

Total BTEX/ TPH

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) (Five kit minimum order)

Assay range

- Soil: 0.9 ppm to 30 ppm as total BTEX standard
- Water: 0.02 to 3.0 ppm as total BTEX standard
- As TPH: range varies based on fuel source

Sample preparation

- Soil samples require prior extraction using the sample extraction kit (sold separately).
- The sample extraction kit provides materials for 12 soil sample extractions with methanol.

Sampling time

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

Specificity

The total BTEX/ TPH concentrations of the indicated contaminant types in soil samples are expressed below, at each of the three kit calibrator levels, in units comparable to results from GC method 8015 (TPH).

The total BTEX/ TPH RaPID assay immunoassay test does not differentiate between BTEX and other petroleum 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.

- » Rapid field testing procedure for analysis of soil and water samples
- » Quantitative data results with excellent analytical precision
- » Results available in approximately 60 minutes
- » Training available
- » Magnetic particle immunoassay
- » Correlated to TPH methods (knowledge of fuel source required)

TOTAL BTEX/TPH RAPID ASSAY - TOTAL FUEL IN SOIL (PPM)

Contaminant	Std. 1 equiv.	Std. 2 equiv.	Std. 3 equiv.
Gasoline	10	50	500
Jet A	200	500	2500
JP-4	20	80	750
JP-5	40	100	500
Turbine (Jet) Fuel	10	50	1000
Kerosene	50	150	1250
Artic Diesel	3	10	60
Diesel Fuel	10	40	300
Home Heating Oil	20	70	600
Fuel Oils	10	50	500



BTEX IN SOIL (PPM)

Contaminant	MDL	LOQ	IC ₅₀
Total BTEX*	0.2	0.9	6.55
m-Xylene	0.3	2.5	18.0
p-Xylene	1.3	4.3	31.0
o-Xylene	2.2	6.5	47.0
Ethylbenzene	2.4	10.8	78.0
Toluene	4.4	10.2	74.0
Benzene	5.9	70.6	510
Naphthalene	0.3	0.82	5.9
1,2,4-Trimethylbenzene	0.4	1.6	11.5
Anthracene	0.6	38.8	280
Styrene	0.7	3.6	26.0
Hexachlorobenzene	0.8	>138	>1000
Phenanthrene	0.8	2.2	16.0
Creosote	1.0	6.6	47.6
1,3,5-Trimethylbenzene	1.4	4.8	35.0
Acenaphthalene	1.7	85.2	620
n-Propylbenzene	2.7	6.5	47.0
n-Hexane	23.5	>138	>1000
n-Octane	34.0	>138	>1000
n-Nonane	44.0	>138	>1000
n-Heptane	63.0	99.7	720
Cyclohexane	83.0	>138	>1000
n-Decane	135	>138	>1000
Methylene Chloride	>1000	>1000	>1000
Trichloroethylene	>1000	>1000	>1000

Other recommended materials

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

Test Kit Components

- » Antibody coated magnetic particles for analysis of 100 test tubes
- » Zero standard, wash, enzyme conjugate, colour development and stop reagents
- » Standards for 0.09, 0.35 and 3.0 ppm as total BTEX
- » Kit control as 2.1 ppm as total BTEX
- » Disposable test tubes

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

- » Total BTEX/TPH 100 tube kit A00162
- » Sample extraction kit (for soil samples only) A00165EB
- » Total BTEX sample diluent 100ml (as needed to increase range) A00164

Required test equipment

- » RaPID Assay accessory kit which contains 6050100A (p)
6997010 (r)
 - » SmartReader analyzer w/tablet 6050105
 - » 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

p = purchase, r = rental