Autosampler

User interfaces

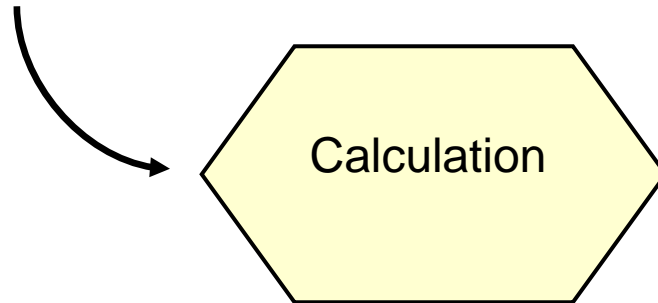


Titration

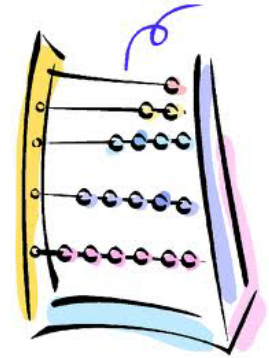


H_2SO_4 (or HCl)
titration solvent

**Determination of ammonia by titration
to $\text{pH}=4.6$
(pH-Elektrode or Sher-Indikator)**



Calculation



$$\% P = \frac{(\text{ml sample} - \text{ml blank}) \times 1.4008 \times N \times F \times 100}{\text{sample weight}}$$

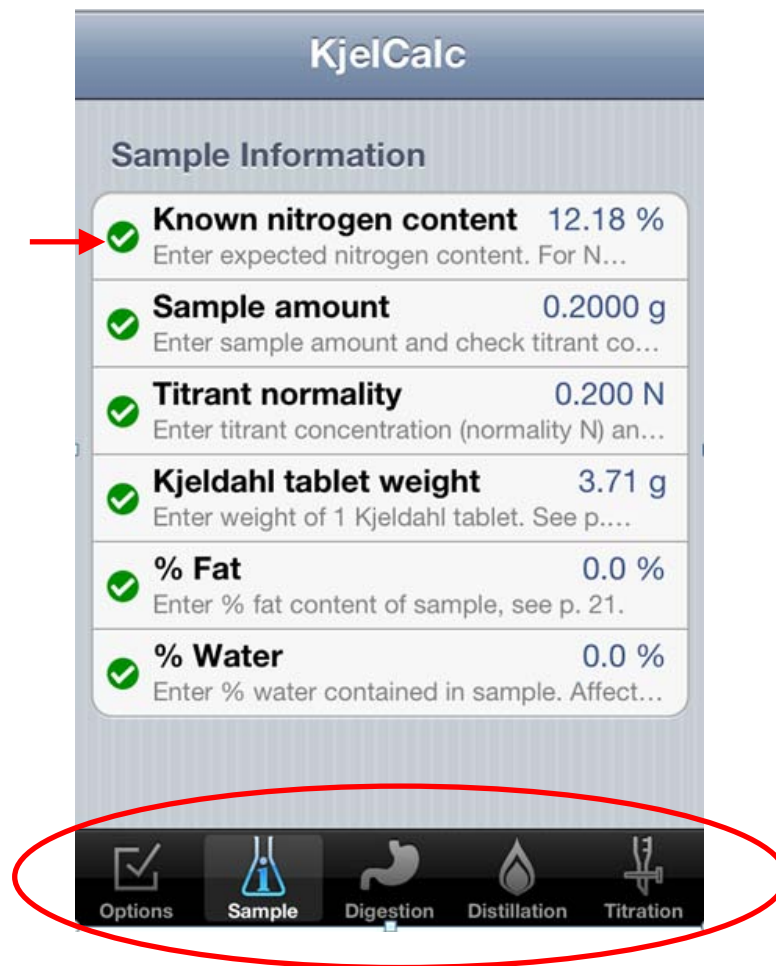
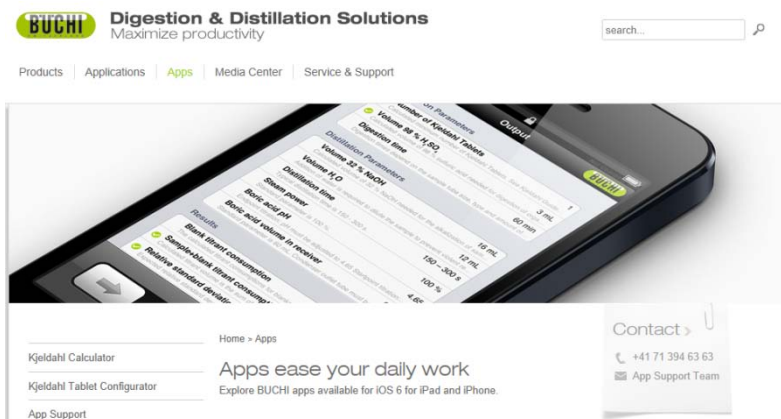
1.4008: 1 ml 0.1 N standard solution = 1.4008 mg N

N: Normality of the titrant

F: Conversion factor N \Rightarrow Protein

- for most products 6.25
- dairy products 6.38
- nuts 5.4

KjelCalc app on www.buchi.com



Optimize your Kjeldahl application:

- amount of sample
- amount of H_2SO_4
- amount of catalyst
- conc. of titrant solution
- etc.

KjelCalc PC Software

The screenshot displays the KjelCalc software interface, which is used for calculating nitrogen content in samples. The interface is organized into several sections: Options, Digestion, Distillation, Sample, and Results.

Options: This section allows users to configure the analysis parameters. The 'Analyte' is set to Nitrogen, 'Boric acid concentration' is 4% H₃BO₃, 'Unit nitrogen content' is %, and 'Tube size' is 300 mL. Other options include 'Sample unit' (g), 'Distillation type' (Standard Kjeldahl), and 'Catalyst type' (Tablet). A recommendation is provided: 'For most applications. Benefit: Allround sample tube. [more...](#)'

Digestion: This section provides details on the digestion process. The 'Number of Kjeldahl Tablets' is 3, with a note: 'Ok. Total weight of catalyst Tablets is 4,77 g. Optimal calculated weight based on powder is 4,35 g.' The 'Volume 98 % H₂SO₄' is 10 mL, with a note: 'Ok, but reduction of H₂SO₄ to 9 mL can be achieved, if 4,5 g of powder is used.' The 'Digestion time' is 60 - 120 min, with a note: 'The digestion time can be reduced to 30 - 60 min, when H₂O₂ is added. [more...](#)'

Distillation: This section details the distillation parameters. The 'Volume 32 % NaOH' is 45 mL, with a note: 'General rule: Use 4.5 mL NaOH per used mL H₂SO₄ (digestion).' The 'Volume H₂O' is 40 mL, with a note: 'General rule: For KjelSampler use 2.5 mL per used mL H₂SO₄. For manual distillation use 4 mL per used mL H₂SO₄.' The 'Distillation time' is 150 - 300 s, with a note: '150 s for KjelMaster (stand alone). 180 s for KjelMaster / KjelSampler. 240 s for other distillation units (stand alone).' Other parameters include 'Steam power' (100 %), 'Boric acid pH' (4,65), and 'Boric acid volume in receiver' (60 mL).

Sample: This section shows the sample characteristics. The 'Expected nitrogen content' is 18,66 %, with a note: 'Ok.' The 'Sample amount' is 0,2 g, with a note: 'Organic sample is 0,125 - 2 g.' The 'Titrant normality' is 0,2 N, with a note: 'Ok.' The 'Kjeldahl Tablet weight' is 1,59 g, with a note: 'Ok.' The '% Fat' is 0 %, with a note: 'Ok.' The '% Water' is 0 %, with a note: 'Ok.'

Results: This section displays the calculated results. The 'Blank titrant consumption' is 0,281 mL, with a note: 'The calculated and the measured blank values do not necessarily match exactly.' The 'Sample-blank titrant consumption' is 13,604 mL, with a note: 'Ok.' The 'Relative standard deviation' is 0,23 %, with a note: 'Ok.' The 'Amount N' is 37,32 mgN/sample, with a note: 'Ok.'

Sizes of Sample Tubes

