



BUCHI NIR Applications Oil & Fats Industry

You need fast and reliable information about your samples in order to make far-reaching decisions. We support you in overcoming your daily challenges, from incoming goods inspection to finished product release, with more than 15 years experience in supplying laboratory and at-line NIR analytical solutions for oil and fats industry.





NIR Pre-calibrated applications Oil & Fats Industry

Your most important benefits

Time savings

- Shorter time to routine use. Measure parameters such as moisture, free fatty acids, peroxide value and many more
- Measure all parameters simultaneously
- Control the value chain at each critical point, from incoming goods to finished product release

Reliability

- Deliver the same accuracy in production as in the laboratory
- Get accurate results from a robust spectral database spanning geographical and seasonal variations

Precision and accuracy

- Our NIR technology provides unparalleled measurement reproducibility and spectrometer performance
- Intimate knowledge and experience with reference methods like Kjeldahl, Dumas and Extraction have been implemented into applications development

Your «NIRSolutions Laboratory»



Based on our NIRFlex® N-500 Spectrometer

- Flexible, with various measurement cells and add-ons to accommodate any sample matrix

Your «NIRSolutions At-line»



Based on our NIRMasteR™ Spectrometer

- Hygienic, representative sampling
- Practical, ingress-protected design
- Simple operator interface

“Rapid reliable analysis is an absolute must during the harvest months in particular when sample numbers peak. The BUCHI N-500 gives the laboratory the capacity to respond to the needs of the UK Rapeseed Growers throughout these critical periods.”



Palm oil

Pre-calibrated application	Crude palm oil*	Palm oil**
Moisture [%]	0.1 – 0.4	
Free fatty acids [% oleic acid]	2.3 – 5.4	
Dirt	0.1 – 0.2	
Degree of bleachability	1.8 – 2.8	
Peroxide value [meq/kg]		2.5 – 17.5
Anisidine value [mg/g]		0.1 – 0.4
Sample compatibility	Crude palm oil (CPO) measured with sample cup in transfectance mode	Refined palm oil measured with mono-use glass-vials in transmission mode



Palm oil by-products

Product	Empty fruit bunch*	Press cake*	Sludge*
Moisture	47.5 – 76.2	32.3 – 50.0	84.3 – 97.8
Oil loss	0.5 – 11.1	3.5 – 7.1	0.2 – 2.1
Sample compatibility	Palm empty fruit bunches cut in pieces and measured with sample cup in diffuse reflectance mode	Palm press cake fiber cut in pieces and measured with sample cup in diffuse reflectance mode	Sludge measured with sample cup in transfectance mode



Oils & Fats mixtures

Pre-calibrated application	Fats & oils cuvette**	Fats & oils vials**
Peroxide value	0.5 – 75.0	0.04 – 35.70
Anisidine value	0.6 – 204.0	
Polar fraction	0.7 – 60.4	
Triglycerides	0.2 – 33.8	
Acid number	0.1 – 8.8	
Free fatty acids [% oleic acid]		0.01 – 23.20
Iodine value		0.8 – 135.2
Sample compatibility	Mixtures of different vegetable oils and animal fats measured with quartz cuvette in transmission mode	Mixtures of different vegetable oils and animal fats measured with mono-use glass-vials in transmission mode

The oil & fats pre-calibration are in continuous development to guarantee the best performances and robustness.

*Pre-calibrations compatible with both the NIRFlex® Solids and the NIRMaste™ spectrometers

**Pre-calibrated applications compatible only with NIRFlex® Liquids spectrometer



Olive oil

Product	Olive oil Transflectance*	Olive oil Transmission**
Moisture [%]	0.01 – 9.60	
Titration acidity	0.08 – 8.98	0.04 – 2.97
Peroxide value [meq O ₂ /kg]	2.00 – 22.94	1.0 – 43.4
Ethyl esters [mg/kg]	0.4 – 157.5	
K232	1.02 – 3.29	1.59 – 9.42
K266	0.10 – 0.23	
K270	0.08 – 0.39	0.07 – 0.89
K274	0.08 – 0.22	
Delta K		0.001 – 0.103
Total sterols [mg/kg]	950 – 2199	
Wax [mg/kg]	22.0 – 328.0	
Saturated fatty acids [%]		11.00 – 19.50
Aliphatic alcohols [mg/kg]	214 – 696	
Phenols [mg/kg]	172 – 454	26.00 – 312.20
Total biophenols [mg/kg]	160 – 714	
Sample compatibility	Olive oil measured with sample cup in transflectance mode	Olive oil measured with quartz cuvette in transmission mode

For the olive oil, pre-calibrations are also available to measure the complete fatty acids profile. Please contact your local BUCHI representative for more information.



Olive oil by-products

Pre-calibrated application	Olive paste*	Olive husk*
Moisture [%]	34.8 – 71.7	24.7 – 70.7
Total fat [%]	15.8 – 31.1	1.0 – 12.1
Sample compatibility	Ground olives measured with sample cup in diffuse reflectance mode	Olive husk after oil extraction measured with sample cup in diffuse reflectance mode

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**Pre-calibrated applications compatible only with NIRFlex® Liquids spectrometer



Oil seeds & meals

Product	Oil seeds & meals*
Moisture [%]	1.4 – 17.7
Total fat [%]	12.4 – 59.9
Protein [%]	14.3 – 74.4
Fiber [%]	2.4 – 30.6
Ash [%]	0.1 – 8.5
FFA (Free Fatty Acids) [%]	0.1- 2.4
Sample compatibility	Ground oil seeds like: soybean, rapeseed, sunflower and cotton

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**Pre-calibrated applications compatible only with NIRFlex® Liquids spectrometer

BUCHI NIRsolutions are compatible with the Aunir INGOT pre-calibrated applications for different matrixes like rapeseeds or oil seeds.

For more information please contact your local BUCHI representative.



www.buchi.com/worldwide



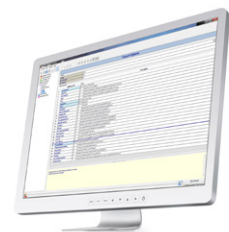
**NIRFlex®
N-500**
Versatile laboratory
FT-NIR spectrometer



**NIRMaste™
IP54**
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