

PAH

RaPID Assay® is a rapid field or laboratory enzyme immunoassay method for the analysis of soil and water for remediation, assessment, and industrial testing.

Test result type

- Quantitative, semi-quantitative or qualitative

Samples per kit

- 100 test kit (tests up to 80+ samples)

Assay range

- Soil: 0.2 ppm to 5 ppm as Phenanthrene
- Water: 2.66 ppb to 66.5 ppb as Phenanthrene
- Range can be extended with additional dilutions
- Site specific calibration required to meet total PAH analysis

Sampling preparation

- Soil samples require prior extraction using the sample extraction kit (sold separately)
- The sample extraction kit provides materials for 12 soil sample extractions
- Water samples must be diluted three parts sample to one part methanol to prevent adsorptive loss

Sampling time

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

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.

- » Rapid field testing procedure for analysis of soil and water samples
- » Quantitative data results with excellent analytical precision
- » Results available in approximately 60 minutes
- » Tests up to 50 samples at once
- » Magnetic particle immunoassay
- » Training available
- » EPA SW-846 method #4035

TOTAL PAH IN SOIL (PPM)

Contaminant	Std. 1 equiv.	Std. 2 equiv.	Std. 3 equiv.
CRESOTE	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 RaPID Assay® PAH 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 colour produced by the negative control. It is also used to calculate cross-reactivity values to similar compounds.

TOTAL PAH IN SOIL (PPM)		
Contaminant	LOQ	IC ₅₀ Total
Phenanthrene	0.20	1.65
Fluoranthene	0.057	0.47
Benzo(a) pyrene	0.084	0.69
Pyrene	0.093	0.77
Chrysene	0.095	0.78
Anthracene	0.133	1.10
Indeno(1,2,3,c,d) pyrene	0.33	2.72
Benzo(a) anthracene	0.344	2.84
Fluorene	0.43	3.52
Benzo(b) fluoranthene	0.66	5.42
Acenaphthylene	5.42	44.7
Benzo(k) fluoranthene	6.35	52.4
Acenaphthalene	8.3	68.8
Benzo(g,h,i) perylene	>12.12	>100
Naphthalene	>12.12	>100
Dibenzo(a,h)anthracene	>12.12	>100

Other recommended materials

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

p = purchase, r = rental

Test kit components

- » Antibody coated magnetic particles for analysis of 100 test tubes
- » Diluent zero, wash, enzyme conjugate, colour development, stop reagents and wash solution
- » Standards for 2, 10 and 50 ppb as Phenanthrene
- » Kit control as 25 ppb as Phenanthrene
- » 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
- » Store 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 colour solution to direct sunlight

Required test materials

Part

- | | |
|---|----------|
| » PAH 100 test tube kit | A00157 |
| » Sample extraction kit (for soil samples only) | A00160EA |

Required test equipment

- | | |
|---|-------------------------|
| » RaPID Assay accessory kit which contains: | 050100(p)
6997010(r) |
| » RPA-I1 RaPID analyser | 6000081 |
| » Printer | 6000082 |
| » Magnetic separation rack | A00004C |
| » Repeater pipet | A00008 |
| » Adjustable volume pipet | A00176 |
| » Vortex mixer | A00014 |
| » Portable balance | A00131 |
| » Digital timer | A00015 |
| » Repeater pipet tips | A00009 |
| » Adjustable pipet tips | A00013 |