

This Application Note contains important information about this product

AFFINILUTE™ MIP – PAH

Description	Quantity	Part Number
AFFINILUTE MIP PAH 25 mg/3 mL	50	M73-0002-B

Molecularly Imprinted Polymers

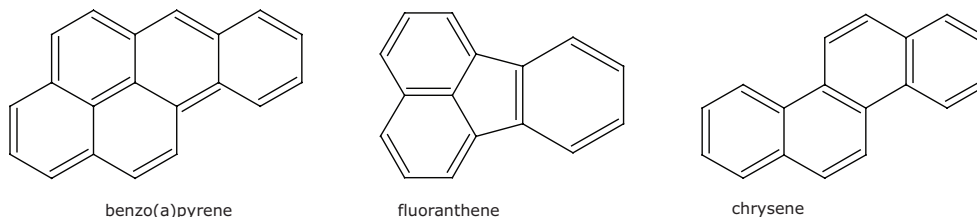
Molecularly imprinted polymers (MIPs) are a class of highly cross linked polymer-based molecular recognition elements engineered to bind one specific target compound or a class of structurally related compounds with high selectivity. The MIP material is designed with cavities that are sterically and chemically complementary to the target analyte(s). As a result, multiple interactions (e.g., hydrogen bonding, ionic, Van der Waals, hydrophobic) can take place between the MIP cavity and the analyte.

Extraction & Analysis of PAHs in Olive Oil

A PAH standard test mix comprising of fluoranthene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(123-cd)pyrene, dibenzo(ah)anthracene, and benzo(ghi)perylene (figure 1) was prepared in methylene chloride.

Olive oil was spiked with PAHs in duplicate at the level of 2 ng/g. Chrysene-d₁₂ was spiked as the internal standard at the level of 20 ng/g.

Figure 1. Representative Structures of PAHs



Sample pretreatment

0.5 g of spiked and blank oil sample was mixed with 0.5 mL cyclohexane and was extracted using the AFFINILUTE MIP SPE procedure described below and analyzed via GC-MS under the conditions listed.

Extraction Procedure

A flow rate of ~0.5 mL/min. is recommended. For analyte elution a flow rate of ~0.2 mL/min. is recommended.

1. Condition with 1 mL cyclohexane
2. Load 2 mL diluted oil sample
3. Wash with 1 mL cyclohexane
4. Elute with 3 x 1 mL ethyl acetate
5. Evaporate SPE eluate under nitrogen at 40 °C and reconstitute in 0.2 mL ethyl acetate for analysis.

GC-MS Conditions for PAH analysis

Column: SLB-5ms: 30 m x 0.25 mm ID x 0.25 µm (Cat. No. 28471-U)
Instrument: Agilent GC-MS
Flow rate: Helium, 2 mL/min, constant
Injector temperature: 300 °C
Oven: 60 °C , 25 °C/min. to 275 °C (5 min.), 10 °C/min. to 300 °C (1 min.)
Injection: 1 µL, splitless
MS detection: Autotune + EM offset of 300
Scan range: SIM

Ordering Information

Description	Quantity	Part Number
AFFINILUTE MIP - PAH		
AFFINILUTE MIP PAH 25mg/3 mL	50	M73-0002-B

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To locate a distributor please
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www.biotage.com.

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AFFINILUTE™ MIP – Triazine

Description	Quantity	Part Number
AFFINILUTE MIP Triazine 25 mg/10 mL	50	M08-0002-G

Molecularly imprinted polymers (MIPs) are a class of highly cross-linked polymers- engineered to bind one target compound or a class of structurally related target compounds with high selectivity. Selectivity is introduced during MIP synthesis in which a template molecule, designed to mimic the analyte, guides the formation of specific cavities or imprints that are sterically and chemically complementary to the target analyte(s). It is therefore critical for analysts to use the methodology described below when using this phase. Conventional generic methodologies employed with conventional SPE chemistries (e.g., reversed-phase C18) will yield sub-optimal results when employed with this phase.

Extraction of triazines and triazine metabolites from water

The following method has been developed for the extraction of the following triazines and triazine metabolites; atrazine, simazine, propazine, cyanazine, sebutylazine deisopropylatrazine, deethylatrazine, deethylterbutylazine, prometon and hydroxyterbutylazine from water. Recoveries are in the range 80-95% and are reproducible, allowing sharp decision limits. The maximum accepted level of triazines in drinking water is 0.1 µg/L (EU legislation).

Note: Terbutylazine analysis is only possible by indirect analysis of its two metabolites, deethylterbutylazine and hydroxyterbutylazine.

Extraction Procedure:

Recommended flow rate is 0.5 mL/min except for analyte elution, for which it is 0.2 mL/min. Gentle vacuum should be applied between each interference elution.

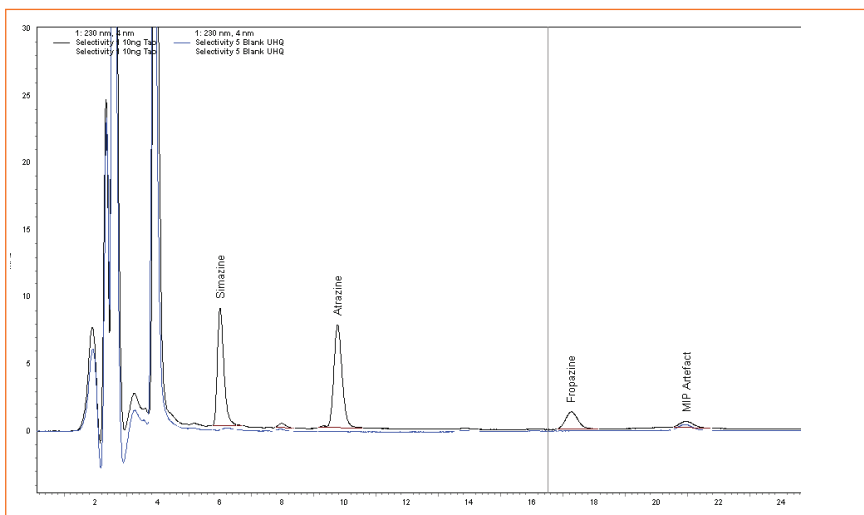
AnalyteS:	Atrazine, Simazine, Propazine, Cyanazine, Sebutylazine, Deisopropylatrazine, Deethylatrazine, Prometon and Hydroxyterbutylazine
Sample pre-treatment:	None
Column conditioning:	<ul style="list-style-type: none"> • 1 mL of MeOH (HPLC Gradient Grade) • 1 mL of Ultra-pure water • 1 mL of 50 mM NH₄H₂PO₄, pH 3 (Do not let the column dry)
Sample application:	Apply the sample to the column (10 mL)
Interference elution:	<ul style="list-style-type: none"> • 1 mL 0.1 M HCL • 1 mL Ultra-pure water • 20 minutes of vacuum (~ -0.7 bar) to dry the column. It is critical to ensure the column is dry before proceeding. • 1.5 mL DCM • 2 minutes of vacuum (~ -0.7 bar) to remove DCM <p>Note: The washes should be performed as prescribed above.</p>
Analyte elution:	Elute Triazines with 3 x 1 mL MeOH (HPLC Gradient Grade), applying gentle vacuum between the fractions. Evaporate under a gentle stream of nitrogen and reconstitute before analysis.

**Recommended Analytical Technique:
HPLC-UV**

Sample: Sample reconstituted in 150 µL of Water:Methanol 4:1
 Injection volume: 80 µL
 Column: Thermo Hypersil Keystone BetaBasic C18, 5 µm, 150 x 2.1 mm
 Flow: 0.25 mL/min
 Temperature: 25° C
 Detection: UV, 230 nm
 Mobile phase: A: 10 mM 10mM NaH₂PO₄·2H₂O, pH 6.9/Acetonitrile 90/10
 B: Acetonitrile
 Gradient elution¹:

Time Min.	Mobile Phase A	Mobile Phase B
0.0	70%	25%
20.0	50%	40%
20.01	70%	25%
30.00	70 %	25%

1. This gradient is developed for analysing a range of triazines. If individual triazines are being analysed the gradient can be optimised to match the specific triazines being analysed.



Chromatograms of extracts from AFFINILUTE MIP Triazine for a tapwater sample spiked with 10 ng/mL of Simazine, Atrazine and Propazine (black line) and a blank tapwater sample (blue line).

Ordering Information

Description	Quantity	Part Number
AFFINILUTE MIP Triazine 25 mg/10 mL	50	M08-0002-G

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