
MEASUREMENT & ANALYTICS

MB3600-CH10

FT-NIR oleochemicals analyzer



Measurement made easy

ABB has 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.

—
01

FT-NIR optimizing productivity

—
01 Canola field

Rapid, reliable oil and fat analysis results

ABB has been a world leader in industrial FT-NIR analysis solutions for many years. 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 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

—
02 MB3600-CH10
analyzer and universal
vial holder sampling
accessory

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.



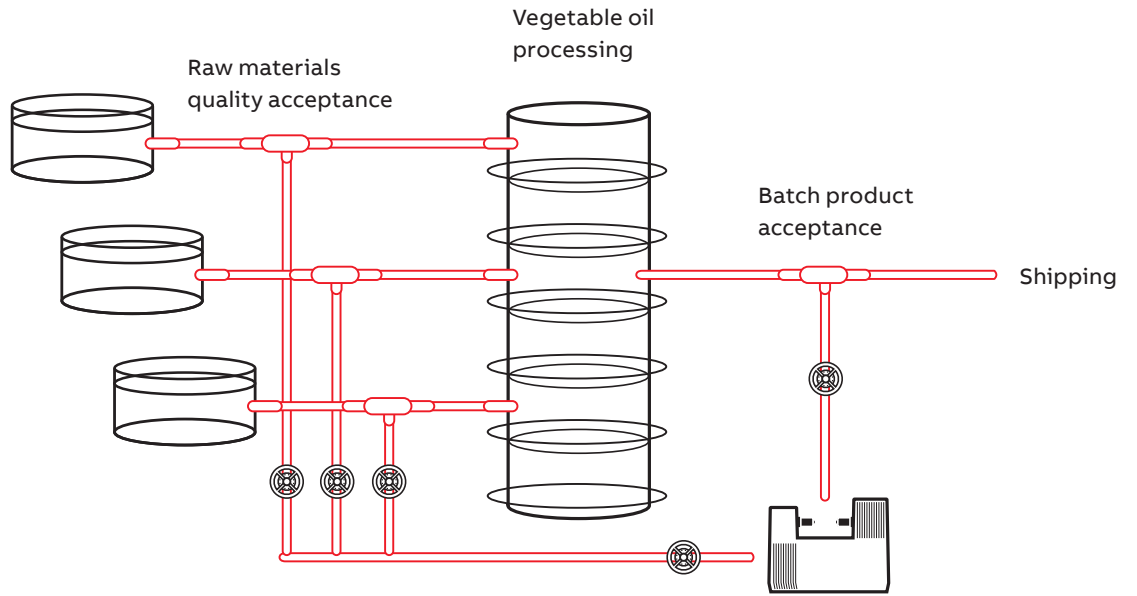
—
02

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) (0.20, 0.31, 0.47 in. 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.

Rapid and reliable oil and fat analysis results

03 Oil and fat production process



MB3600-CH20
Lab analyzer
calibration models

- QA/QC
- Method development

03

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

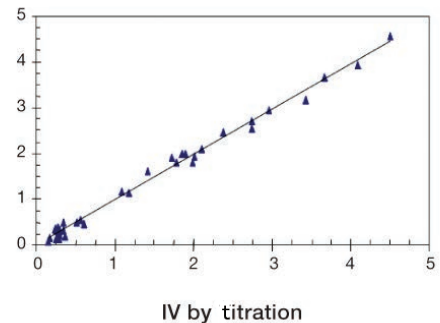
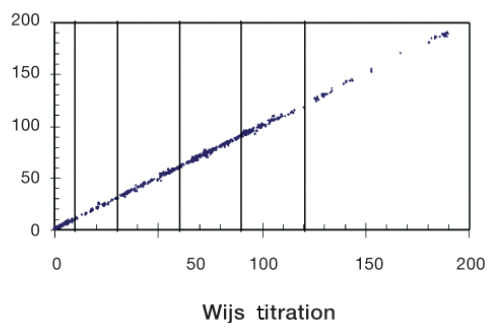
—
04 FT-NIR Wijs
titration and IV by
titration analysis

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

Property table

	Properties	Units	SECV (1 Sigma)	Repeatability (r)	Range min.	Range max.
Oil and fat Pre-calibrated Properties	IV (0 to 10)	g I2/100g	0.25	0.08	0	10
	IV (10 to 30)	g I2/100g	0.44	0.10	10	30
	IV (30 to 60)	g I2/100g	0.30	0.08	30	60
	IV (60 to 90)	g I2/100g	0.40	0.10	60	90
	IV (90 to 120)	g I2/100g	0.76	0.12	90	120
	IV (120 to 190)	g I2/100g	0.82	0.15	120	190
Pre-calibrated Properties	%Trans fat (0 to 15)	wt%	0.70	0.10	0	15
	%Trans fat (15 to 60)	wt%	1.60	0.60	15	60
Oil and fat Typical custom Calibration model Properties (Dependant on laboratory performance)	Low range custom IV	g I2/100g	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

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.



—
04

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, Inc.

Measurement & Analytics

3400, rue Pierre-Ardouin
Québec (Québec) G1P 0B2
Canada

Tel: +1 418-877-2944 (worldwide)
1 800 858-3847 (North America)

Email: ftir@ca.abb.com

abb.com/analytical

Additional information

We reserve the right to make technical changes or modify the contents of this document without prior notice. With regard to purchase orders, the agreed particulars shall prevail. ABB does not accept any responsibility whatsoever for potential errors or possible lack of information in this document.

We reserve all rights in this document and in the subject matter and illustrations contained therein. Any reproduction, disclosure to third parties or utilization of its contents – in whole or in parts – is forbidden without prior written consent of ABB.