

InfraCal 2 Soot Meter

PORTABLE, RUGGED INFRARED ANALYZER



Soot, in diesel engines, is made up of nanometer size hard carbon particles and is deposited in the oil as combustion by-products. As soot globules coagulate into larger particles, engine wear will accelerate. At very high levels soot can cause an increase in the oil viscosity. Higher than normal levels can indicate an improper air/fuel ratio, plugged or defective air intakes or leaking injectors.

The InfraCal 2 Soot Meter measures the amount of suspended carbon (soot) in diesel engine lubricating oils by infrared absorption at a fixed wavelength. The Soot Meter is based on proven IR technology. Results correlate to the TGA (thermogravimetric analysis) reference method ASTM D7686 and FTIR methods. No solvents requiring special ventilation, expensive waste disposal or difficult to clean cells are needed.

Ideal for:

Oil testing labs – achieve comparable results to TGA or FTIR in a fraction of the time

Engine test labs – obtain on-the-spot assessment of the engine test progress

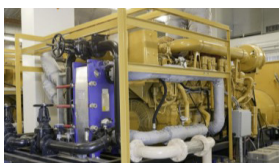
Fleet maintenance shops – check soot level to know exactly when to schedule oil changes

Construction or mining sites – stay operational with oil condition checks

On-board-ship – no need to return to port to monitor oil condition

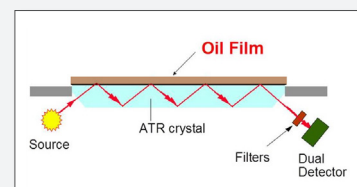
Power generation stations – monitor the quality of the lubricating oil without waiting for off-site lab results

- Measurement range: 0 - 15% soot
- Instrument repeatability: +/- 0.2
- Complies with ASTM Method D7686
- No dilution or sample preparation
- Rapid analysis – less than 30 seconds per sample
- Multiple language interface with touch screen input
- Password protected settings



Principle of Operation

Samples are applied to a zinc selenide (ZnSe) attenuated total reflectance (ATR) sample plate. Infrared light from a source bounces multiple times between the top and bottom surfaces of ZnSe crystal as it travels horizontally from one side to the other. It is then filtered and measured by the detector. The loss of the light at specific wavelengths is due to the absorption by the oil sample on the top plate and it is then calculated to percentage of soot based on calibration to gravimetric methods.



Soot Meter Product Information

PART NUMBER	
406-2048	InfraCal 2 Soot Meter, complete with HATR sample stage for direct measurement of suspended carbon (soot) level in diesel engine oils (factory calibrated to 12% soot concentration) set of reference oils and power supply.
PRODUCT INFORMATION	
Analytical Wavelength/ Wave Number	3.9 micrometers, 2464 cm ⁻¹
Outputs	% (by weight) soot in engine oil
ASTM Method	ASTM 7686
Analytical Range	0 - 15%
Analysis Time	Less than 30 seconds
Instrument Repeatability	±0.2%
USER INTERFACE SPECIFICATIONS	
User interface	6" color display
Data input	Touch screen
Communication port	USB, RS 232
POWER REQUIREMENTS	
Battery Power Source	18 volt NiCad battery
External Power Requirements	18 volts DC, 3.3 amps
Power Adaptor Input	Universal AC/DC
Battery Run Time	4 - 6 hours

OPERATING SPECIFICATIONS	
Sample Volume	< 1 ml
Solvent/Reagent	None
Operating Temperature	5°C - 40°C
Relative Humidity	0 - 90%, non-condensing
Altitude	Up to 5000 meters
MECHANICAL SPECIFICATIONS	
Weight	7.0 lbs (3.2 kg)
Dimensions	6.7" x 7.8" x 5.2" (170 x 198 x 132 mm)
Shipping Weight	8.0 lbs (3.6 kg)
Shipping Dimensions	10 x 10 x 14" (254 x 254 x 355 mm)
COMPLIANCE	
CE, FCC Class B, NEMA 2, IP31	
CONSUMABLES AND STANDARDS	
403-0025	Set of 6 reference oils in dropper bottles, appropriate for calibration and verification of reproducibility 0 - 12% soot range. This set of reference oils has been correlated with the results obtained via thermal gravimetric analysis (TGA) of fresh used diesel oil samples.
OPTIONAL ACCESSORIES	
403-0013	Carrying case for InfraCal Analyzers with pre-diced pluck foam. 18.5" x 14.6" x 8"; 10 lbs
403-1086	Dust cover



The Soot Meter can be used as part of a solutions kit for engine oil condition.