



MB3600-CH10

FT-NIR Analyzer for Oils, Fats &
Oleochemicals Application
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.

“Our industry needs rapid laboratory QA determination of critical oil and fat sample properties. We use the results for product release and process monitoring.”

“The IV and %Trans fat calibrations need to work reliably for many different raw materials and processed oils.”

Laboratory QA chemist

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.

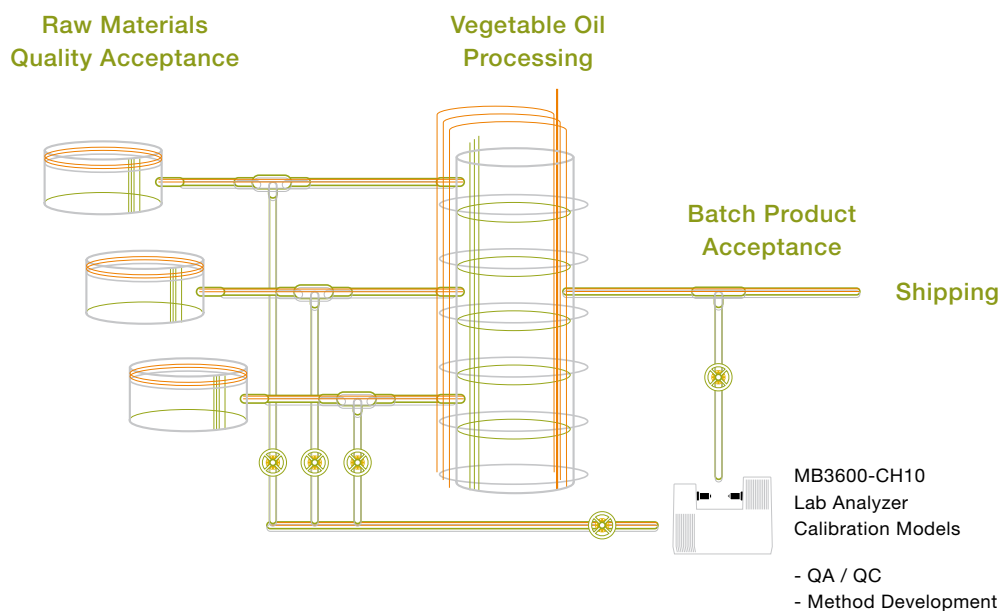
ABB's world-renowned range of on-line and laboratory FT-NIR analyzers provide guaranteed transferability of calibration models between laboratory and process applications

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.
- 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.

Go to www.abb.com/analytical to discover how ABB can help you to optimize oil and fat processing operations.

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.”

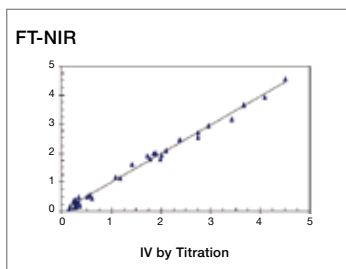
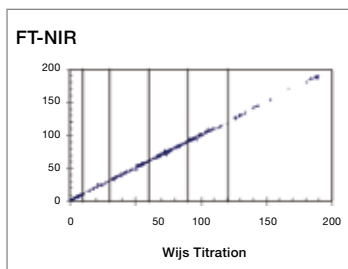
Laboratory QA chemist

“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
Oil & Fat Pre-calibrated Properties	IV (0 - 10)	g I ₂ /100g	0.25	0.08	0	10
	IV (10 - 30)	g I ₂ /100g	0.44	0.10	10	30
	IV (30 - 60)	g I ₂ /100g	0.30	0.08	30	60
	IV (60 - 90)	g I ₂ /100g	0.40	0.10	60	90
	IV (90 - 120)	g I ₂ /100g	0.76	0.12	90	120
	IV (120 - 190)	g I ₂ /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
Oil & Fat Typical Custom Calibration Model Properties (Dependant on Laboratory Performance)	Low Range Custom IV	g I ₂ /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.

Contact us

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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

