



# Solutions for Oils and Syrups

Wet Chemistry Analyses for Producers of Syrups, Palm, Coconut and other Oils

## Crude Protein in Oil production residues

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 residues from palm oil production such as palm kernel cake, palm oil sludge (POS) and palm pressed fibre (PPF). Protein in soybean meal and other oilseed by-products.

### Our Solution

- The KjelROC Digestor Advanced motor lift makes the digestion efficient and saves valuable operator time.
- KjelROC Analyzer with integrated Titration offers titration with low relative standard deviation saving time and costs.

### Standards

ISO 1871,  
AOAC 920.176, AOAC 945.23  
AOAC 984.13, AOAC 2001.11  
AOCS Ba 4b-87

### Application Notes

LA1000 Application Guide Kjeldahl  
Further Notes on request

## Extraction of Oil

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: Palm oil in press fiber, coconut oil in copra and oil in canola, soya beans and sunflower seeds.

### 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

AOCS Ba 3-38  
AOCS Ba 4b-87  
AOAC 938.06  
ISO 659

### Application Notes

LA1002, Appl. Guide Solvent Extraction  
LA1003, SoxROC Extraction of Palm Oil  
Further Notes on request

## Formaldehyde in Maple Syrup

Formaldehyde, though banned in most areas, is sometimes used to increase Maple production - causing a need to monitor for this component.

OP SIS LiquidLINE has solutions to help when determining Formaldehyde in maple syrup. Spectrophotometric measurement is used after steam distillation. OP SIS LiquidLINE instrument can be used for the distillation.

Example: Formaldehyde in Maple Syrup

### Our Solution

- KjelROC Auto or Manual Distillation unit with programming capabilities make distillation easy.

### Standards

AOAC 964.21 (old)

### 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 olive oil cake, palm kernel meal and soybean meal.

### 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 oil by-products such as olive oil cake, palm kernel and soybean meal.

### 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

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
- THE LATEST IN MAINTENANCE
- A COMPLETE PORTFOLIO



OPSIS AB, Box 244  
SE-244 02 Furulund Sweden  
Telephone +46 46 72 25 00  
Telefax +46 46 72 25 01  
E-mail [info@opsis.se](mailto:info@opsis.se)  
[www.liquidline.se](http://www.liquidline.se)

LB1020  
2023 07