

Remediation, Assessment & Industrial Testing



RaPID Assay[®]

PAHs RaPID Assay

Features

- rapid field testing procedure for analysis of soil and water samples
- quantitative data results with excellent analytical precision
- test up to 50 samples at one time
- results in approximately 60 minutes
- training recommended
- magnetic particle immunoassay
- EPA SW-846 Method #4035

Test Result Type

- Quantitative, semi-quantitative or qualitative.

Samples per Kit

- Two kit sizes available:
 - 30 Test Kit (tests up to 20+ samples)
 - 100 Test Kit (tests up to 80+ samples)

Assay Range

- Soil: 0.2 to 5.0 ppm as Phenanthrene
- Water: 0.93 to 66.5 ppb as Phenanthrene
- Range can be extended with additional dilutions.
- Site specific calibration required to meet total PAH analysis.



Sample Preparation

- Soil samples require prior extraction using the SDI Sample Extraction Kit (sold separately).
- The Sample Extraction Kit provides materials for 12 soil sample extractions with methanol.
- Water samples need to be diluted 3 parts sample to 1 part methanol to prevent adsorptive loss.

Sampling Time

- Soil extraction time is typically 2 minutes per sample plus assay run time of approximately 60 minutes.



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Specificity

The Total PAHs (sum of 16 PAH compounds) of the indicated contaminant types in soil samples are expressed below, at each of the three kit calibrator (standards) levels, in units comparable to results from GC method 8270 or HPLC method 8310.

PAHs RaPID Assay
Total PAHs in Soil (in PPM)

Contaminant	Std. 1 equiv.	Std. 2 equiv.	Std. 3 equiv.
Creosote	0.04	0.3	1.0
Coal Tar Oil	0.04	0.2	1.0
Diesel Oil	0.01	0.1	0.4
Jet Fuel	0.15	0.8	4.0
Fuel Oil #1	0.15	0.8	4.0
Fuel Oil #2	0.01	0.1	0.5
Fuel Oil #4	0.01	0.05	0.25
Fuel Oil #5,6	0.01	0.03	0.1

The PAHs RaPID Assay immunoassay test does not differentiate between phenanthrene and other polyaromatic hydrocarbons. The table below shows compounds at the limit of quantitation (LOQ) - an approximate concentration required to yield a positive result at the lowest standard. The IC50 is the concentration required to inhibit one-half of the color produced by the negative control. It is also used to calculate cross-reactivity values to similar compounds.

Contaminant	PAHs in Soil (ppm)	
	LOQ	IC50Total
Phenanthrene	0.20	1.65
Fluoranthene	0.06	0.47
Benzo(a)pyrene	0.08	0.69
Pyrene	0.09	0.77
Chrysene	0.09	0.78
Anthracene	0.13	1.10
Indeno(1,2,3-c,d)pyrene	0.33	2.72
Benzo(a)anthracene	0.34	2.84
Fluorene	0.43	3.52
Beno(b)fluoranthene	0.66	5.42
Acenaphthylene	5.42	44.7
Benzo(k)fluoranthene	6.35	52.4
Acenaphthalene	8.34	68.8
Benzo(g,h,i)perylene	>12	>100
Naphthalene	>12	>100
Dibenzo(a,h)anthracene	>12	>100

Test Kit Components

- Antibody coated magnetic particles for analysis of 30 or 100 test tubes
- Diluent zero, wash, enzyme conjugate, color development and stop reagents.
- Standards for 2, 10 and 50 ppb as Phenanthrene.
- Negative control standard and a 25 ppb control.
- Disposable test tubes.
- Test kit instructions

Storage & Precautions

- Shelf life is typically one year from date of manufacture, with specific kit expiration date information provided on product packaging.
- Reagents must be stored at 39° to 46°F (4° to 8°C) when not in use.
- Storage at ambient temperature 64° to 81°F (18° to 27°C) is acceptable for day of use.
- Kits must be brought to 64° to 81°F (18° to 27°C) before use.
- Do not expose color solution to direct sunlight.

Required Test Materials

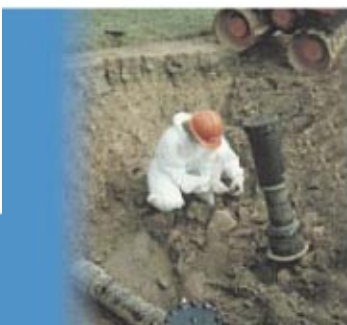
- | | |
|--|-----------------------------|
| ◦ PAHs Test Kit: 30 tube | <i>SDI Part #</i>
A00156 |
| ◦ PAHs Test Kit 100 tube | A00157 |
| ◦ SDI Sample Extraction Kit
(for soil samples only) | A00160EA or
A00160EB |
| ◦ 10X Range Extension Kit | A00236 or |
| ◦ 100X Range Extension Kit | A00237 |

Required Test Equipment

- | | |
|-----------------------------|------------------|
| ◦ RaPID Assay Accessory Kit | 6050100 purchase |
| which contains: | 6997010 rental |
| RPA-I RaPID Analyzer | A00003 |
| Magnetic Separation Rack | A00004 |
| Repeater Pipet | A00008 |
| Adjustable Volume Pipet | A00176 |
| Vortex Mixer | A00014 |
| Portable Balance | A00131 |
| Digital Timer | A00015 |
| ◦ Repeater Pipet Tips | A00009 |
| ◦ Adjustable Pipet Tips | A00013 |

Other Recommended Materials

- Latex gloves
- Liquid and solid waste containers
- Calculator
- Absorbant paper for blotting
- Marking pen



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