

Free fatty acids, moisture and iodine value in palm oil



Fast and straightforward determination
by near-infrared spectroscopy

A dedicated solution for quality control of palm oil

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Metrohm offers a turnkey solution the determination of various quality parameters in palm oil by near-infrared spectroscopy (NIRS). Based on a dedicated spectral database and a pre-calibration model, this solution is enables manufacturers and processors of palm oil to reduce the cost of their daily quality control while improving their product quality.

After its production in specific geographic areas, Palm oil is shipped across the globe and is used as an ingredient in various different products, such as cleaning products, detergents, shampoo, cosmetics, and processed food. Key quality parameters of palm oil are **iodine value (IV), moisture and free fatty acids (FFA) content**. These parameters are still often determined in the laboratory by time consuming wet chemical analysis involving complex sample preparation.

NIRS on the other hand requires neither chemicals nor hardly any sample preparation, it can even be used by non-chemists, and provides results in less than a minute. Furthermore, multiple chemical and physical parameters can be determined simultaneously with a single measurement. **The combined benefits of this technology make NIRS the ideal solution for a large number of daily QA/QC measurements or process analysis.**



Easy-to-use

- Turnkey solution
- Measure at the push of a button
- No expertise required



Fast

- No sample preparation
- Analysis results within one minute
- More than 15 minutes time saving compared to reference methods



Cost minimizing

- No solvents, no reagents
- No waste disposal



Clean

- Non-destructive, chemical-free method
- Minimum of impact on health and environment

Turnkey solution for palm oil analysis

The Metrohm solution for palm oil analysis comes with ready-to-use pre-calibration models for the determination of the iodine value, moisture and free fatty acids content. Metrohm provides different specific pre-calibrations dedicated for the analysis of different products like crude palm oil (CPO), crude palm kernel oil (CPKO) or refined, bleached and deodorized crude palm stearin or olein (RBD). Due to these pre-calibrations, the Metrohm solution can be used as a starter model without any method development.



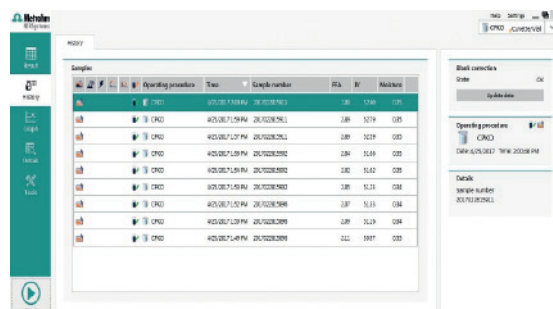
Reliable results from day one

The robust pre-calibration model allows precise and accurate determination of the iodine value, moisture and free fatty acids content with excellent reproducibility. The performance of the pre-calibration can be improved even further, if a smaller calibration range is selected or if it is augmented with customer specific samples.

Parameter		CPKO	CPO	RBD
FFA in %	Range	0–4	2.5–6	0–0.25
	SECV	0.11	0.26	0.03
Water in %	Range	0–0.3	0–0.3	0–0.1
	SECV	0.03	0.05	0.01
IV	Range	7–19	49–53	21–63
	SECV	0.27	0.22	0.56

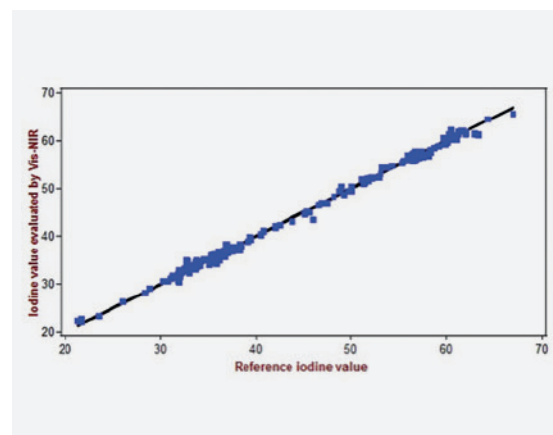
Straightforward and intuitive operation

Metrohm instruments for Vis-NIR are controlled by Vision Air software. Vision Air provides two environments tailored to users' needs: **Vision Air Routine** enables secure daily operation by routine users, while **Vision Air Manager** allows experienced and authorized users to control data and perform instrument configurations. For daily routine analysis, **measurements can be performed with two simple clicks.**



Customized service and support

Metrohm supports users by updating the default pre-calibration on demand with customer specific samples. This improves the performance of the method and/or extends it to new applications. Such updates are easily performed in the Vision Air Manager network mode. When using Vision Air Network, all instruments within a global customer network can be synchronized at the push of button. Customer specific calibrations can be easily developed for the analysis of further palm oil products or for the determination of additional quality parameters such as **peroxide value (PV), carotene content, and deterioration of bleachability index (DOBI).**



Ordering information

6.6072.302	NIRS pre-calibration for crude palm oil (CPO)
6.6072.303	NIRS pre-calibration for crude palm kernel oil (CPKO)
6.6072.304	NIRS pre-calibration for refined, bleached and deodorized crude palm oil (RBD)

Requires hardware

2.921.1410	NIRS XDS RapidLiquid Analyzer
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Comprised of:

1.921.0010	NIRS XDS Monochromator
1.921.0410	NIRS XDS RapidLiquid Module
6.7400.000	NIRS XDS accessory kit
8.921.8005EN	Manual for NIRS XDS RapidLiquid Analyzer

Requires software

6.607.2201	Vision Air 2.0
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Optional software

6.607.2204	Vision Air 2.0 Server
6.607.2206	Vision Air 2.0 Network

Requires certified standards

6.7450.040	NIRS transmission wavelength calibration standard
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Optional certified standards

6.7450.050	NIRS transmission standard, set of 6 (for the regulated environment)
6.7450.060	NIRS transmission wavelength verification standard

Sampling accessories

6.7402.000	NIRS disposable glass vials, 8 mm (250 pcs.)
6.7403.000	NIRS XDS spacer for disposable glass vials, 8 mm

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