



Measurement & Analytics | Measurement made easy

MB3600-CH10

FT-NIR oleochemicals analyzer

Pre-calibrated for Iodine Value (IV) and %Trans Fat

# FT-NIR optimizing productivity



## **Rapid, reliable oil and fat analysis results**

ABB has been a world leader in industrial FT-NIR analysis solutions for many years. We have worked together with customers and the American Oil Chemists Society (AOCS) to help define standard methods for FT-NIR calibration and analysis of oils and fats. The result is the MB3600-CH10 laboratory FT-NIR Oils and Fats Analyzer.

## **Real-time data for fast product release**

The MB3600-CH10 is supplied complete with pre-calibrations for Iodine Value (IV) and % trans fat (%Trans fat) suitable for a wide variety of sample types, including raw and processed vegetable oils. It is therefore ready to use for quick lab analysis and fast product release.

## **Simplified analysis and calibration development in the lab**

The MB3600-CH10 Laboratory Analyzer simplifies oil and fat quality analysis in the laboratory. It combines the analysis of IV and %Trans fat in a single measurement step. Analysis is performed using disposable vials, which eliminate sample cell cleaning. The measurement time is only 1 minute after the sample has reached the fixed measurement temperature.

## **Guaranteed laboratory-to-process calibration transfer**

ABB has developed manufacturing methods which ensure that all of our laboratory and process FT-NIR analyzers are highly stable, have a highly linear photometric response, and provide identical absorbance spectra. This guarantees calibration transferability from lab to process without any additional calibration effort or data manipulation.

# MB3600-CH10 FT-NIR analyzer for oils, fats & oleochemicals applications

The MB3600-CH10 uses Fourier Transform Near-Infrared (FT-NIR) spectroscopy to analyze oil and fat products. This turnkey analyzer is pre-calibrated for Iodine Value and %Trans fat. The IV determination uses a global calibration in accordance with the AOCS-approved standard procedure Cd 1e\_01. This global IV calibration is based on a wide selection of oils and fats obtained from multiple production facilities worldwide. The %Trans fat determination uses a global calibration based on a similarly wide range of oils.

## ABB's world-renowned range of on-line and laboratory FT-NIR analyzers provide guaranteed transferability of calibration models between laboratory and process applications

The accuracy and reliability of the FT-NIR based method has been evaluated via an official AOCS-supervised round robin test. Because of the inherent high reproducibility and stability of ABB's FT-NIR analyzer technology, the analysis procedure is universally applicable to a wide variety of oils and fats without any adjustment of the calibration.

- Fully pre-aligned and pre-calibrated for Iodine Value and % Trans fat. Rugged design and construction and superior manufacturing methods guarantee unsurpassed analyzer stability.
- Results obtained in less than 2 minutes, with simultaneous analysis of multiple components. Easy-to-use, operator friendly, with very low cost of analysis.
- Simplified sampling using heated disposable glass vials means no clean-up between samples – very easy to run large sample batches. Vials are inserted in a heatable universal vial holder that supports different vial sizes (5, 8, 12 mm OD) and has USB port for automatic recognition by the analyzer.
- Higher analytical precision (increased repeatability, reproducibility and stability) compared with standard wet-chemical methods.
- Very little training required for use in a routine operations environment by plant personnel. Operations are all pre-configured in the modern and intuitive operator interface based on Horizon software suite.



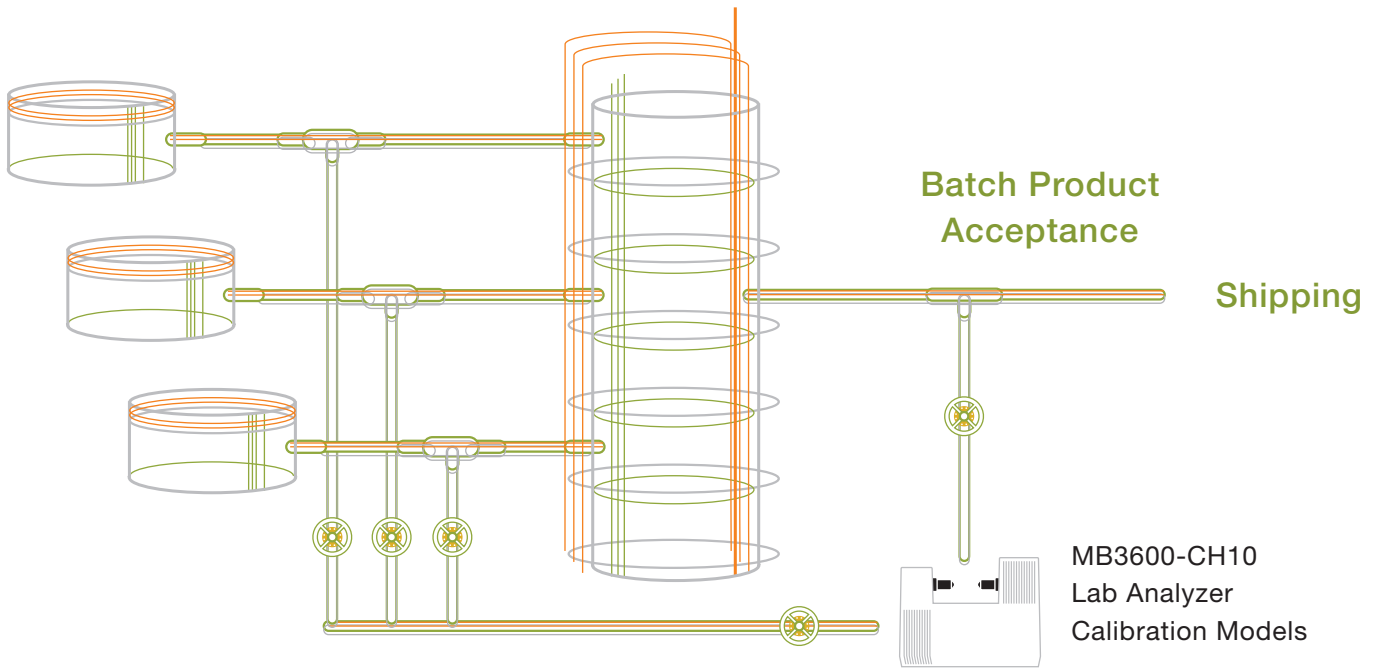
# MB3600-CH10 FT-NIR analyzer for oils, fats & oleochemicals applications

Raw Materials  
Quality Acceptance

Vegetable Oil  
Processing

Batch Product  
Acceptance

Shipping

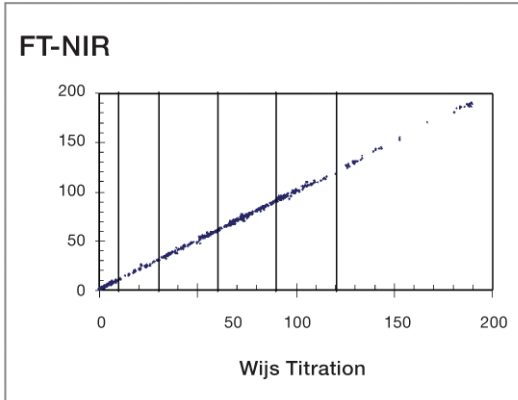


MB3600-CH10  
Lab Analyzer  
Calibration Models

- QA / QC
- Method Development

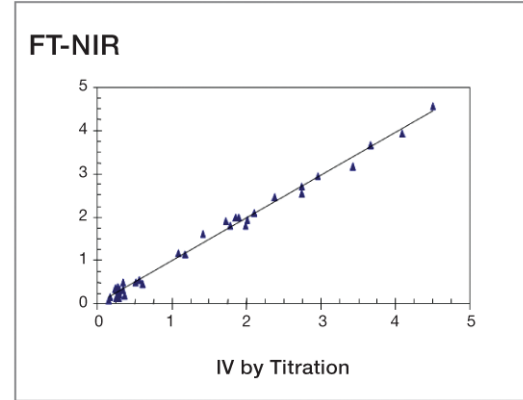
# MB3600-CH10 FT-NIR analyzer for oils, fats & oleochemicals applications

The MB3600-CH10 Laboratory Oils and Fats Analyzer is not only a valuable and reliable pre-calibrated laboratory analyzer, it also allows easy custom calibration model development for additional oil and fat properties.



**“ABB’s FT-NIR Analyzer for laboratory oils and fats analysis has had a big impact on our batch throughput.”**  
Hydrogenation reactor process engineer

**“The IV and %Trans fat calibrations were easy to validate, and we use them every day in the laboratory.”**  
Laboratory qa chemist



**“We have been able to develop and maintain a robust calibration for our specialized low-IV range application for vegetable oil hydrogenation.”**  
Method development chemist

**“Routine control of our incoming raw material was made very simple with the pre-installed full-range IV model.”**  
Oil processing manager

# Calibration models specifications

	Properties	Units	SECV (1 Sigma)	Repeatability ( r )	Range Min	Range Max
<b>Oil &amp; Fat Pre-calibrated Properties</b>	IV (0 - 10)	g I <sub>2</sub> /100g	0.25	0.08	0	10
	IV (10 - 30)	g I <sub>2</sub> /100g	0.44	0.10	10	30
	IV (30 - 60)	g I <sub>2</sub> /100g	0.30	0.08	30	60
	IV (60 - 90)	g I <sub>2</sub> /100g	0.40	0.10	60	90
	IV (90 - 120)	g I <sub>2</sub> /100g	0.76	0.12	90	120
	IV (120 - 190)	g I <sub>2</sub> /100g	0.82	0.15	120	190
	%Trans fat (0 - 15)	wt%	0.70	0.10	0	15
	%Trans fat (15 - 60)	wt%	1.60	0.60	15	60
<b>Oil &amp; Fat Typical Custom Calibration Model Properties (Dependant on Laboratory Performance)</b>	Low Range Custom IV	g I <sub>2</sub> /100g	0.18	0.08	0	5
	Moisture	wt%	0.05	0.01	0	0.5
	Melting Point	deg C	0.50	0.20	40	100
	Cloud Point	deg C	0.60	0.20	8	14
	Saponification Number	Units	1.30	0.63	0	50
	Acid Value (low)	mgKOH/g	0.53	0.11	187	270
	Acid Value (high)	mgKOH/g	1.13	0.14	200	450
	%FFA	wt%	0.03	0.01	0.01	0.1
	%FFA	wt%	0.14	0.01	0.82	1.9
	%FFA	wt%	0.10	0.02	1.6	4.4

Pre-installed calibration models for IV and % Trans fat follow AOCS-recommended procedures for development and validation

## Custom calibration models

The MB3600-CH10 simplifies the development of local site-data based calibration models, allowing the analyzer to be used for a wide range of process streams and properties. Many of our customers have successfully developed their own rigorous and stable calibration models. The sample temperature is indicated and adjustable in software.

## ABB's calibration modeling and training services

Custom calibration models can easily be developed to generate QA data for oil quality and degradation parameters. These calibrations must be developed on a site-by-site basis for specific oil and fat products. ABB will work in close partnership with you to develop customized solutions that meet your specific needs.

# ABB Analytical

ABB Analytical is one of the major ABB manufacturing centers for laboratory and process analytical systems with more than 35 years of experience in developing FT-IR and FT-NIR spectrometers for industrial, military and space applications.

As part of our portfolio of products and services for process optimization, we are able to offer a full range of custom calibration modeling services and application support for industrial applications.

ABB also provides extensive, globally distributed after-sales support and engineering services, as well as a full customer training program.

## **IR & NIR Spectroscopy Knowledge Management**

- Application support and spectroscopy training
- Calibration and chemometrics development training
- On-site services including hardware and calibration maintenance

## **Up-Time Insurance Program**

- Preventive maintenance
- Extended warranty services
- Tailor-made service contracts
- Chemometrics services

## **Installations / Start-ups & Analyzer Life Cycle Program**

- Process spectrometer start-ups
- Laboratory spectrometer installations
- Spectrometer and laboratory / process software exchanges / upgrades
- Extended process and lab spectrometer warranties



# Contact us

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