Spectro Scientific
AMETEK

InfraCal 2 Analyzers — Measuring Oil In Water & Soil





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Over 5,000 Oil in Water/Soil Analyzers in World-wide Use Today





The InfraCal 2 Oil in Water Analyzers quickly and accurately measure TOG (total oil & grease), FOG (fats, oil and grease) and TPH (total petroleum hydrocarbons) in produced water, industrial wastewater and soil. InfraCal 2 analyzers have become the petrochemical industry standard ensuring oil content levels in produced water, drill cuttings or soil are below the regulated limit. InfraCal 2 Analyzers are widely used in industrial wastewater and in municipal testing laboratories to ensure EPA guidelines are met prior to disposal.

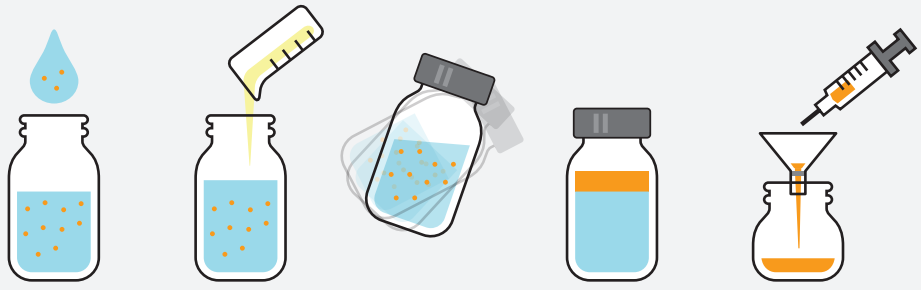
One instrument, multiple applications

The portability and proven ruggedness of the InfraCal 2 means it is the ideal equipment for on-site analysis of oil in water/soil in a variety of locations and environments. The ease-of-use of the InfraCal 2 means that non-laboratory personnel can be easily trained to use the equipment in under 2 hours. These attributes make the InfraCal 2 well-suited to be used in a multitude of applications including the following:

- Testing produced water on offshore or onshore oil rigs
- Monitoring refinery or industrial plant wastewater effluents
- Measuring FOG discharge levels
- Checking oil/water separation systems
- Measuring oil in drilling mud/cuttings
- Determining the purity level of reclaimed solvents
- Testing for residual oil on pre-cleaned metal components

Simplified extraction procedure for on-site analysis

The InfraCal 2 is a mobile platform for oil in water analysis and is used to measure samples on-site and in the lab. Standard lab methods typically use a complicated liquid-liquid extraction method for analyzing oil in water that can require up to 28 steps and take over 2 hours. It is not possible to perform this procedure on-site, so the InfraCal 2 uses a simplified, 5 step extraction procedure for measuring oil in water that uses up to 90% less solvent than standard laboratory tests.



Collect known amount sample

Add solvent at appropriate ratio

Mix for 1-2 minutes

Allow the two layers to separate

Filter sample (when necessary)



Standard features of the InfraCal 2

MEASUREMENT RANGE

The InfraCal 2 can measure values from sub-ppm all the way up to 15%. This flexibility allows the instrument to cover a wide variety of applications.

MULTIPLE CALIBRATIONS

The InfraCal 2 can store multiple calibrations including custom calibrations added by the user. Each calibration can be individually adjusted allowing the user to tune the instrument in order to receive even more accurate results.

LIMITED REQUIRED GLASSWARE

Since the InfraCal 2 uses a simplified extraction procedure, it does not require as much glassware as standard laboratory methods. This is critical for non-laboratory locations with limited space.

FAST RESULTS

Including extraction, the InfraCal 2 can provide results in under 15 minutes. This allows users to make decisions based on the results immediately rather than having to wait 1+ week for results from a lab.

MULTIPLE SOLVENT CHOICES

Hydrocarbon solvents can range non-toxic to highly toxic and from relatively cheap to very expensive. Since the InfraCal 2 can work with a variety of solvents, users can choose which solvents work best to meet their needs.

TOUCHSCREEN DISPLAY

The touchscreen display allows for more features in the instrument as well as a simpler user experience.

MULTIPLE LANGUAGE OPTIONS

Internal languages in the instrument include English, Spanish, French, Portuguese, Russian, Chinese and Arabic.

INTERNAL DATA STORAGE W/USB EXPORT

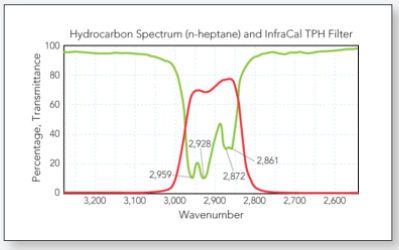
The InfraCal 2 can store up to 2000 results internally that allow the user to look up historical data without having to manually write down results. The data can be easily exported to an external USB drive as a CSV file.

INTERNAL BATTERY

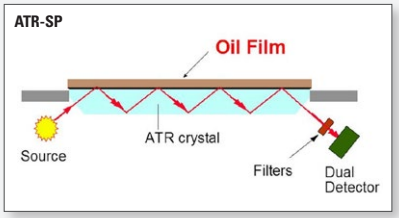
An internal battery allows the user to run the instrument in locations without stable wall power or any other power source for up to 6 hours.

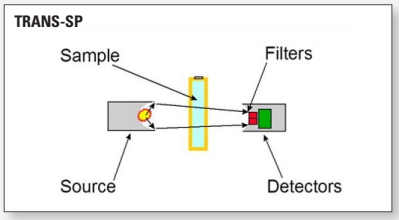
IR analysis for TOG/TPH/FOG

For more than 50 years, infrared spectroscopy has been used as a method to look for TOG/TPH. Since hydrocarbons have multiple strong peaks in the mid-IR spectrum, this methodology is ideal for measuring oil in water/soil to ppm and even sub-ppm concentrations. The InfraCal 2 uses a broadband filter centered at 2930 cm^{-1} to measure the oil content of water/soil samples. Unlike some other IR methods that only measure the CH_3 component of a hydrocarbon oil, the InfraCal 2 measures both CH_2 and CH_3 components of a hydrocarbon oil so it is less susceptible to changes in the composition of the oil being measured.



GREEN = IR spectrum
RED = InfraCal 2 bandpass filter







InfraCal 2 ATR-SP

The ATR-SP model is the most common model chosen by customers. Like EPA 1664, the ATR-SP, ASTM D8478, uses hexane and an evaporation during the measurement process making it an ideal solution for customers trying to get comparable results to the EPA 1664 method.

- Strong correlation to EPA 1664 because both methods use a hexane extraction procedure
- Uses a variety of solvents such as hexane, pentane and cyclohexane that are inexpensive, easily obtained
- ATR crystal is robust and is easily maintained with proper cleaning
- No sample handling accessory required
- Measurement range can extend up to 15%



InfraCal 2 TRANS-SP

The TRANS-SP uses the traditional IR transmission method for measuring oil in water/soil. Since the TRANS-SP does not rely on an evaporation, there is no loss of volatile material during measurement which is why the TRANS-SP was used for developing ASTM D7066.

- Measures both volatile and non-volatile hydrocarbons
- No evaporation required
- Used to develop ASTM D7066
- Strongly correlates with other regulatory methods
- Uses a variety of solvents, some of which are non-toxic and environmentally friendly

SPECIFICATIONS	
Analytical Wavelength/Wave Number	3.4 µm, 2930 cm^{-1}
Power Requirements	18 volts DC, 3.3 amps, internal battery
Power Supply	Universal AC, optional Auto adapter
Weight	5.8 lb (2.6 kg), with battery - 7.0 lbs (3.2 kg)
Dimensions	6.7" (17cm) x 7.8" (19.8 cm) x 5.2" (13.2 cm)
Suggested Operating Range	40°F (5°C) – 110°F (40°C)
Measurement Range	ATR-SP: 0.3-2000+ ppm 0.3-15+ % TRANS-SP: 0.1-2000+ ppm
Analysis Time	10-15 minutes, including extraction process
Instrument Repeatability	ATR-SP: down to ±0.3 ppm TRANS-SP: down to ±0.1 ppm
Communication Port	USB, RS 232

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