



# Solutions for Fruits and Nuts

Wet Chemistry Analyses for Fruit and Nut farms

## Crude Protein

OP SIS LiquidLINE has solutions for determination of Kjeldahl (TKN) protein following standard methods.

The samples are digested with sulphuric acid to convert nitrogen into ammonium sulphate. The samples are further distilled by steam distillation followed by titration.

Examples: Protein determination in fruits, fruit products, nuts and nut products

### Our Solution

- The KjelROC Digestor Advanced motor lift makes the digestion efficient and saves valuable operator time.
- OP SIS LiquidLINE Kjeldahl catalyst tablets and glass tubes ensure stable and reliable results.
- KjelROC Analyzer with integrated Titration offers titration with low relative standard deviation saving time and costs.

### Standards

AOAC 920.152  
AOAC 950.48

### Application Notes

LA1000 Application Guide Kjeldahl  
Further Notes on request

## Crude Fat

OP SIS LiquidLINE provides instruments to extract oil from plants and seeds.

The sample is prepared and thereafter extracted in hot solvents. Calculation of oil content follows after the extract has been dried to a constant weight.

Examples: Fat in nuts and nut products

### Our Solution

- The SoxROC extraction unit with batch handling and full automation facilitates the extraction.
- The instrument provides significant time savings versus cold extraction and a recovery of over 90% of used solvents.

### Standards

AOAC 948.22  
AOCS Ba 3-38

### Application Notes

LA1002, Appl. Guide Solvent Extraction  
Further Notes on request

## Total SO<sub>2</sub>

SO<sub>2</sub> is used as preservative in the fruit industry, in particular for dried fruits.

OP SIS LiquidLINE has solutions for determination of Total SO<sub>2</sub> with steam distillation, following standard methods.

Total sulphur dioxide is liberated by acidic steam distillation and is fixed and oxidized by hydrogen peroxide. The sulphuric acid formed is determined by separate titration, using third party instruments.

Examples: Total SO<sub>2</sub> in dried apricots, dried fruits and Total SO<sub>2</sub> in fruit juices

### Our Solution

- OP SIS LiquidLINE glass tubes ensure stable and reliable results.
- KjelROC Distillation unit with programming capabilities makes distillation easy. A special adaption kit for SO<sub>2</sub> determination can be ordered.

### Standards

AOAC 962.16

### Application Notes

LA1000 Application Guide Kjeldahl  
Further Notes on request

## Crude Fiber

OPSIS LiquidLINE has instruments to determine Crude Fiber (CF) according to the Weende reference method.

Examples: Crude fiber in peas, banana, apple, grape and soybean.

### Our Solution

- The FiberROC Auto and FiberROC Advanced units manages the different steps in the method. Addition of solution, boiling and rinsing is done automatically. Every step is monitored and the operator will be notified when ready.
- The FiberROC Manual unit facilitates manual determination of Crude Fiber, providing an efficient and safe environment.
- Our solutions provides significant time and cost savings compared to the manual method.

### Standards

Weende method for Crude Fiber

### Application Notes

Notes on request

## Detergent Fiber

OPSIS LiquidLINE provides solutions to determine Acid Detergent (ADF), Neutral Detergent (ADF) and Acid Lignin Fiber (ADL) according to the Van Soest method. Examples: Detergent Fiber in banana, citrus, peach and walnut paste.

### Our Solution

- The FiberROC Auto and FiberROC Advanced units manages the different steps in the method. Addition of solution, boiling and rinsing is done automatically. Every step is monitored and the operator will be notified when ready.
- FiberROC provides a High throughput, Low operating costs and an Unified solution with LabConnect software.

### Standards

Van Soest method for Acid Detergent (ADF), Neutral Detergent (ADF) and Acid Lignin Fiber (ADL).

### Application Notes

Further Notes on request

## OPSIS LIQUIDLINE - INNOVATIVE WET CHEMISTRY

OPSIS AB, founded in 1985 in Sweden, took the concept of measuring gases with light and developed it into a commercially viable product. In 2013, we took another step and moved our innovative technology into Wet Chemistry and Liquids.

- AN APPLICATION LABORATORY READY TO ASSIST
- CUSTOMIZED TRAINING AND SUPPORT FROM SWEDEN
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