

Agilent 4500 and 5500 Series FTIR Instruments

Compact and lightweight field portable FTIR technology



Agilent 5500 Series FTIR Spectrometers

Compact and versatile FTIR

Agilent 5500 Series FTIR instruments are small-sized, mid-infrared region spectrometers designed to provide the capabilities of larger, traditional FTIR systems—minus the complexity, maintenance demands, or cost.

The instrument has compact dimensions of only 20.3 x 20.3 x 11.4 cm (8.0 x 8.0 x 4.5 in), with a footprint smaller than standard A4 (or letter-sized) paper, and weighing only 3.6 kg (8 lb). Unlike traditional benchtop FTIR, the 5500 can be switched on and off frequently, transported from a lab to a fume hood or portable lab, and even installed in a mobile lab—without compromising performance or instrument stability.

The 5500 offers remarkable versatility, making it suitable for use in traditional analytical chemistry laboratories, temporary field labs, or in dry, non-extreme outdoor settings. Commonly found in QA/QC facilities at manufacturing sites and oil-testing labs, the 5500 seamlessly integrates into control rooms, loading docks, or glove boxes.



The 5500 Series FTIR allows you to:

- Monitor product quality
- Determine if ingredients in a mixture are at the proper levels
- Assess the quality of incoming raw materials
- Identify contaminants

Product highlights:

- Small footprint and easily transportable
- Highly accurate mid-IR analysis
- Minimal to no sample preparation needed
- Available with general purpose and specific methods within the Agilent MicroLab PC software
- Dedicated and integrated sampling interfaces available

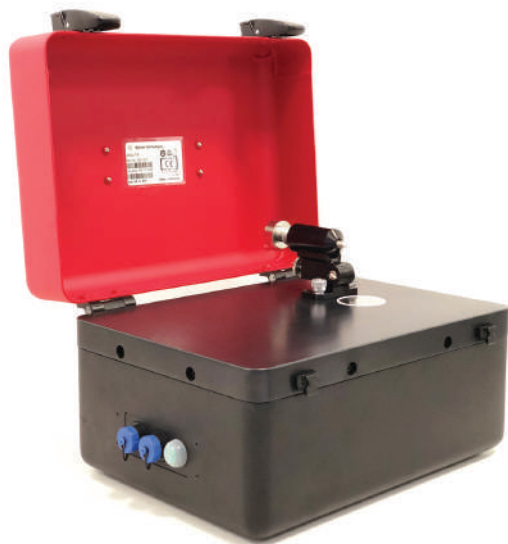
Agilent 4500 Series FTIR Spectrometers

Rugged and portable FTIR

Agilent 4500 Series FTIR systems are mid-IR spectrometers designed for on-the-spot analyses outside the laboratory. The lightweight and compact 4500 is packaged in weather-resistant housing, making it ideal for outdoor use. It is perfect for obtaining fast, insightful answers about your liquid and solid samples onsite, without compromising data quality.

Central to the system is a unique, rugged interferometer that is field-proven for use in challenging environments. The internal components are mounted on shock-dampening platforms to protect the components from damage onsite, making the 4500 one of the most robust spectrometers available.

The 4500 Series FTIR with Agilent MicroLab PC software can easily perform spectroscopic analyses on a range of liquids, powders, pastes, and gels. The easy-to-use software is designed for simple push button, method-driven operation to obtain valuable information about the identity and amount of chemical substances present in a material.



The 4500 Series FTIR allows you to:

- Assess fuel and oil integrity on site
- Monitor chemical reactions in situ
- Screen drug samples at the place of discovery
- Assess and determine the state or stage of a process

Product highlights:

- Designed for field use
- Equal or better performance than a benchtop equivalent instrument
- Small, lightweight, and portable
- Battery or mains powered. Internal four-hour battery
- Water-resistant in harsh weather conditions in line with IP54 specifications
- Full Fourier transform resulting in highly accurate mid-IR sample measurements
- Minimal sample preparation needed
- Available with general purpose and specific methods
- USB or Bluetooth connection to a computer
- Dedicated and integrated sampling interfaces

The Right Solution for Your Application

Agilent is committed to providing the right solution for your application. We have the technology, platforms, and expert guidance necessary for successful FTIR analysis of your samples.

Designed for robustness, portability, and versatility, the 4500 and 5500 FTIR instruments are well suited for diverse applications both within and outside the laboratory. The small footprint of both instruments means that they easily fit in a glove box or under a fume hood, ensuring the safe analysis of reactive samples.

Gain all the advantages of larger FTIR instruments, while avoiding the complexity, maintenance demands, or upfront and ongoing costs.



Application sample types (solids ATR only)

- | | | | | |
|-----------|---------------|---------------|-------------------|---------|
| – Powders | – Gels | – Bases (ATR) | – Ground minerals | – Wine |
| – Solids | – Greases | – Diesel | – Polymers | – Dairy |
| – Liquids | – Pastes | – Gasoline | – Foodstuffs | – Seeds |
| – Oils | – Acids (ATR) | – Soils | | |

Quick to Learn and Easy to Use

The 4500 and 5500 Series FTIR feature innovative sampling interfaces, eliminating the need for sample preparation, while the MicroLab software and user interface are intuitive, requiring minimal training to use the systems. Both series of instruments allow you to complete measurements in less than two minutes and clean up in seconds—freeing you to concentrate on other tasks.



A faster, simpler, more innovative way to analyze liquids

Agilent is changing how liquids are analyzed by FTIR. The Agilent TumbIIR and DialPath modules use innovative technology to measure liquids using transmission FTIR spectroscopy with the same ease and simplicity of ATR methods. The TumbIIR (single pathlength) and DialPath (multi-pathlength) modules measure liquids and thin films quickly and easily, eliminating the need for conventional flow or demountable cells

Advantages of the TumbIIR and DialPath sampling interfaces compared to demountable cells include:

- Non-hygroscopic ZnSe windows instead of the fragile and prone to clouding CaF_2 or NaCl cell windows
- Fixed-position cell windows—no spacers required means no “gasket swelling” effects
- No autosampler or syringes needed to introduce samples
- Low-to-high viscosity liquids and greases can be handled equally effectively
- Volatile solutes and solvents can be accurately measured
- Only a small sample volume of approximately 100 μL is needed
- Rapid analysis of samples, simply rotate the TumbIIR or DialPath into position and go
- Quick sample cleanup—no flushing, simply solvent wipe the sample window

DialPath offers even more advantages

- Instantaneous selection of any one of three different pathlengths. Select a longer pathlength window for lower concentration samples or use a shorter pathlength for more concentrated samples.
- Effortless change of pathlengths without the need for disassembly—simply rotate the optical head into position.



TumbIIR sampling interface



DialPath sampling interface

4500 and 5500 FTIR Dedicated Sampling Interfaces— Complete Systems Designed for Your Samples

Agilent offers three sampling systems for the 4500 and 5500 Series FTIR that are tailored to different types of analyses. Select the right interface and pathlengths for your application.



TumbIIR

The TumbIIR interface of the 4500 or 5500 FTIR systems allows you to effortlessly determine and quantify the amount of minor components in your liquid samples.

Simply place a drop of your sample on the lower window of the interface and rotate the top window into position to ensure a single fixed pathlength between 30 and 1000 μm .



DialPath

The DialPath interface of the 4500 or 5500 FTIR systems provides reproducible pathlengths between 30 and 1000 μm .

With three configured pathlengths, the DialPath enables the quick and easy identification of components in liquids, while the fixed and repeatable pathlength measurements enabled by the interface make it ideal for quantitative measurements.



ATR

Measure all your solid, paste, and gel samples with the diamond ATR sampling system.

To analyze and measure virtually any type of solid, paste, or gel substance, select the 4500a or 5500 ATR, featuring a diamond ATR sampling system.

Just place the substance on the diamond window and take the measurement. A pressure device ensures that powders and solids contact the diamond uniformly, ensuring the best possible quality information.

MicroLab: Simple, Intuitive, and Versatile Method-Driven Software

Powerful Agilent MicroLab FTIR software provides the answers that you need quickly and easily.

MicroLab Suite (included with 5500 or 4500 Series instrument)	MicroLab PC	ML_PC drives the instrument. It is also used for method creation, library creation, data collection and review, diagnostic review, and reanalysis of previously acquired data.
	MicroLab Lite	ML_Lite is the offline version of ML_PC, with full functionality except for data collection and diagnostics. ML_Lite does not need an instrument connection for use.
	MicroLab Quant	ML_Quant enables the user to build and test models from previously collected data. Used offline it has three model types (Beer-Lambert, ILS, and CLS) which can be exported into ML_PC.
	MicroLab OQ	ML_OQ stands for operational qualification, equivalent to the system checks in ML_PC. ML_OQ formally performs tailored checks on the system with an option to create PDF reports.
MicroLab Expert	ML_Expert provides advanced features such as peak and spectral evaluations, PCA analysis, PLS1 modeling, spectral transformations, deconvolution, useful for advanced applications.	

Analysis made easy...

- MicroLab software automatically recognizes which instrument is connected
- An intuitive, pictorial interface guides the user through sample introduction, analysis, and cleanup
- A fast optical engine enables rapid analysis even at high scan numbers, increasing productivity
- Easily create qualitative and quantitative methods
- Click a button to use preloaded and precalibrated methods
- Use color-coding to quickly identify whether analytes are above or below a critical threshold (red), approaching threshold (yellow), or within specification (green)
- Edit action thresholds for specific equipment or formulations with customizable text

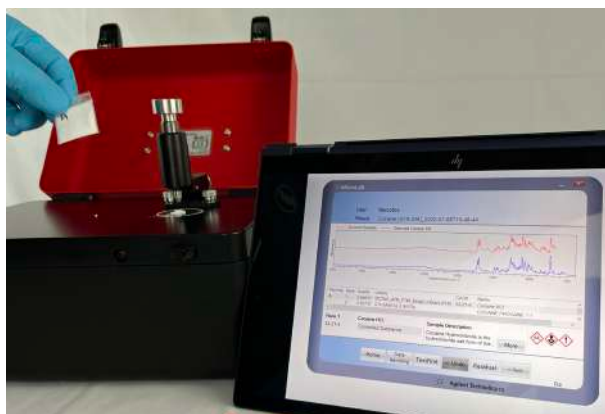
...with uncompromising quality

- Ensure data quality by seeing the spectrum before full data collection, using real-time analysis mode that constantly refreshes the spectra until the user is satisfied
- Perform straightforward diagnostics for optimal instrument performance and data quality—all color-coded for quick decision making
- Identify unknown compounds by searching a library or database

Comprehensive FTIR Libraries at Your Fingertips

Agilent offers a selection of spectral libraries for FTIR systems, designed to cover a wide range of application needs. These include, but are not limited to libraries for:

- Polymers and polymer additives
- Food additives and packaging
- Pesticides
- Dyes, pigments, and stains
- Lubricants
- Coatings and industrial paints
- Other industries, such as semiconductor, petrochemicals, and pharmaceuticals



Forensics library packages are also available for use with Agilent FTIR systems. These packages include a collection of substances that are relevant to forensic analysis by FTIR. Options include:

- **TICTAC ATR FTIR Drugs Library:** focused on new psychoactive substances (NPS). Plus spectra of traditional drugs of abuse, and substances related to drugs and drug abuse, such as contaminants, adulterants, diluents, potentiators, precursors, and substances that are often passed off as drugs.
- **ATR Forensics Library for Mobile FTIR:** includes spectra of hazardous and toxic chemicals, pharma, drugs and antibiotics with excipient, excipients, high production volume (HPV) chemicals, forensic (includes white powders), white powders, biochemicals, food additives, and food packaging.

Distinctly Better FTIR

The Agilent FTIR range is unrivaled, innovative, and reliable. From bench-top instruments offering the highest analytical performance to dedicated portable analyzers for maximum flexibility, there is an instrument to suit every application need.



Agilent 4300 Handheld FTIR Analyzer

The Agilent 4300 Handheld FTIR analyzer is the first of its kind employing lightweight ergonomics, ease-of-use, ruggedness, and sampling flexibility in one system. The 4300 weighs in at approximately 2 kg. With its light weight ergonomic design, and wide range of interchangeable sampling interfaces, the system is ideal for field use and deployment into nonlaboratory situations.



Agilent 8700 Laser Direct Infrared (LDIR) Chemical Imaging System

The Agilent 8700 Laser Direct Infrared (LDIR) chemical imaging system provides a sophisticated new approach to chemical imaging and spectral analysis. Designed to be used by both experts and inexperienced users alike, the 8700 LDIR provides a fast, simple, and automated approach for obtaining high-definition, spatially resolved chemical images of constituents on a surface.



Agilent Cary 630 FTIR

The Agilent Cary 630 FTIR spectrometer is innovative and reliable, providing quantitative and qualitative information for the routine analysis of solids, liquids, and gases. With a wide range of sample interfaces and high performing optics, the compact Cary 630 FTIR will give you accurate results—fast.

Related Field Detection Spectrometers



Agilent Resolve Raman

The Agilent Resolve Raman handheld analyzer enables rapid identification of explosives, narcotics, toxic industrial chemicals, chemical warfare agents, and other materials through sealed, opaque containers.

Learn more:

www.agilent.com/chem/4500

www.agilent.com/chem/5500ftir

Get answers to your technical questions and
access resources in the Agilent Community:

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