

# MAKE INFORMED DECISIONS ABOUT PRODUCT QUALITY WHEREVER YOUR ANALYSIS TAKES YOU

The Measure of Confidence



## Agilent 4500 and 5500 FTIR Biodiesel Analyzers

Biodiesel offers many environmental advantages; however, its long-term storage can promote biological growth and oxidative degradation. Using blended fuels in engines designed for petroleum-based diesel can also cause problems with injector pumps and other components.

ASTM and CEN standards define methods for determining biodiesel (% FAME) in diesel fuel. Likewise, stability concerns have prompted some industries to lower their biodiesel limits for fuel blends. To meet these varying requirements, you must reliably verify blend quality and biodiesel content.

### Measure key parameters with confidence where and when you need them

Agilent's portable 4500 and 5500 FTIR Biodiesel Analyzers provide rapid, highly accurate data about diesel composition. Each system is factory pre-tested and pre-configured to perform sensitive analysis of materials and finished products – in the lab or in the field.

In addition, no specialized training is required for operation, allowing your existing field teams to detect even the lowest levels of biodiesel contamination in petroleum diesel products.

### Agilent FTIR Biodiesel Analyzers include innovative technology and reflect our stringent quality control process. Systems include:

#### Factory

- Installation of TumbIIR™ and DialPath™ liquid cells, which require less maintenance than standard flow cells
- System optimization for your application
- Method calibration

#### Delivery

- Application Note for running the method
- Installed methods for easy out-of-the-box operation
- Validation standards available to demonstrate accuracy

#### Installation

- Adaptation to alternate petrochemical applications, if required
- Optional application startup assistance



Agilent 4500 Series Portable FTIR

Agilent's 5500 Series FTIR



Agilent Technologies

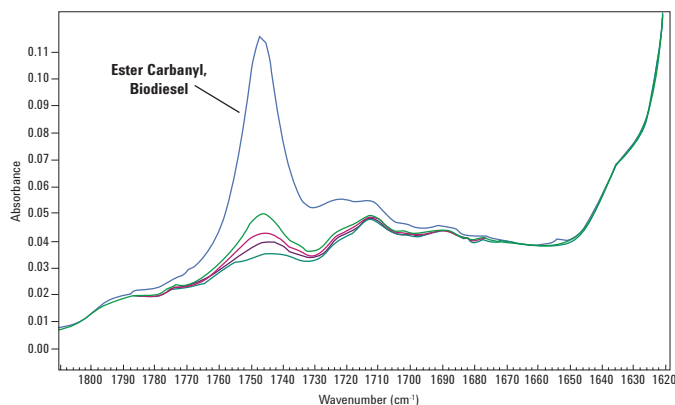
# Standard and Custom FTIR Biodiesel Analyzers

From clear, sharp optics... to innovative sampling interfaces... to intuitive software... these “ready-to-go” systems are designed to deliver great results on liquid and solid samples.

- **Analyzers are pre-configured and factory tested.** They also arrive ready to use with simple methods for determining:
  - Biodiesel concentration in diesel fuel
  - Mixing and contamination levels
  - Diesel fuel quality and contamination parameters, including standard methods ASTM D7371-01 and EN 14078
- **Each analyzer arrives ready to perform your specific application.** Systems include proven analysis methods and optional validation standards that can reduce method development costs by up to 80%.
- **Required flow cells are included for “out-of-the-box” setup and operation,** so your laboratory can begin system calibration and performance validation *immediately following installation.*

## FTIR quantification of biodiesel in diesel fuel

In the example below, we combined the transmission sample interface specified in EN 14078 with the algorithm and standards specified in ASTM D7371 to develop a method that accurately predicts the percentage of biodiesel in diesel fuel from 0.025% to 20%.



Overlaid IR spectra of diesel fuels with ultra-low concentrations of biodiesel: 0.50% (blue), 0.10% (light green), 0.05% (red), 0.025% (maroon), and 0.00% (dark green).

Range	SECV	R <sup>2</sup>	#Validation Samples	Avg. Relative Error
0.025 - 1%	0.0016%	0.9999	29	1.37%
1% - 10%	0.0164%	0.9999	12	0.06%
10% - 20%	0.04%	0.9999	8	0.57%

Agilent's custom biodiesel in diesel fuel method contains calibrations for three ranges of biodiesel concentration. Shown here is the performance for each range. This custom method has excellent performance in terms of both the standard error of cross validation (SECV) and the relative error calculated from a separate calibration set.

## Ordering information:

Consult with your Agilent Account Manager or visit [www.agilent.com/chem](http://www.agilent.com/chem)

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Visit [www.agilent.com/chem/appkits](http://www.agilent.com/chem/appkits) for a description of available Analyzers and Application Kits

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