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ABB MEASUREMENT & ANALYTICS

# MB3600-CH10

FT-NIR oleochemicals analyzer



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## 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.**



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## FT-NIR optimizing productivity

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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

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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.



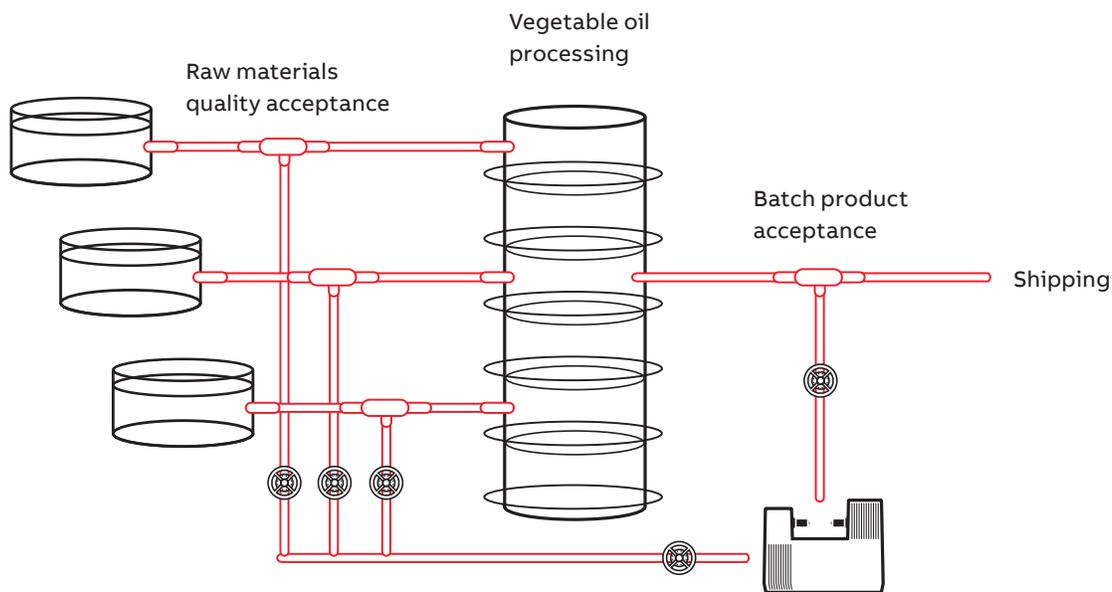
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The accuracy and reliability of the FT-NIR based method has been evaluated via an official AOCS-supervised round robin test. Because of the inherent high reproducibility and stability of ABB's FT-NIR analyzer technology, the analysis procedure is universally 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



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MB3600-CH20  
Lab analyzer  
calibration models

- QA/QC
- Method development

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

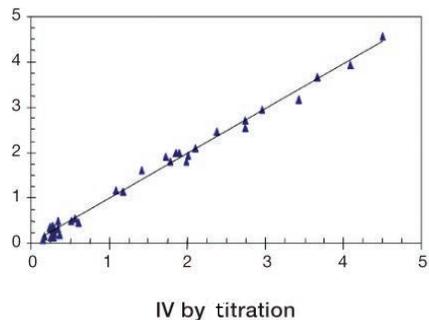
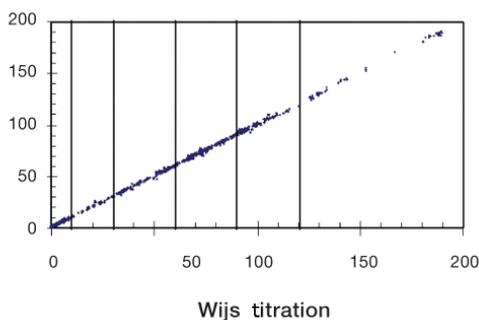
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04 FT-NIR Wijs  
titration and IV by  
titration analysis

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.
<b>Oil and fat Pre-calibrated Properties</b>	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
<b>Pre-calibrated Properties</b>	%Trans fat (0 to 15)	wt%	0.70	0.10	0	15
	%Trans fat (15 to 60)	wt%	1.60	0.60	15	60
<b>Oil and fat Typical custom Calibration model Properties (Dependant on laboratory performance)</b>	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
<b>Properties (Dependant on laboratory performance)</b>	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.



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## 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.



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