



The Portable Quality Fuel Analyzer (PFQA) provides rapid fuel quality assessment anywhere it's needed, the plant, port, or field. The PFQA uses Near Infrared Spectroscopy combined with Advanced Chemometric Analysis to determine key fuel properties that determine engine performance. Analysis is obtained in seconds using only a 2 mL fuel sample.

The PFQA is calibrated at the factory using a diverse matrix of over 800 fuels from around the world. The results obtained with the PFQA are based on fuel property data obtained by ASTM methods. New fuel types can be easily added to the PFQA without making any modifications to the hardware.

The PFQA is used as follows:

- 1) A sample is placed in a disposable 2 mL vial then sealed.
- 2) The sealed vial is placed in the PFQA.
- 3) The PFQA is turned *On*.
- 4) The operator presses *Measure Sample*.
- 5) The results are displayed in 10 seconds.

There is no cleaning or flushing required between samples.

Advantages

- **One Instrument for All Fuel Types: Diesel, Gasoline, and Jet**
- **Uses Only 2 mL of Fuel**
- **No Sample Preparation Required**
- **Warm Up in 1 Minute**
- **Complete Analysis in 10 Seconds**
- **Permanently Aligned and Calibrated**
- **Light Weight, Portable, and Easy To Use**
- **Rugged Design, No Moving Parts**
- **Analysis Based on ASTM Data**
- **Analysis Software and Tablet Computer Included**
- **Optional 4 hour battery**
- **Optional Printer**



Portable Fuel Quality Analyzer
7x13x16", 14 lbs.

Developed with the Support and Cooperation of the U.S. Marine Corps and the U.S. Army

Diesel	Jet Fuel	Gasoline
Density / API Gravity	Density / API Gravity	Density / API Gravity
Distillation Fractions (IBP, 10%, 50%, 90%, FBP)	Distillation Fractions (IBP, 10%, 50%, 90%, FBP)	Distillation Fractions (IBP, 10%, 50%, 90%, FBP)
Cetane Index	Flash Point	Octane (RON, MON, AKI)
Viscosity 40C	Viscosity -20C	Reid Vapor Pressure
Flash Point	Freeze Point	Ethanol
Cloud Point	Pour Point	MTBE
Biodiesel	Fuel System Icing Inhibitor	BTEX
Sulfur		

The Performance and System Specifications for the Portable Fuel Quality Analyzer.

Performance Specifications			
Property	Range	RMSEC	Method ⁽¹⁾
Density	0.77-0.87 kg/m ³	±0.0033	D1298
Cetane Index ⁽²⁾	35-60	±1.43	D976
Distillation 0%	140-210 C	±6.5	D86
Distillation 50%	185-300 C	±6.6	D86
Distillation 90% ⁽²⁾	225-350 C	±4.3	D86
Distillation 100% ⁽³⁾	245-365 C	±4.4	D86
Viscosity (-20 C) ⁽³⁾	< 8.5 cSt	±0.5	D445
Viscosity (40 C) ⁽²⁾	1.9-4.1 cSt	±0.19	D445
Flash Point	38-100 C	±6.2	D93
Cloud Point ⁽²⁾	-20 to 0 C	±2.2	D2500
Pour Point	Regional C	±4.83	D5297
Freezing Point ⁽³⁾	-60 to -40 C	±6.5	D974
Aromatics	10-25 %	±3.85	D1319
Olefins	2-18 %	±4.45	D1840
Saturates ⁽²⁾	75-90 %	±6.1	D1390
FSII ⁽³⁾	0 to 0.20 %	±0.02	D4530
Biodiesel ⁽³⁾	5-20 %	±2	D96
Sulfur	0.01-0.05	±0.01	D4294

Due to continuing product development, specifications may change at any time.

(1) ASTM method used to develop correlations

(2) Applies to Diesel Fuel only

(3) Applies to Jet Fuel only

Typical user Interface (Custom Interfaces Available)

The screenshot shows the PFQA software interface. At the top, there are tabs for Measure, Spectrum, Spectrometer, Model Settings, and TEC (10.996). Below these are input fields for Fuel Type (D2), Sample ID (Sample1), Memo (Test Sample1), and Operator (John Doe). A large 'Results' table is displayed, showing various fuel properties and their corresponding values. The table has columns for Min, Max, Prediction, Error, and Pass/Fail. A 'RUN' button is highlighted in green, and an 'EXIT' button is in red. At the bottom, there are status indicators for 'Pass/Fail' and 'In Range?' and a 'Generate PDF Report' button.

	Min	Max	Prediction	Error	Pass/Fail
Density 15C	0.82	0.877	0.85	0.0074	Pass
Flash Point	52	Inf	83.82	10.5451	Pass
Cetane Index	40	Inf	48.04	3.0594	Pass
Cloud Point	-Inf	-7.3	-13.16	10.3471	Pass
Viscosity 40C	1.9	4.1	2.88	0.4903	Pass
Sulfur wt%	-Inf	0.05	0.02	0.0124	Pass
IBP			193.87	7.6390	
Distill 10%			217.58	17.8100	
Distill 20%			231.88	17.7706	
Distill 30%			269.05	18.0027	
Distill 50%	282	338	318.50	14.4892	Pass
FPB			341.01	15.0111	
Pour Point	-35	0	-12.17	11.7167	
Acidity	-Inf	0.18	NaN	NaN	

System Specifications	
Operation	
Warm-up Time	1 minute
Measurement Time	10 seconds
Sampling	2 mL glass vials (disposable)
Calibration	Factory set using NIST standard lamp
Analyzer	
Measurement Principle	Near Infrared Spectroscopy
Optical Design	Dispersive (no moving parts)
Light Source	Incandescent Lamp
Detector	256 pixel InGaAs (thermo-electrically cooled)
Spectral Resolution	3-6 nm (20-30 cm ⁻¹)
Spectral Range	1000 to 1600 nm
Analysis	
Calibration	Each unit is calibrated with a diverse matrix of over 800 fuels
System Check	Methylene Chloride Reference
Fuel Analysis	Validated against ASTM methods
Outlier Detection	Non fuel or contaminated fuel rejected
Data System	
Computer	Tablet computer
Operating System	Windows 8.1
Sample Storage	Over 1000 measurements on computer
Data Export	USB Port, Ethernet, WiFi
Data Printout	Thermal printer
Environment	
Dimensions	7x13x16" (17.4x33x40.6 cm)
Weight	14 lbs (6.24 kg)
Power	120/240 VAC 50/60Hz or 12 VDC with automotive lighter adapter
Power	Optional battery
Operating Temperature Range	-4 to 110 F (-20 to 45 C)

The PFQA was developed with the support and cooperation of the United States Marine Corps, Army, and Navy.