

eraspec

SPECTRAL FUEL ANALYSIS IN SECONDS

Standards

ASTM D5845, D6277, D7777, D7806,
EN 238, EN 14078, ISO 15212, IP 559

Fuel types

Gasoline, diesel fuel, jet fuel,
fuel ethanol, fuel methanol, ...



eraspec – portable high precision fuel analysis

Comprehensive Multi Fuel FTIR Analysis

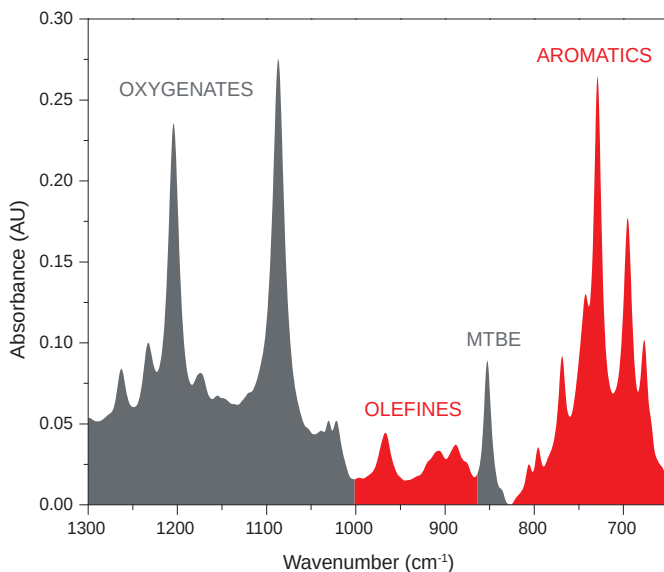
ERASPEC is your fuel analyzer of choice, independent of the fuel type analyzed. With its modular design the analysis of gasoline, diesel fuel or jet fuel become simple routine. Specialized modules cover benzene and FAME detection according to EN 238 and EN 14078. **ERASPEC** also measures ethanol, methanol and synthetic fuels. Product development keeps adding new modules for upcoming measurement needs and continuously enhances existing features.

Laboratory-grade Portable Rugged Design

ERASPEC is a patented, rugged FTIR fuel analyzer. It is a stand-alone instrument that can be operated in the lab, in mobile laboratories and in the field. The patented interferometer and a spectral resolution tailored to the task lead to an exceptionally low noise level and deliver results known only from bench-top FTIR systems.

Unique Triple-cell Design

The measurement of different fuels implicates different requirements for the analyzer. Therefore, eralytics launched **ERASPEC** in 2008 with a leading-edge triple-cell design. This innovation by eralytics uses a 20 μm cell to measure gasoline and a 100 μm cell to measure diesel and jet fuel. With the third cell **ERASPEC** automatically performs a reagent free reference measurement whenever needed. **ERASPEC** can also use both cells for a measurement if the specific application so requires. For example, **ERASPEC** can use the 100 μm cell to lower its detection limit for contaminants in gasoline such as acetates or anilines. Other path lengths for specialized fuel modules can be installed if needed.



Fingerprint your Fuel in Seconds

ERASPEC measures a mid-infrared (mid-IR) spectrum of your fuel in less than one minute. It directly derives the concentrations of all relevant fuel components and immediately displays the results. They include oxygenates such as ethanol or MTBE according to ASTM D5845, aromatics such as benzene (ASTM D6277) or toluene, octane boosters such as MMT or DCPD for gasoline measurements or FAME (ASTM D7806, EN 14078) in diesel fuel. Knowing the exact fuel composition makes calculating complex fuel parameters possible without needing complex and time consuming methods. **ERASPEC** uses chemometrical models to evaluate the spectrum for significant parameters such as RON, MON, DVPE, cetane number, distillation and evaporation fractions. The built-in U-tube density meter, measuring according to ASTM D7777 and ISO 15212, tops off **ERASPEC**'s measurement capabilities.

Huge Expandable Database

With eralytics' experience and its customer base of several thousand **ERASPEC** installations around the world we can offer a huge database of international fuel calibration samples with known parameters. It is key to accurate, reliable results of calculated parameters such as RON and MON. **ERASPEC** learns new samples at the push of a button. In a simple process it is even possible to train **ERASPEC** completely new parameters. The added information is immediately available for the next measurement.

Applications

ERASPEC's applications range from routine analysis at pipeline terminals, refineries and blending stations to high-tech fuel analysis at engine manufacturers. It is also frequently used by governmental bodies in mobile laboratories to test fuel quality right at the gas stations, fighting fuel adulteration fraud.



Fuel Modules

- **Gasoline module** (ASTM D5845, D6277)
 - EU Benzene module (EN 238)
 - Contamination module
 - MMT/CMT module
 - Synfuel module
- **Diesel fuel module** (ASTM D7806)
 - EU FAME module (EN 14078)
 - 2EHN module
- **Jet fuel module**
- **Fuel ethanol module**
- **Fuel methanol module**
- **Automatic fuel recognition module**

Built in density meter (ASTM D7777, ISO 15212)

Autosampler

Directly attached optional
10-position autosampler



Gasoline Module

PROPERTIES ¹	RANGE
Research Octane Number (RON)	70–110
Motor Octane Number (MON)	60–105
Anti Knock Index (AKI)	65–107
RVP & DVPE	35–100 kPa
Distillation Fractions	IBP, T10, T50, T90, FBP
Evaporation Fractions	E70, E100, E150 (°C) E200, E300 (°F)
Density (built-in U-tube cell)	0–3 gcm ⁻³
Driveability Index, VOC Emissions Calculator, Vapor Lock Index (VLI)	

AROMATICS ²	RANGE
Benzene	0–10 Vol%
Toluene	0–20 Vol%
o-, m-, p-Xylene	0–20 Vol%
Ethylbenzene	0–20 Vol%
Propylbenzene	0–20 Vol%
2-Ethyltoluene	0–20 Vol%
3-Ethyltoluene	0–20 Vol%
4-Ethyltoluene	0–20 Vol%
Pseudocumene	0–20 Vol%
Hemellitol	0–20 Vol%
Mesitylene	0–20 Vol%
Iso-Durene	0–20 Vol%
Durene	0–20 Vol%
Naphthalene	0–10 Vol%

ANILINES ²	RANGE
Aniline	0–15 Vol%
N-Methylaniline	0–15 Vol%
o-Methoxyaniline	0–20 Vol%
o-, m-, p-Toluidine	0–20 Vol%
N,N-Dimethylaniline	0–20 Vol%

SUM PARAMETERS	RANGE
Aromatics ¹	0–60 Vol%
Olefins ¹	0–80 Vol%
Di-Olefins ²	0–15 Vol%
Oxygenates ²	0–80 Vol%
Oxygen ²	0–12 wt%
Anilines ²	0–25 Vol%
Esters ²	0–30 Vol%
Saturates	0–100 Vol%

OXYGENATES ²	RANGE
MTBE	0–20 Vol%
ETBE	0–25 Vol%
TAME	0–25 Vol%
DIPE	0–20 Vol%
Dimethoxymethane (DMM)	0–20 Vol%
Methanol	0–15 Vol%
Ethanol	0–25 Vol%
Iso-Propanol	0–20 Vol%
2-Butanol	0–25 Vol%
tert-Butanol	0–25 Vol%
Dimethylcarbonate (DMC)	0–15 Vol%
Methylacetate	0–15 Vol%
Ethylacetate	0–15 Vol%
Isobutylacetate	0–15 Vol%
Sec-Butylacetate	0–15 Vol%

OCTANE BOOSTERS ²	RANGE
MMT	0–10 000 mg/L
CMT	0–10 000 mg/L
Manganese	0–2 500 mg/L
Dicyclopentadiene (DCPD)	0–15 Vol%

Diesel Fuel Module

PROPERTIES ¹	RANGE
Cetane Number	20–80
Cetane Index	20–80
Distillation Fractions	IBP, T10, T50, T65, T85, T90, T95, FBP
Evaporation Fractions	E250, E350 (°C)
CFPP	-50–+20 °C
Viscosity at 40 °C	0–10 mm ² /s
Density (built-in U-tube cell)	0–3 gcm ⁻³
PARAMETERS	RANGE
Total Aromatics ¹	0–60 Vol%
Polynuclear Aromatics (PNA) ¹	0–50 Vol%
Benzene ²	0–5 Vol%
Cetane Improver (2-EHN, IPN) ²	0–20 000 mg/L
Dimethoxymethane ²	0–20 Vol%
FAME ² / FAEE ²	0–100 Vol%
Vegetable Oil ²	0–65 Vol%

Fuel Ethanol Module

PARAMETERS ²	RANGE
Ethanol	0–100 Vol%
Water	0–2 Vol%
Methanol	0–15 Vol%
Denaturant	0–75 Vol%
Density (built-in U-tube cell)	0–3 gcm ⁻³

Jet Fuel Module

PROPERTIES ¹	RANGE
Freezing Point	-80–-25 °C
Flash Point	+25–+65 °C
Smoke Point	19–29 mm
Viscosity at 20 °C	1.2–2.1 mPas
Viscosity at -20 °C	2.4–4.5 mPas
Distillation Fractions	IBP, T10, T50, T65, T85, T90, T95, FBP
Density (built-in U-tube cell)	0–3 gcm ⁻³
PARAMETERS	RANGE
Total Aromatics ¹	0–60 Vol%
FAME Concentration ²	0–6 Vol%
Polynuclear Aromatics (PNA) ¹	0–10 Vol%

Fuel Methanol Module

PARAMETERS ²	RANGE
Methanol	0–100 Vol%
Density (built-in U-tube cell)	0–3 gcm ⁻³

Auto Fuel Recognition

ERASPEC automatically detects the fuel type of the sample and performs the corresponding analysis.

Easy addition of unlimited user-defined properties.

1 ... The range and repeatability for all correlated properties depend on the used database.

2 ... Lowest concentrations correspond to the limit of detection (LOD), all concentrations in Vol% and Mass%.

Technical Specifications of eraspec

Available Test Methods	ASTM D5845, D6277, D7777, D7806; EN 238, EN 14078; ISO 15212; IP 559
Correlation to	ASTM D56, D86, D323, D445, D613, D976, D1319, D1322, D1840, D2386, D2699, D2700, D3828, D4814, D5191, D6371, D6379, D6378, D7153; EN116, EN 13016; ISO 3104, 3405, ISO 5163, ISO 5164, ISO 5165
Spectrometer Type	Patented mid-FTIR interferometer Laser and temperature controlled design
Measurement Cell	20 µm and/or 100 µm path length cell, reference cell Optimized dual or triple position cell design for gasoline, diesel and jet fuel measurements
Calibration	Factory calibrated with a matrix of several hundred international fuels
Spectral Libraries	Easy addition, expansion and exchange of individual fuel libraries On the fly recalculation of libraries without delaying any measurements
Density Meter	0–3 gcm ⁻³ (r = 0.0005 gcm ⁻³) Oscillating U-tube cell
Measurement Time	60 seconds, includes sample introduction, measurement and calculations Warm-up time 30 seconds
Sample Introduction	Directly from the sample container by an integrated pump
Sample Volume	10 mL
Cleaning	Automatic rinsing with next sample or solvent Flow cell protection by an integrated filter
Display of Fuel Spectra	Direct comparison of spectra on the color touchscreen Overlay of fuel spectra with spectra of pure substances
Display	Industry proven 7" color touchscreen
Interfaces	Built-in PC with Ethernet, USB, and RS232 interfaces Direct LIMS connectivity via LAN and output to printer or PC Optional input by external keyboard, mouse, and barcode reader
Remote Control	Remote service capability via Ethernet interface
PC Software	ERASOFT RCS – remote control Windows® software for multi-instrument remote control, convenient data transfer, viewing spectra and result analysis
Result Database	50 000+ detailed test reports and spectra storable in internal memory
Alarm Tracking	All alarm messages are stored in the database together with the results
Power Requirements	Auto-switching 85–264 V AC, 47–63 Hz, max. 150 W (multi-voltage power supply) Field application: 12 V DC (vehicle battery) adapter available
Dimensions / Weight	29 x 35 x 34 cm (11.4 x 13.8 x 13.4 in) / 9.7 kg (21.4 lb)

Due to continuing product development, specifications are subject to change.

All eralytics products are manufactured under ISO 9001 regulations and are CE, ROHS and UL/CSA compliant. www.eralytics.com/eraspec



eralytics instruments are available worldwide.
An international network of over 50 authorized and well-trained distributors is ready to answer your inquiries and to offer local support and service.
www.eralytics.com/distribution

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