



UVF-TRILOGY Test Procedures using METHANOL SOLVENT Extraction

©2021 Sitelab Corporation

Visit: www.site-lab.com Call Toll Free 877-SITELAB or Dial (USA) 978-363-2299 UVF-TRILOGY SOIL-PROCEDURES-V3

Equipment Required

UVF-TRILOGY, glass cuvette, solvent dispenser bottle, adjustable pipette, digital scale, metal spatulas and tissue wipes.

UV Modules used with analyzer. Be sure the proper module is installed. Select GRO, EDRO, PAHS or TPHOIL.

20 Sample Extraction Kit - Soil Product No. EXTR010-20
Use for sample analysis. Solvent not included. Use HPLC or other high grade methanol solvent.

Rinse cuvette with solvent prior to use and place onto tissue wipes. Use a waste cup to collect solvent.

WARNING! Methanol highly flammable. Dispose solvent waste properly.

Set up Analyzer

Insert UV Module
Choose "UV" when prompted to select and confirm the module being used

Turn the instrument on using the switch in the back. Open the lid and insert the module into position. Press "Calibrate" and then press "Use Stored Calibration." Choose the test you want and press "Select." The screen will display a green "measure fluorescence" button with test name shown below it. Analyzer is ready for analysis.

1. Extract Sample in Solvent

Metal Spatula
Extraction Jar
10 mL Line
Test Tube
Methanol

For Most Soil Applications:
Weigh 5 grams of sample into extraction jar using the scale and metal spatula. Fill the solvent dispenser bottle with methanol and squirt 10 mL of solvent into a graduated plastic test tube and pour into extraction jar. 10 mL + 5 grams creates a 2-to-1 or 2X Extract.

Testing Clay Samples, Sediments or Sludge?
Prepare a 4X Extract; Weigh 5 grams of sample into extraction jar and add 20 mL of solvent. Samples will settle faster and filter more easily.

2. Filter Extract

Syringe
Filter
Extract

Samples filter easier when extraction jars settle longer

Shake extract jars by hand for several minutes. Next, let jars settle for several more minutes or longer if needed. Remove lid and suck up 2 to 4 mL from the surface using a syringe. Attach/screw a filter to the syringe and dispense contents into a test tube. Label Extract tube with sample ID and 2X or 4X.

3. Prepare Dilution

Pipette Extract
Use Extract to Prepare Dilutions
Start with a 100X Dilution First
Add Solvent

Adjust setting on the micropipette, attach a tip and use a 2nd test tube to prepare a dilution for analysis. Examples shown below account for the dilutions created in Step 1:

Pipette Extract	Add Solvent To	2X Extract Dilution	4X Extract Dilution
250 uL x2	5 mL line	= 20X	= 40X
200 uL	5 mL line	= 50X	= 100X
100 uL	5 mL line	= 100X	= 200X
50 uL	5 mL line	= 200X	= 400X
50 uL	use 10 mL	= 400X	= 800X

4. Test Sample and Record Results

Tighten cap and shake dilution made in Step 3 for several seconds prior to use. Pour dilution into the glass cuvette, about half full. Use a tissue wipe to keep the outside glass clean from liquids or fingerprints. Next, carefully place cuvette into the UV Module and close the lid. Be careful not to spill!

Press the green "Measure Fluorescence" button and wait for concentration to be displayed. Readings are shown in PPM units. Measure sample again to check repeatability. Avoid readings near zero or above the upper limit of calibration. These detection limits vary depending on module and calibration selected. Press "Mode" and test sample in raw fluorescence units (RFU), if desired. Pour back into test tube when finished. Save and store extracts and dilutions.

Example: EDRO in Soil
Cal Range = 0.1 - 5 ppm
Reading = "2.22 ppm" x 100X Dilution
Final Concentration = 222 ppm (mg/Kg)

Multiply reading by dilution tested for final result. Avoid testing Extracts unless samples are clean.

Check for Quenching

Prepare and test higher or lower dilutions
100X Dilution = 2.22 ppm
200X Dilution = 1.10 ppm
Good, Linear! 222 vs. 220

"Quenching" can occur when the detector is swamped by too many hydrocarbons or organic interferences, producing low or negative concentrations. Test the sample at multiple dilutions to confirm results are linear and accurate. Rinse and clean test tube and pipette tip with solvent to reuse. Use Extract to make higher or lower dilutions.

Highly Contaminated Samples

Use the 100X Dilution from cuvette or test tube
Adjust Pipette
Test New Dilutions
Add Solvent

Samples with very high concentrations of hydrocarbons require very big dilutions for analysis. The 100X Dilution prepared in Step 3 can be further diluted using the pipette. Pipette contents of the 100X into a clean test tube and add 5 mL or 10 mL of solvent. Use examples below:

Pipette	Add Solvent To	New Dilution Created
100X Dilution		
250 uL x2	5 mL line	1,000X
50 uL	5 mL line	10,000X
50 uL	use 10 mL	20,000X

Quality Control Tests

See "View Cal Details" with RFU values

Test a Solvent Blank

Confirm your solvent is clean. Readings should be zero ppm (or close to zero).

Test Calibration Standards (if available)

Readings should be close. Calibration Kits include a Certificate of Analysis with Instructions and MSDS.