

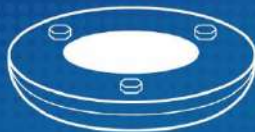


affinisep

The Art of making
sample preparation easier



WATER & ENVIRONMENTAL ANALYSIS SOLUTIONS



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Sampling and sample Preparation

AFFINISEP provides a multitude of chemical phases and formats to help you to face the increasingly challenges of sampling and sample preparation methods for single and multi analysis.

Solid Phase Extraction

SPE Disks

Passive samplers

POCIS, SPATT, Based on
Disks, Silicone rubber

Membranes & filtration

**SPE Manifolds and
Accessories**

AttractSPE® Disks for environmental applications

AttractSPE® Disks are **thin** and **uniform** membranes based chromatography for extraction/separation, purification and concentration of analyte molecules from a liquid or air sample.



AttractSPE® Disks

AttractSPE® Disks are Solid Phase Extraction Disks for the extractions of a broad range of contaminants. **AttractSPE® Disks** are **thin, dense** and **uniform** SPE disks for retention of targeted analytes without any breakthrough. Our innovative SPE disks allow the best interactions with analytes and a maximal flow rates without any channeling.

Important Fact

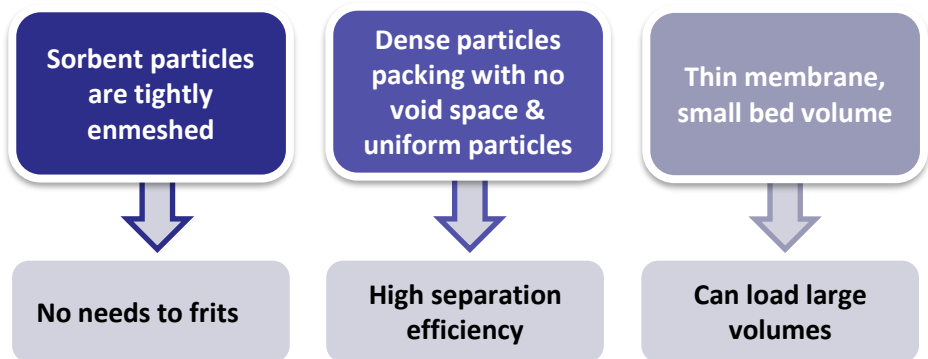
AFFINISEP is manufacturer of its own resins from A to Z (from monomers to polymers) and can tailor-made chemistries with different physico-chemical properties.

Compared to other Disks available on the market :

- ✓ Higher density avoiding channeling
- ✓ No bubbling
- ✓ More diversity on chemistry **including HLB**
- ✓ More diversity in term of capacity (different particle sizes and porosities)
- ✓ Large diversity of applications for passive sampling (based on disks and POCIS) as well as for protein and peptide purifications
- ✓ Can handle dirty samples
- ✓ Compatible with manual and automated holders
- ✓ Multimode or Specific application like disks for Glyphosate

AttractSPE® Disks Advantages

- The membrane has a high exposed surface area of active particles
- AttractSPE® Disks are used to prepare samples of large volumes for environmental analysis with a very high flow rate
- AttractSPE® Disks are available in a broad diversity of chemistry, HLB, C18, SDB-XC, SDB-RPS, anion and cation exchanges as well as multimode HLB and ionics
- AttractSPE® Disks has an excellent hold
- Make possible the loading of high volume of water in a short time with excellent performances
- Usable as Passive sampler such as ChemCatchers
- Disks format for contaminants enrichment – 47mm or 90mm



AttractSPE® Disks Environment

AttractSPE® Disks Environment have been designed for environmental applications such as high volume loading (including in compliance with EPA methods) or passive sampling use.

Product	Compatible with analytical methods
AttractSPE® Disks HLB	EPA methods : 532 (Phenylurea compounds), 548 (Endothall), 625 (Acids and Base/Neutrals including PCBs), 8081 (Organochlorine Pesticides), 8082 (PCBs), 8270 (Semivolatiles Organic Compounds), 8315 (Carbonyl Compounds), 8318 (N-Methylcarbamates), 8330 (Nitroaromatics & Nitramines) and also Hormones, sex steroids, PAHs, PPCPs, Pharmaceutical compounds, Endocrine disruptors
AttractSPE® Disks C18 & AttractSPE® Disks C18 Polar	EPA methods : 506 (Phthalate & Adipate Esters), 507 (Nitrogen- & Phosphorus-Containing Pesticides), 508.1 (Chlorinated Pesticides), 525 (Organic Compounds), 532 (Phenylurea compounds), 548 (Endothall), 550.1 (PAHs), 553.1 (Benzidine & Nitrogen-containing Pesticides), 554 (Carbonyl Compounds & Formaldehyde), 608 (Organochlorine Pesticides), 1613 (Dioxins & Furans), 1614, 1657 (Organophosphorus Pesticides), 1668 (PCBs), 8061 (Phthalate Esters), 8081 (Organochlorine Pesticides), 8082 (PCBs), 8315 (Carbonyl Compounds) and also Bisphenols & Alkyl phenols, PBDEs, Dioxins & Furans, Phthalates, Herbicides, PAHs, Carbaryl, Microcystins
AttractSPE® Disks SDB-XC	EPA method 515.2 chlorinated acids
AttractSPE® Disks SDB-RPS	Explosives Residues (HDX, RDX)
AttractSPE® Disks Anion Exchange - SR	EPA methods: 548.1 Rev. 1 (Endothall), EPA Method 552.1 Rev. 1 (Haloacetic Acids and Dalapon) And also Pesticides, Pharmaceutical compounds and analytes containing carboxylic acid groups
AttractSPE® Disks Cation Exchange - SR	Metals, Amines
AttractSPE® Disks Oil & Grease	Oil & grease

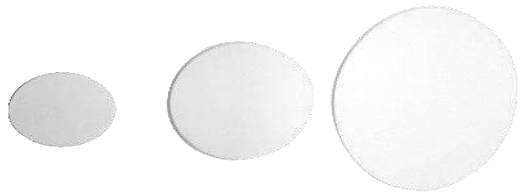
AttractSPE® Disks Environment

Designation	Description	Reference - 47mm -20/pk	Reference -90mm - 10/pk
AttractSPE® Disks HLB	HLB sorbent	SPE-Disks-HLB-47.T1.20	SPE-Disks-HLB-90.T1.10
AttractSPE® Disks C18	C18 sorbent	SPE-Disks-C18-47.T1.20	SPE-Disks-C18-90.T1.10
AttractSPE® Disks C18 Polar	C18 Polar sorbent	SPE-Disks-C18P-47.T1.20	SPE-Disks-C18P-90.T1.10
AttractSPE® Disks SDB	PS-DVB sorbent	SPE-Disks-DVB-47.T1.20	SPE-Disks-DVB-90.T1.10
AttractSPE® Disks SDB-RPS	Modified SDB-RPS sorbent	SPE-Disks-RPS-47.T1.20	SPE-Disks-RPS-90.T1.10
AttractSPE® Disks Anion Exchange SR	SAX sorbent	SPE-Disks-AN-47.T1.20	SPE-Disks-AN-90.T1.10
AttractSPE® Disks Cation Exchange SR	SCX sorbent	SPE-Disks-CAT-47.T1.20	SPE-Disks-CAT-90.T1.10
AttractSPE® Disks Oil & Grease	For oil and grease	SPE-Disks-OIL-47.T1.20	SPE-Disks-OIL-90.T1.10
AttractSPE® Disks Chelating	For multivalent metal	SPE-Disks-MET-47.T1.20	SPE-Disks-MET-90.T1.10
AttractSPE® Disks SAX-HLB	SAX-HLB mixture	SPE-Disks-SAX-HLB-47.T1.20	SPE-Disks-SAX-HLB-90.T1.10
AttractSPE® Disks High Spectrum	Mix HLB-WCX-WAX for non-targeted screening	SPE-Disks-screening1-47.T1.20	SPE-Disks-screening1-90.T1.10
AttractSPE® Disks High Spectrum	Mix HLB-SCX-SAX for non-targeted screening	SPE-Disks-screening2-47.T1.20	SPE-Disks-screening2-90.T1.10
AFFINIMIP® SPE Disks Picolinic Herbicides	Based on AFFINIMIP® SPE Picolinic herbicides for extraction of picloram Clopyralid, Aminopyralid	SPE-Disks-PICO-47.T1.20	SPE-Disks-PICO-90.T1.10

AttractSPE® Disks Applications

- **Extraction/separation, purification** and concentration of analytes from a large volume aqueous sample.
- **Passive Sampling** Devices based on **disks**
- **Air sampling** to identify and quantify health hazards

AttractSPE® Disks are available
with 3 diameters: 25mm,
47mm and 90mm.



AttractSPE® Disks Manifolds
Available for all formats

AttractSPE® Disks Manifolds and accessories

AttractSPE® disks Manifolds

One-, three- or six-station filtration manifolds allow the simultaneous extractions of several 1-L samples on a very simple and easy-to-handle way. The manifold is a very compact stainless steel device with a filtration glassware. Each station is controlled through an independent flow control valve.

Manifolds 47mm



Designation	Reference
AttractSPE® disks Manifolds - 1 station - 47mm	ACC-DISKSPE-G47-1
AttractSPE® disks Manifolds - 3 stations - 47mm	ACC-DISKSPE-G47-3
AttractSPE® disks Manifolds - 6 stations - 47mm	ACC-DISKSPE-G47-6
4L Polycarbonate Trap with 2m vacuum hose	ACC-TRAP-4L



AttractSPE® Prefilter Glassfiber

AttractSPE® Prefilter Glassfiber are required on top of AttractSPE® Disks to prevent clogging when loading water rich of suspended particles



Description	Reference	Description	Reference
25mm, 1µm, 50/pk	PF-GF-50.T1.25.1	90mm, 1µm, 50/pk	PF-GF-50.T1.90.1
25mm, 3µm, 50/pk	PF-GF-50.T1.25.3	90mm, 3µm, 50/pk	PF-GF-50.T1.90.3
47mm, 1µm, 50/pk	PF-GF-50.T1.47.1	100mm, 1µm, 50/pk	PF-GF-50.T1.100.1
47mm, 3µm, 50/pk	PF-GF-50.T1.47.3	100mm, 3µm, 50/pk	PF-GF-50.T1.100.3

Passive Sampling Solutions



POCIS



SPATT



Disks-based passive samplers



Silicone rubbers

Passive sampling enables the monitoring of contaminants in water (surface water, groundwater, coastal water...) for a short (at least 7 days) to long period (with an average field deployment of one month) for which no power, maintenance and supervision is required. An average of the concentration of collected contaminants is measured in the laboratory.



Passive samplers

Advantages of Passive Sampling

- Can generate a time-weighted average (TWA) concentration of the contaminants in water
- Deployable in harsh conditions
- No a priori preparation or supervision
- Very simple use

Passive Samplers and Applications

POCIS

Pesticides and drug residus



Passive sampler based on Disks

Pesticides and drug residus



SPATT

Biotoxins tracking



Silicone rubbers

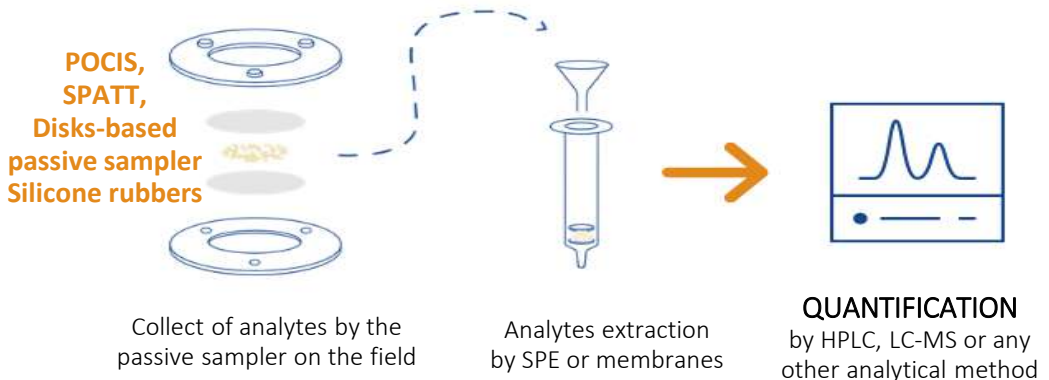
Hydrophobic micropollutants



Passive samplers

Steps from water to analysis

The sorbent adsorbs the contaminant(s) in water. The organic compounds are then extracted from the sorbent in the POCIS, following a SPE procedure and analyzed using classical analytical methods by HPLC, and LC-MS,



Broad range of applications for your sample preparation

Hormons and EDCs Natural & synthetic estrogens, Bisphenols & analog, Phenolics	Pesticides Glyphosate & AMPA, Aminopyralid, Clopyralid, Picloram, Organophosphorus & Organochlorine pesticides
Drug residues Carbamazepine, Sulfamethoxazole, Diclofenac, Propranolol, Tetracyclines, ...	Other contaminants Caffeine, Perfluorinated cmpds, Organometals, PAHs, Biotoxins

Passive samplers

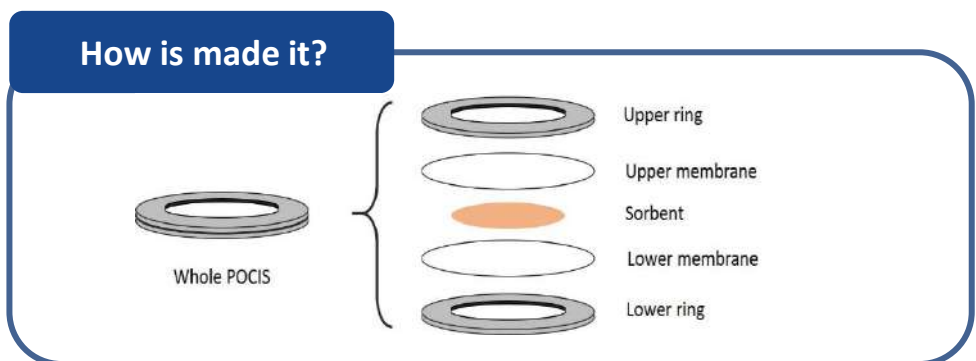
POCIS portfolio

Polar Organic Chemical Integrative Sampler (POCIS) are used for water monitoring of a wide range of organic molecules :

- **AttractSPE® POCIS HLB** for drug residues and pesticides
- **AttractSPE® POCIS Pesticides** for pesticides
- **AFFINIMIP® POCIS GLYPHOSATE** for Glyphosate and AMPA
- **AFFINIMIP® POCIS EDC** for the retention of Phenolic endocrine disrupters such as natural/synthetic estrogens, Bisphenols...

Our POCIS with PRC at the concentration you require !

Performance and reference compound (PRC) is a compound not present in the environment (*e.g.*, a deuterated molecule), which is spiked in the sorbent phase of the POCIS before its exposure as internal standards.



AttractSPE® SPATT Biotoxins

AttractSPE® SPATT Biotoxins is used to evaluate the contamination of shellfish with biotoxins in seawater such as Pectenotoxin, Yessotoxin, Okadaic acid/ Dinophysistoxin and Azaspiracids.

Passive samplers

Passive sampler based on SPE disks

- **AttractSPE® Disks Passive Sampler HLB**
- **AttractSPE® Disks Passive Sampler SDB-RPS**



For the analysis of pesticides and drug residues
Devices equivalent to Chemcatchers™ with a 40mm window to adsorb the contaminants on the field.
Available for groundwater analysis with rectangular shape.



Do you know ?

AFFINISEP provides a complete range of SPE Disks suitable for Chemcatchers™ and any disk –based passive samplers use (see page SPE Disks for more information).

Silicone rubbers

Attract Silicone Rubber SR are PDMS membrane SSP-M823 (250µm) used to extract a broad range of nonpolar compounds ($\log K_{ow} >2-3$) such as organophosphorus or organochlorine pesticides, PolyChloroBiphenyl (PCB), Polycyclic Aromatic Hydrocarbons (PAHs) and a lot of persistent organic pollutants (POP).



Passive sampling PRODUCT LIST

Several kits are available **with or without a performance reference compounds (PRC)** to correct for in situ exposure known to affect uptake rates. These kits also include empty fritted cartridges to make easiest the extraction step of the contaminants.



Designation	Description	Composition	Reference
AFFINIMIP® POCIS GLYPHOSATE	POCIS containing AFFINIMIP® GLYPHOSATE - AMPA for the retention of glyphosate and AMPA	1 POCIS	POCIS.GLY.90.55.A.1
		Kit of 10 POCIS + empty fritted cartridges	POCIS.GLY.90.55.kit.10
AFFINIMIP® POCIS EDC	POCIS containing AFFINIMIP® Estrogens and AFFINIMIP® Bisphenols for the retention of endocrine disrupters such as natural/synthetic estrogens, Bisphenols...	1 POCIS	POCIS.EDC.90.55.A.1
		Kit of 10 POCIS + empty fritted cartridges	POCIS.EDC.90.55.kit.10
AttractSPE® POCIS Pesticides	POCIS containing mixture of sorbent for the retention of several pesticides	1 POCIS	POCIS.PEST.90.55.A.1
		Kit of 10 POCIS + empty fritted cartridges	POCIS.PEST.90.55.kit.10
		Kit of 1 POCIS with a sorbent containing DIA as PRC - 3 cartridges containing the sorbents with Désisopropylatrazine (DIA) d5 - empty fritted cartridges	POCIS.PEST.90.55.kit.1.DIA
AttractSPE® POCIS HLB	POCIS containing Attract HLB for the retention of pharmaceutical drug residues	1 POCIS	POCIS.HLB.90.55.A.1
		Kit of 10 POCIS + empty fritted cartridges	POCIS.HLB.90.55.kit.10
		Kit of 1 POCIS with a sorbent containing DIA as PRC - 3 cartridges containing the sorbents with Désisopropylatrazine (DIA) d5 - empty fritted cartridges	POCIS.HLB.90.55.kit.1.DIA

Passive sampling PRODUCT LIST

POCIS for groundwater

Designation	Definition	Reference
AttractSPE® POCIS HLB for Groundwater	1 POCIS containing Attract HLB for the retention of pharmaceutical drug residues & pesticides - 30cm x 5cm - mass sorbent equivalent to 2 rounds POCIS	POCIS.HLB.30.5.A.1
	POCIS containing Attract HLB for the retention of pharmaceutical drug residues & pesticides - 1 unit = 3 pocis of 10cmx4cm equivalent to 2 round POCIS	POCIS.HLB.10.4.A.3
AFFINIMIP®SPE POCIS GLYPHOSATE for Groundwater	1 POCIS containing AFFINIMIP® Glyphosate - 30cm x 5cm - mass sorbent equivalent to 2 rounds POCIS	POCIS.GLY.30.5.A.1
	POCIS containing AFFINIMIP® Glyphosate in Groundwater - 1 unit = 3 pocis of 10cmx4cm equivalent to 2 round POCIS	POCIS.GLY.10.4.A.3

AFFINISEP provides POCIS with specific shapes for groundwater.

Do not hesitate to contact for the POCIS of interest.



POCIS FOR GROUNDWATER

1 unit = **3 pocis of 10cmx4cm**



POCIS FOR GROUNDWATER

1 unit = **30cm x 5cm**

Disks-based passive samplers

Designation	Description	Reference
AttractSPE®Disks Passive Sampler HLB	Disks - based passive samplers with AttractSPE®Disks HLB + ready to use PES membranes, 10/pk Outer diameter of 90mm and with a single-sided opening of 40mm. Compliant with 3-PS holders	DBPS.HLB.90.40.kit .10
AttractSPE® Disks Passive Sampler SDB-RPS	Disks - based passive samplers with AttractSPE®Disks SDB-RPS + ready to use PES membranes, 10/pk Outer diameter of 90mm and with a single-sided opening of 40mm. Compliant with 3-PS holders	DBPS.RPS.90.40.kit. 10

Front and back sides of disks passive samplers-compliant with POCIS holder.

Available formats for groundwater analysis.



Passive sampling PRODUCT LIST

AttractSPE® SPATT

Designation	Description	Composition	Reference
AttractSPE® SPATT BIOTOXINS	SPATT containing HP-20 sorbent for the retention of biotoxins. Nylon mesh membrane	10 SPATT Biotoxins	SPATT.BIOTOX.90 .55.300.A.10

Attract Silicone rubber - PDMS membrane SSP-M823 (250µm)

Designation	Description	Reference
Attract Silicone Rubber SR	Silicone rubber strips – 10/pk – No PRC	SR.0.100.3.A1.10
	Silicone rubber strips with PRCs – 10/pk	SR.PRC.100.3.A1.10

AFFINISEP provides a complete set of accessories for the use of **Passive sampler**.

Designation	Description	Reference
CANISTER – 3 POCIS	1 Canister for 3 POCIS – Empty (holder not supplied)	CAN-3P.A.1
CANISTER AND HOLDER FOR 3 POCIS	1 Canister and 1 holder for 3 POCIS/DBPS	CH-3P.A.1
CANISTER 24cm	1 Canister 24cm – Empty - Requires two holders for 3 passive samplers each (not included)	CAN24.A.1
CANISTER 29cm	1 Canister 29cm – Empty - Requires 2 holders for 3 passive samplers each + 1 spider holder for silicone rubber/SPMD (not included)	CAN29.A.1
HOLDER – 3 POCIS	1 Holder for 3 POCIS	HOLD-3P.A.1
HOLDER - SPIDER	1 Holder – Spider for silicone rubber or SPMD	HOLD-SPI.A.1



CANISTER - 29cm



CANISTER – 3 POCIS



HOLDER – 3 POCIS

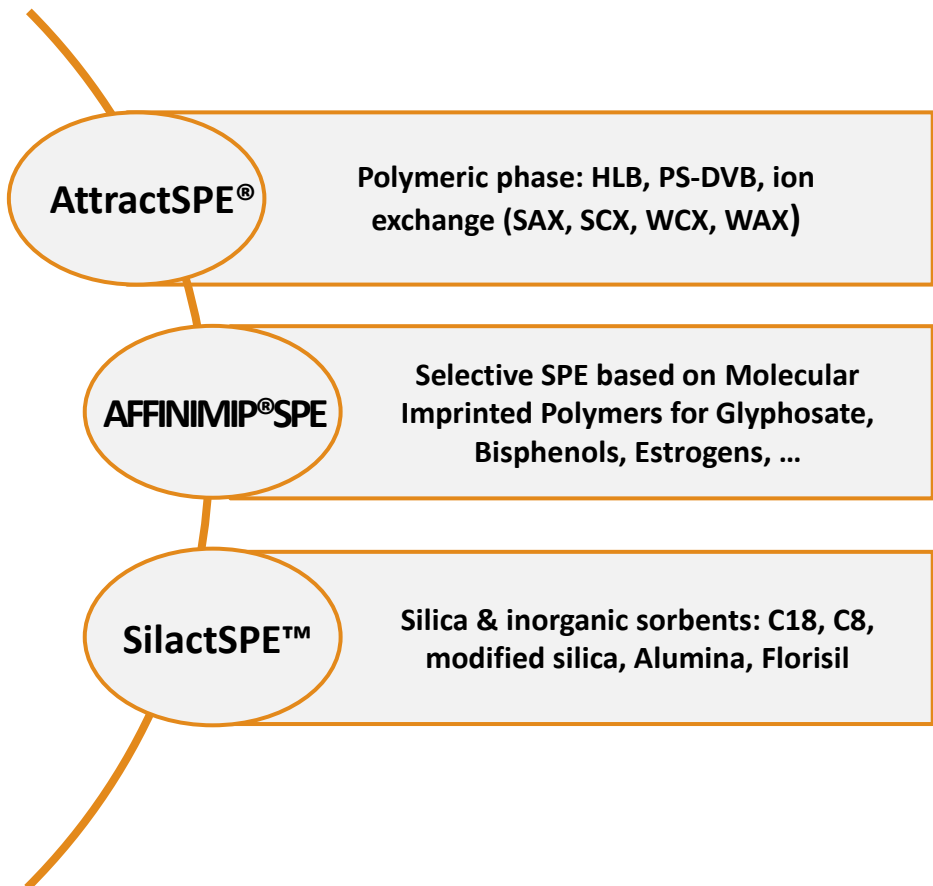


HOLDER – SPIDER

Solid Phase Extraction from every angle!

AFFINISEP offers a complete range of sorbents for solid phase extraction:

- from very specific to crude clean-up phases,
- from silica to polymers,
- from conventional to more sophisticated sorbents for various applications.



AFFINIMIP® SPE

Based on Molecularly Imprinted Polymers for
the Selective Extraction of Trace Analytes from
Complex Matrices



Antibiotics and drug residues

- Chloramphenicol
- Aminoglycosides
- Amphetamines
- Sulfonamides
- ...

Pesticides

- Glyphosate, AMPA & Glufosinate
- Aminopyralid, Clopyralid, Picloram
- Atrazine & derivatives

Other contaminants

- Hydroxylated PAHs
- PAHs
- PCBs
- Cyanuric acid

Endocrine disruptors

- Natural & synthetic Estrogens
- Bisphenols & analogs
- Parabens
- Phenolics



**Glyphosate, AMPA,
Glufosinate in Waters:
Geothermal, mineral, river
sea or underground**

- **NO DERIVATIZATION** required to extract the analytes



AFFINIMIP® SPE Glyphosate

- FS113-03B for 6mL – 50/pk
- FS113-15-03B for 6mL – 50/pk
- FS113-03C for 12mL – 50/pk



**Picloram,
Aminopyralid,
Clopyralid in Water,
Compost, Cereal, Soil...**



AFFINIMIP®SPE Picolinic Herbicides

- FS115-03 for 3mL – 50/pk
- FS115-03B for 6mL – 50/pk



**Broad family of natural
and synthetic estrogens**



AFFINIMIP®SPE Estrogens

- FS104-03A for 1mL – 50/pk
- FS104-03 for 3mL – 50/pk
- FS104-03B for 6mL – 50/pk
- FS104-1.96W 96 well plate – 1 unit



Bisphenols such as Bisphenol A and closely 18 related structures



AFFINIMIP® SPE Bisphenols

- FS106-03 for 3mL – 50/pk
- FS106-03B for 6mL – 50/pk
- FS106-03C for 12mL – 50/pk
- FS106-1.96W 96 well plate – 1 unit



Parabens, carnosic acid, hydroxylated PAHs, Tocopherols, Nitrophenols, Chlorophenols, ...



AFFINIMIP®SPE Phenolics

- FS103-03 for 3mL – 50/pk
- FS103-03B for 6mL – 50/pk
- FS103-03C for 12mL – 50/pk
- FS103-1.96W 96 well plate – 1 unit



Benzo[a]anthracen B[a]A; Benzo[a]pyren B[a]P; Benzo[a] fluoranthen B[a]F; Chrysen (CHR), etc.



AFFINIMIP®SPE PAHs

- FS1119-03-NG for 3mL – 50/pk
- FS1119-03B for 6mL – 50/pk



PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFNA, PFDA, PFTA, PFBS, PFHxS, PFOS



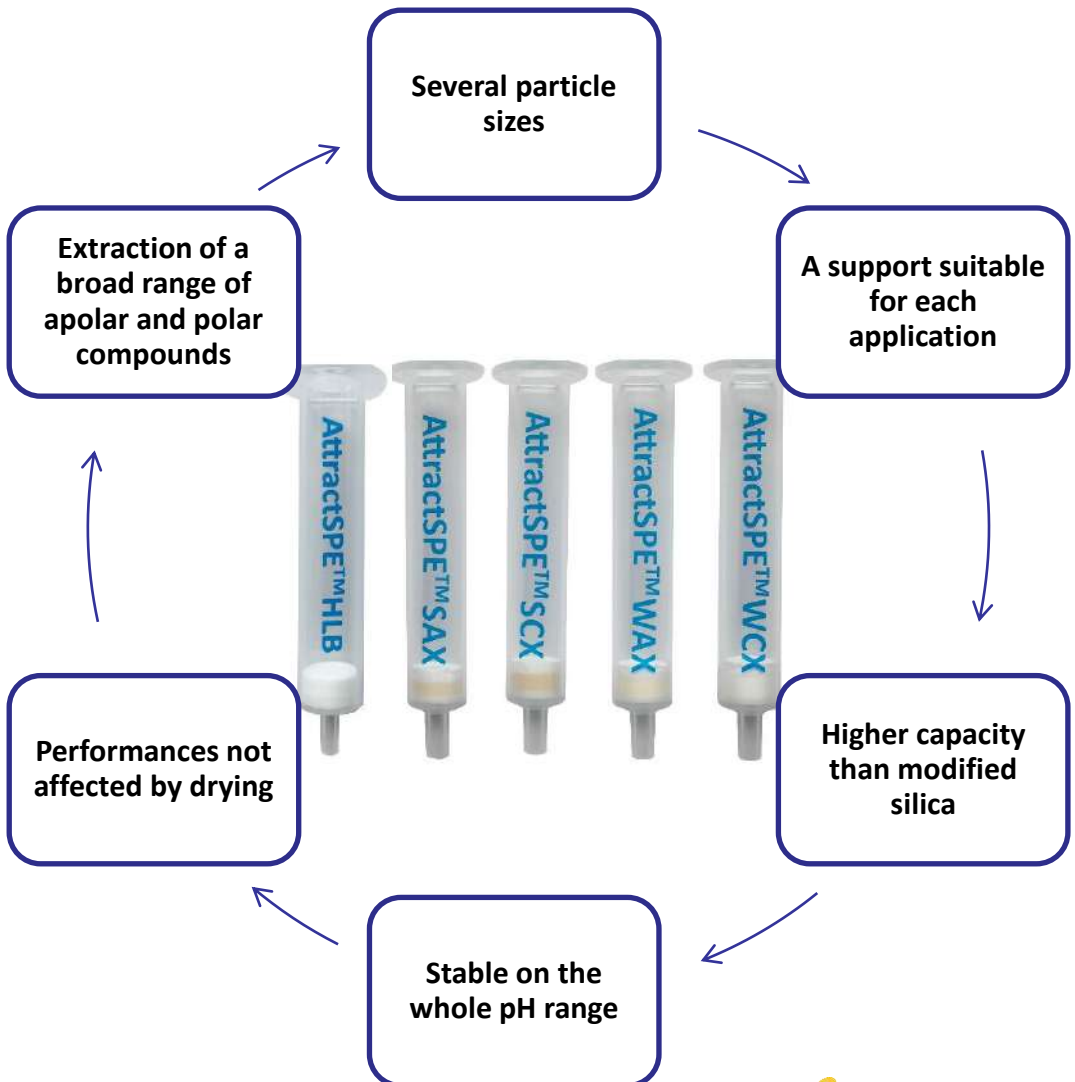
AttractSPE™ WAX-PFC

- WAX-PFC-50.S.6.150
- for 6mL – 150mg– 50/pk
- WAX-PFC-50.S.6.200
- for 6mL – 200mg– 50/pk

AttractSPE[®] Cartridges

Polymeric- based SPE
A broad range of chemistries
& formats for your application:

HLB – DVB – SAX – SCX – WAX - WCX



A powerful Sorbent for your extraction

AttractSPE[®] Disk HLB

SPE Disk membranes – For very large samples at high flow rate and for chemcatchers.



AttractSPE[®] HLB

Cartridges for SPE automates High throughput and automated analysis.



AttractSPE[®] HLB

Cartridges for Solid phase extraction 1, 3, 6, 12, 25, 60mL - PP or Glass – LRC. Several formats available.

On-line AttractSPE[®] HLB

On-line SPE column for your HPLC.



Attract POCIS HLB

Passive sampler for a long and cumulative uptake of drug residues/pesticides/P AHs in natural water (underground, surface...).



AttractSPE[®] Disks Passive Sampler HLB

Passive sampler for a long and cumulative uptake of drug residues/pesticides/PAHs in natural water (underground, surface...).



AttractSPE[®] HLB – AttractSPE[®] DVB

AttractSPE[®]HLB is an **uncharged Hydrophilic and Lipophilic** sorbent interacting with both, hydrophilic and hydrophobic interactions. It particularly suits for the extraction of a wide range of analytes (polar, apolar, neutral, acid, basic...)



Format, amount	#/box	AttractSPE [®] HLB -40µm	AttractSPE [®] HLB -80µm
6mL, 200mg	50	HLB-50.S.6.200	HLB-50.S.6.200GP
6mL, 500mg	50	HLB-50.S.6.500	HLB-50.S.6.500GP
10mL LRC, 60mg	50	HLB-50.LRC.10.60	
12mL, 500mg	25	HLB-25.S.12.500	
12mL, 1g	25	HLB-25.S.12.1000	
12mL, 2g	25		HLB-25.S.12.2000GP
20mL, 1g	25	HLB-25.S.20.1g	
20mL, 2g	25		HLB-25.S.20.2g
Reversible 0.7mL, 100mg	50	HLB-50.REV.1.F	
Reversible 2mL, 225mg	50	HLB-50.REV.2.N10	

Reversed phase SPE for extraction of hydrophobic analytes.

AttractSPE[®]DVB is a polystyrene-divinylbenzene copolymer. It particularly suits for the extraction of hydrophobic analytes.



Format, amount	#/box	AttractSPE [®] DVB -40µm	AttractSPE [®] DVB -80µm
6mL, 200mg	50	DVB-50.S.6.200	DVB-50.S.6.200GP
6mL, 500mg	50	DVB-50.S.6.500	DVB-50.S.6.500GP
10mL LRC, 60mg	50	DVB-50.LRC.10.60	
12mL, 500mg	25	DVB-25.S.12.500	
12mL, 1g	25	DVB-25.S.12.1000	
12mL, 2g	25		DVB-25.S.12.2000GP
20mL, 1g	25	DVB-25.S.20.1g	
20mL, 2g	25		DVB-25.S.20.2g
Reversible 0.7mL, 100mg	50	DVB-50.REV.1.F	
Reversible 2mL, 225mg	50	DVB-50.REV.2.N10	

Mixed-mode SPE for extraction of strong acid analytes

AttractSPE® WAX is a weak anion exchange sorbent. It particularly suits for the extraction of strong acids.

Format, amount	#/box	AttractSPE®WAX-40µm	AttractSPE® WAX -80µm
6mL, 200mg	50	WAX-50.S.6.200	WAX-50.S.6.200GP
6mL, 500mg	50	WAX-50.S.6.500	WAX-50.S.6.500GP
10mL LRC, 60mg	50	WAX-50.LRC.10.60	
12mL, 500mg	25	WAX-25.S.12.500	
12mL, 1g	25	WAX-25.S.12.1000	
12mL, 2g	25		WAX-25.S.12.2000GP
20mL, 1g	25	WAX-25.S.20.1g	
20mL, 2g	25		WAX-25.S.20.2g
Reversible 0.7mL, 100mg	50	WAX-50.REV.1.F	
Reversible 2mL, 225mg	50	WAX-50.REV.2.N10	



Mixed-mode SPE for extraction of strong basic analytes.

AttractSPE® WCX is a weak cation exchange sorbent. It particularly suits for the extraction of strong bases and quaternary amines.

Format, amount	#/box	AttractSPE®WCX-40µm	AttractSPE® WCX -80µm
6mL, 200mg	50	WCX-50.S.6.200	WCX-50.S.6.200GP
6mL, 500mg	50	WCX-50.S.6.500	WCX-50.S.6.500GP
10mL LRC, 60mg	50	WCX-50.LRC.10.60	
12mL, 500mg	25	WCX-25.S.12.500	
12mL, 1g	25	WCX-25.S.12.1000	
12mL, 2g	25		WCX-25.S.12.2000GP
20mL, 1g	25	WCX-25.S.20.1g	
20mL, 2g	25		WCX-25.S.20.2g
Reversible 0.7mL, 100mg	50	WCX-50.REV.1.F	
Reversible 2mL, 225mg	50	WCX-50.REV.2.N10	



AttractSPE® SAX - AttractSPE® SCX

Mixed-mode SPE for extraction of weak acid analytes

AttractSPE®SAX is a strong anion exchange sorbent. It particularly suits for the extraction of weak acids.

Format, amount	#/box	AttractSPE® SAX -40µm	AttractSPE® SAX -80µm
6mL, 200mg	50	SAX-50.S.6.200	SAX-50.S.6.200GP
6mL, 500mg	50	SAX-50.S.6.500	SAX-50.S.6.500GP
10mL LRC, 60mg	50	SAX-50.LRC.10.60	
12mL, 500mg	25	SAX-25.S.12.500	
12mL, 1g	25	SAX-25.S.12.1000	
12mL, 2g	25		SAX-25.S.12.2000GP
20mL, 1g	25	SAX-25.S.20.1g	
20mL, 2g	25		SAX-25.S.20.2g
Reversible 0.7mL, 100mg	50	SAX-50.REV.1.F	
Reversible 2mL, 225mg	50	SAX-50.REV.2.N10	



Mixed-mode SPE for extraction of weak basic analytes

AttractSPE®SCX is a strong cation exchange sorbent. It particularly suits for the extraction of weak bases.

Format, amount	#/box	AttractSPE® SCX -40µm	AttractSPE® SCX -80µm
6mL, 200mg	50	SCX-50.S.6.200	SCX-50.S.6.200GP
6mL, 500mg	50	SCX-50.S.6.500	SCX-50.S.6.500GP
10mL LRC, 60mg	50	SCX-50.LRC.10.60	
12mL, 500mg	25	SCX-25.S.12.500	
12mL, 1g	25	SCX-25.S.12.1000	
12mL, 2g	25		SCX-25.S.12.2000GP
20mL, 1g	25	SCX-25.S.20.1g	
20mL, 2g	25		SCX-25.S.20.2g
Reversible 0.7mL, 100mg	50	SCX-50.REV.1.F	
Reversible 2mL, 225mg	50	SCX-50.REV.2.N10	



Everything you might need!

Reversed phase based silica

C8
moderately hydrophobic

Phenyl
moderately hydrophobic

C18
Strongly hydrophobic

More polar Silica based phase

SiWCX
Weak cation exchanger

SiSCX
Strong cation exchanger

SiSAX
Strong anion exchanger

Amino (SiWAX)
Weak anion exchanger

Cyano
Cyano propyl
Polar phase

PSA
primary secondary amine

Normal phase

Silica
Very polar

Alumina (A, B, N)
Highly active

Florisil PR
polar –highly active – weakly basic

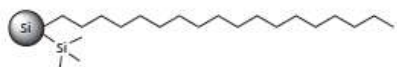


SilactSPE™ C18

Strongly hydrophobic and non-polar sorbent

It was recently developed as an innovative C18 phase characterized by a homogeneous coverage of the silane on the surface.

SilactSPE™ C18 particularly suits for the extraction of acidic, neutral and basic compounds from aqueous solutions, various organic compounds from water, and drugs and metabolites from physiological fluids.



SilactSPE™ C18 end-capped



SilactSPE™ C18NEC not end-capped

Cartridges format, Sorbent amount	#/box	SilactSPE™ C18 (end capped)	SilactSPE™ C18 NEC (not end capped)
1mL, 50mg	100	C18-100.S.1.50	C18nec-100.S.1.50
1mL, 100mg	100	C18-100.S.1.100	C18nec-100.S.1.100
3mL, 200mg	50	C18-50.S.3.200	C18nec-50.S.3.200
3mL, 500mg	50	C18-50.S.3.500	C18nec-50.S.3.500
6mL, 500mg	50	C18-50.S.6.500	C18nec-50.S.6.500
6mL, 1g	50	C18-50.S.6.1g	C18nec-50.S.6.1g
10mL LRC, 500mg	50	C18-50.LRC.10.500	C18nec-50.LRC.10.500
12mL, 2g	20	C18-20.S.12.2g	C18nec-20.S.12.2g
Reversible 0.7mL, 260mg	25	C18-25.REV.1.260	C18nec-25.REV.1. 360
Reversible 2mL, 1g	25	C18-25.REV.2.1000	C18nec-25.REV.2.1000

Moderately hydrophobic and non-polar sorbent

› SilactSPE™ C8:

Sorbent C8 is more selective than **Sorbent C18** for big compounds such as PAH, vitamin D, and oils as well as greasy compounds. Suits for the extraction of extremely non-polar compounds.

› SilactSPE™ Phenyl:

Suits for the extraction of non-polar compounds with different selectivities through π - π interactions including aromatic compounds and other non-polar phases.

Cartridges format, Sorbent amount	#/box	SilactSPE™ C8	SilactSPE™ Phenyl
6mL, 500mg	50	C8-50.S.6.500	Phe-50.S.6.500
6mL, 1g	50	C8-50.S.6.1g	Phe-50.S.6.1g
12mL, 2g	20	C8-20.S.12.2g	Phe-20.S.12.2g
Reversible 0.7mL, 260mg	25	C8-25.REV.1. 260	Phe-25.REV. 1.260
Reversible 2mL, 1g	25	C8-25.REV.2.1000	Phe-25.REV.2.1000

Most polar sorbent

› SilactSPE™ Silica :

It presents a slightly acidic character and is used to extract various compounds from non-polar solvents through hydrogen bonding.

› SilactSPE™ Cyano :

As a normal phase (less polar compared to silica), particularly suits for the extraction of acidic, basic and neutral compounds from aqueous solutions. As a reversed-phase (less hydrophobic than C8 and C18).

Cartridges format, Sorbent amount	#/box	SilactSPE™ Silica	SilactSPE™ Cyano
6mL, 500mg	50	Si-50.S.6.500	CN-50.S.6.500
6mL, 1g	50	Si-50.S.6.1g	CN-50.S.6.1g
12mL, 2g	20	Si-20.S.12.2g	CN-20.S.12.2g
Reversible 0.7mL	25	Si-25.REV.1.240 for 240mg	CN-25.REV.1. 260 for 260mg
Reversible 2mL	25	Si-25.REV.2.900 for 900mg	CN-25.REV.2.1000 for 1000mg

Weak anion exchanger silica-based sorbent

› SilactSPE™ Amine (SiWAX):

Avoids irreversible retention of acidic molecules ($pK_a < 3$) and suits for the separation of peptides, drugs and metabolites from physiological fluids, poly- and monosaccharides and structural isomers.

› SilactSPE™ PSA:

Less polar sorbent than **SilactSPE™ Amine** used for its replacement with analytes that are too strongly retained on an amine phase.

Cartridges format, Sorbent amount	#/box	SilactSPE™ Amine or SiWAX	SilactSPE™ PSA
6mL, 500mg	50	NH2-50.S.6.500	PSA-50.S.6.500
6mL, 1g	50	NH2-50.S.6.1g	PSA-50.S.6.1g
12mL, 2g	20	NH2-20.S.12.2g	PSA-20.S.12.2g
Reversible 0.7mL, 260mg	25	NH2-25.REV.1.260	PSA-25.REV.1.260
Reversible 2mL, 1000mg	25	NH2-25.REV.2.1000	PSA-25.REV.2.1000

Weak cation exchanger silica-based sorbent with carboxylic acid

› **SilactSPE™ SiWCX:** Suits to extract strong basic molecules ($pK_a > 9$).

Strong cation exchanger silica-based sorbent positively charged with tosic acid moieties.

› **SilactSPE™ SiSCX:** Suits to extract basic molecules (pK_a 7-10).

Cartridges format, Sorbent amount	#/box	SilactSPE™ SiWCX	SilactSPE™ SiSCX
6mL, 500mg	50	SiWCX-50.S.6.500	SiSCX-50.S.6.500
6mL, 1g	50	SiWCX-50.S.6.1g	SiSCX-50.S.6.1g
12mL, 2g	20	SiWCX-20.S.12.2g	SiSCX-20.S.12.2g
Reversible 0.7mL, 260mg	25	SiWCX-25.REV.1.260	SiSCX-25.REV.1.260
Reversible 2mL, 1000mg	25	SiWCX-25.REV.2.1000	SiSCX-25.REV.2.1000

SilactSPE™ SiSAX - Florisil PR - Na₂SO₄/Florisil

Strong anion exchanger silica-based sorbent using trimethyl ammonium moieties

➤ **SilactSPE™ SiSAX:** Suits to extract acidic molecules (pKa 3-5).

Cartridges format, Sorbent amount	#/box	SilactSPE™ SiSAX
6mL, 500mg	50	SiSAX-50.S.6.500
6mL, 1g	50	SiSAX-50.S.6.1g
10mL LRC, 500mg	50	SiSAX-50.LRC.10.500
12mL, 2g	20	SiSAX-20.S.12.2g
Reversible 0.7mL, 260mg	25	SiSAX-25.REV.1.260
Reversible 2mL, 1000mg	25	SiSAX-25.REV.2.1000

Polar sorbent

➤ **SilactSPE™ Florisil PR** (MgO₃Si):

They present a basic character used to extract non-polar to moderately polar compounds from non-polar solvents.

Suits for the retention of chlorinated pesticides, PCB's and polysaccharides due to the magnesium ion.

Cartridges format, Sorbent amount, #/box	SilactSPE™ Florisil PR
6mL, 500mg, 50/pk	FloPR-50.S.6.500
6mL, 1g, 50/pk	FloPR-50.S.6.1g
12mL, 2g, 20/pk	FloPR-20.S.12.2g
Reversible 0.7mL, 300mg, 25/pk	FloPR-25.REV.1.300
Reversible 2mL, 900mg, 25/pk	FloPR-25.REV.2.900

➤ **SilactSPE™ Na₂SO₄/Florisil** contains an upper layer of sodium sulfate anhydrous (Na₂SO₄) to dry the solution and a bottom layer of Florisil for the determination of hydrocarbons in water according to DIN-H-53/ ISO 9377-4.

Cart. format, Sorbent amount #/box	SilactSPE™ Na ₂ SO ₄ /Florisil
6mL PP, 2g+2g, 50/pk	FloNa2SO4-50.S.6.2g.2g
12mL PP, 3g+3g, 25/pk	FloNa2SO4-25.S.12.3g.3g

ON-LINE SPE – description and product list

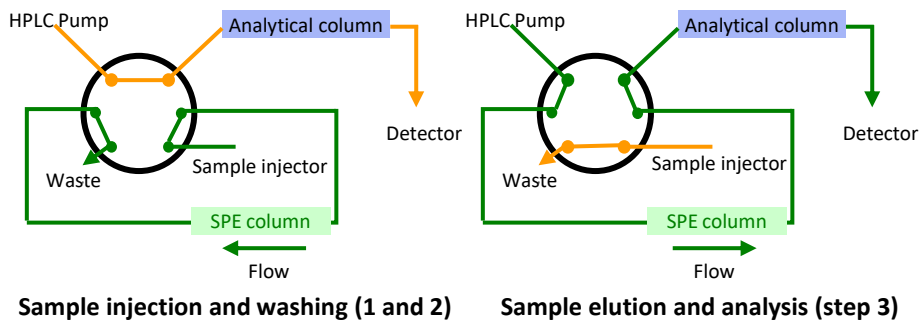
ON-LINE SPE PROCEDURE STEPS

SPE technique can be coupled on-line to HPLC for a high sensitivity or for limited amount of sample. An on-line SPE column containing the SPE sorbents is coupled. A three steps process is used:

1- Sample injection: The valve is configured with the injector directly in contact with the on-line SPE column. The sample is injected and goes through the on-line SPE column where the analytes remain.

2- Washing: a solution is used to wash out most interferences.

3- Analysis: The valve is switched. The analytes are eluted out of the sorbent by the LC mobile phase and transferred into the analytical column for their analyses.



ON-LINE SPE COLUMNS



Product	Product reference	Number column	I.D. (mm)	Length (mm)
On-line AttractSPE® HLB columns	OnlineSPE-HLB-1.2.20	1	2.1	20
	OnlineSPE-HLB-1.5.20	1	4.6	20
On-line AFFINIMIP® PHENOLICS columns	OnlineSPE-PHE-1.2.20	1	2.1	20
	OnlineSPE-PHE-1.5.20	1	4.6	20
On-line AFFINIMIP® ESTROGENS columns	OnlineSPE-EST-1.2.20	1	2.1	20
	OnlineSPE-EST-1.5.20	1	4.6	20

For other on-line SPE products, please contact us!

AFFINISEP can provide you with on-line SPE of all products on demand.

AttractSPE® Manifolds

AttractSPE® disks Manifolds

One-, three- or six-station filtration manifolds allow the simultaneous extractions of several 1-L samples on a very simple and easy-to-handle way. The manifold is a very compact stainless steel device with a filtration glassware. Each station is controlled through an independent flow control valve.



AttractSPE® Vacuum Manifold

very flexible, allows you to control the flow and to process up to 12 or 24 samples simultaneously, to gain significantly time during sample preparation steps.



AttractSPE® Manifolds

AttractSPE® Vacuum Manifold



Vacuum Manifold	ACC-MAN2	Like all chromatography techniques, use of SPE cartridges needs a precise control of flow rate for maintaining reproducible extractions. Solid Phase extraction Vacuum Manifold allows you to control the flow and to process up to 12 (12-port version) or 24 (24-port version) AFFINIMIP® SPE samples simultaneously, to gain significantly time during sample preparation steps.
Mini PUMP	ACC-PUMP	Diaphragm vacuum pump for solid phase extraction experiments ➤5.5L/min ➤~120 torr vacuum ➤Oil-free ➤Portable
Vacuum pump trap	ACC-TRAP-1L	SPE Vacuum pump trap kit. Installed between the manifold and the vacuum pump, it collects all liquids that are aspirated preventing contamination of the vacuum pump with a capacity of 1L.

Open Cartridge



Formats: 1mL, 3mL, 6mL, 15mL, 20mL, 60mL

Materials: Polypropylene glass (6mL)

Frits: Polyethylene, PTFE, Glass fiber

Sorbents: powder or disk

Luer compatible

Cartridge for Automates



Formats: 1mL, 3mL, 6mL

Material: Polypropylene

Frit: Polyethylene

Automate: Gerstel, Gilson...

LRC Cartridge



Formats: 10mL

Material: Polypropylene

Frit: Polyethylene

Luer compatible

On-line SPE Cartridge



I.D: 2,1 and 4,6mm

Length: 20mm

FORMATS

Disks

Formats:

Diameters

- 25mm
- 47mm
- 90mm



SPE Tips

Formats:

T1, T2, T3



96 Well-plates



Reversible Cartridge



Formats: 0,7mL, 2mL

Material: Polypropylene

Frit: Polyethylene

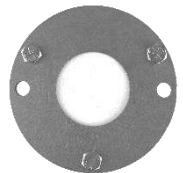
Luer compatible

Passive Samplers

Pocis



**Disks-based
on passive
samplers**



Application notes

1. Determination of Pharmaceuticals in water with AttractSPE[®] Disks HLB - EPA method 1694
2. PAHs with AttractSPE[®] Disks HLB
3. PAHs with AttractSPE[®] Disks C18 – EPA method 550.1 : Comparison with 3M Empore SPE Disks C18
4. Multiresidues analysis with AttractSPE[®] Disks HLB : Comparison with competitor SPE Disks HLB
5. Acid Herbicides with AttractSPE[®] Disks HLB
6. Ionic herbicides with AttractSPE[®] Disks Anion exchange SR
7. Analysis of Seven tetracyclines in water using AttractSPE[®] Disks HLB
8. Glyphosate - AMPA and Glufosinate in Water– No derivatization – LC-MS/MS
9. Glyphosate - AMPA and Glufosinate in Water– Capillary Electrophoresis analysis
10. Glyphosate - AMPA and Glufosinate in several waters – FMOc derivatization – LC-MS/MS
11. Monitoring of glyphosate - AMPA with a passive sampler AFFINIMIP[®] POCIS Glyphosate
12. Determination of Estrogens in water by GC-MS/MS
13. Determination of Estrogens in water by GC-HRMS

AttractSPE® Disks HLB is successfully tested in similar conditions of EPA 1694 and showed recovery yields >80% for most the analytes.

Analyte	Blank	Spiked recovery %	Concentration (ng/L)
Penicilin V	0	105	160
Flucloxacillin	0	105	80
Sulfathiazole	0	92	16
Sulfadimethoxine	0	84	16
Sulfamethazine	0	88	80
Sulfadiazine	0	95	32
Caffeine	0	106	80
Carbamazepine	0	98	16
4-epitetraacycline	0	107	820
4-epioxytetraacycline	0	104	440
Oxytetraacycline	0	78	1160
Tetraacycline	0	102	860
4-epichlorotetraacycline	0	113	720
Chlorotetraacycline	0	87	800
Doxycycline	0	49	800

INSTALLATION AND CONDITIONING

Put the SPE disk on the holder

Loading solution: One liter of reagent water put to pH 2-2,5 with HCl 37%. Add 80mg of sodium thiosulfate, and 500 mg of EDTA-Na₄2H₂O. Solution is then spiked with analytes of interest.

Important: For each conditioning and elution step, apply a fast vacuum to soak the disk and wait 1 minute before starting elution.

LOADING

- 1 L of loading solution in 15 minutes

WASHING

- 20 mL ultrapure water
- Apply vacuum for 30 s to dry the disk

ELUTION

- 20 mL Methanol
- (for tetracyclines only)4*20 mL Methanol +3% Formic Acid

ANALYSIS

- Evaporation under N₂ and dissolved in mobile phase.
- Tetracyclines: Elutions mixed and diluted by 4 with water 5mM Oxalic Acid, prior to analysis. (Can also be evaporated

Catalog number:

AttractSPE® Disks HLB - 47mm diameter,
20/pk : SPE-Disks-HLB-47.T1.20

PROTOCOL OF PURIFICATION

Sample preparation

1L of water was put to pH<2 with HCl 37% (optional) and spiked at 20ng/L with each analyte (Benzo[a]anthracene, Chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, Benzo[a]pyrene, Dibenz[a,h]anthracene, Benzo[g,h,i]perylene).

Purification with a AttractSPE®Disks HLB

Equilibration

- Put the SPE disk on the holder
- 10 mL Acetone
- 10 mL Isopropanol
- 10 mL Methanol
- 50 mL of ultrapure water

Loading

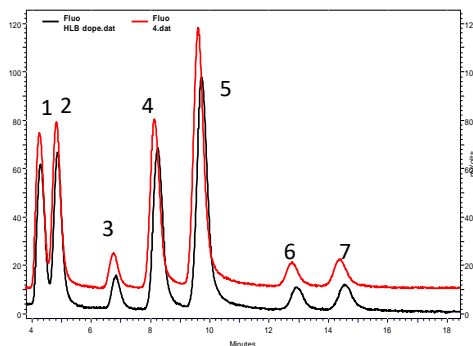
- 1 L of loading solution

Elution (E)

- 10 mL Methanol
- 4x10 mL Ethyl Acetate

Evaporate the elution solution and reconstitute with 5mL Acetonitrile prior to analysis

RESULTS



Fluorescence chromatograms ($\lambda_{exc/em}$ 252nm / 400nm) for 7 PAHs (1 - BaA, 2 – CHR, 3- BbFA, 4 – BkFA, 5- BaP, 6- DbahA, 7 - BghiP)

The black profile uses the **AttractSPE® Disks HLB** to concentrate the 20ng/L PAHs contained in 1L of water while the red one is the solution with PAHs standards.

Conditions of analysis:

LC-Fluorescence. Column: Zorbax eclipse PAH 4,6*50mm (1,8 μ m), at 30°C. Injection volume: 50 μ L. Isocratic: Water / Acetonitrile 15 / 85. Flow rate: 0.5 mL/min, run of 25min.

Fluorescence detection: $\lambda_{exc/em}$ 252nm / 400nm

Recovery yields obtained for the loading of 1L of water spiked with 7 PAHs at 20 ng/L each and concentrated using **AttractSPE® Disks HLB**

	AttractSPE® Disks HLB	
	Blank	Spiked
Benzo[a]anthracene BaA	0	90%
Chrysene CHR	0	90%
benzo[b]fluoranthene BbFA	0	90%
benzo[k]fluoranthene BjFA	0	96%
Benzo[a]pyrene BaP	0	91%
Dibenz[a,h]anthracene DBahA	0	92%
Benzo[g,h,i]perylene BghiP	0	99%

Catalog number:

AttractSPE® Disks HLB - 47mm diameter,
20/pk : SPE-Disks-HLB-47.T1.20

PROTOCOL OF PURIFICATION

Sample preparation

1L of water was put to pH<2 with HCl 37% (optional) and spiked at 20ng/L with each analyte (Benzo[a]anthracene, Chrysene, benzo[b]fluoranthene, Benzo[a]pyrene, Dibenz[a,h]anthracene, Benzo[g,h,i]perylene).

Purification with a AttractSPE®Disks C18

Equilibration

- Put the SPE disk on the holder
- 10 mL Ethyl Acetate
- 10 mL Methanol
- 50 mL of ultrapure water

Loading

- 1 L of loading solution

Elution (E)

- 10 mL Methanol
- 4x10 mL Ethyl Acetate

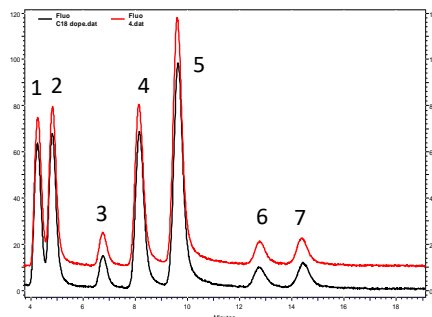
Evaporate the elution solution and reconstitute with 5mL Acetonitrile prior to analysis

Recovery yields obtained for the loading of 1L of water spiked with 7 PAHs at 20 ng/L each and using either **AttractSPE® Disks C18** or 3M Empore SPE disks C18

	AttractSPE® Disks C18		3M Empore SPE disks C18	
	Blank	Spiked	Blank	Spiked
Benzo[a]anthracene BaA	0	96%	0	96%
Chrysene CHR	0	98%	0	96%
benzo[b]fluoranthene BbFA	0	94%	0	93%
benzo[k]fluoranthene BkFA	0	98%	0	100%
Benzo[a]pyrene BaP	0	91%	0	94%
Dibenz[a,h]anthracene DBahA	0	88%	0	96%
Benzo[g,h,i]perylene BghiP	0	97%	0	97%

These experiments show that **AttractSPE® Disks C18** behave similarly to 3M Empore SPE Disks C18.

RESULTS



Fluorescence chromatograms ($\lambda_{exc/em}$ 252nm / 400nm) for 7 PAHs (1 - BaA, 2 - CHR, 3- BbFA, 4 - BkFA, 5- BaP, 6- DbahA, 7- BghiP) The black profile uses the **AttractSPE® Disks C18** to concentrate the 20ng/L PAHs contained in 1L of water while the red one is the solution with PAHs standards.

Conditions of analysis:

LC-Fluorescence. Column: Zorbax eclipse PAH 4,6*50mm (1,8µm), at 30°C. Injection volume: 50 µL. Isocratic: Water / Acetonitrile 15 / 85. Flow rate: 0.5 mL/min, run of 25min. Fluorescence detection: $\lambda_{exc/em}$ 252nm / 400nm

Catalog number:

AttractSPE® Disks C18 - 47mm diameter, 20/pk : **SPE-Disks-C18-47.T1.20**

PROTOCOL OF PURIFICATION

Sample preparation

2L of water were spiked at 200ng/L with each molecule (Caffeine, Diclofenac and Metolachlor ESA).

Purification with a **AttractSPE® Disks HLB** using **SPE-DEX 4790 Automated**

Extractor System **

Equilibration

- Put the SPE disk on the holder
- 50 mL Methanol
- 50 mL of ultrapure water

Loading

- 2 L of loading solution

Elution (E)

- 50 mL Methanol

Dilute by 10 with ultrapure water prior to analysis

RESULTS

Conditions of analysis for Caffeine and Diclofenac:

LC-MS/MS HPLC U3000 - QTRAP 4000. Column: Hypersil Gold 150x2.1cm 3µm, pre-column (hypersil gold 1cm) at 30°C. Injection volume: 20 µL. Gradient: Water with 0.1% Formic acid and Acetonitrile with 0.1% Formic acid. Flow rate: 0.3 mL/min.

Conditions of analysis for Metolachlor ESA:

LC-MS/MS HPLC U3000 - QTRAP 4000. Column: Hypersil Gold 150x2.1cm 3µm, pre-column (hypersil gold 1cm) at 30°C. Injection volume: 20 µL. Gradient: Water with 0.01% Formic acid and Acetonitrile. Flow rate: 0.3 mL/min.

Recovery yields obtained for the loading of 2L of water spiked with several analytes at 200 ng/L each and using either **AttractSPE® Disks HLB** or competitor SPE disks HLB

	AttractSPE® Disks HLB		Competitor SPE disks HLB	
	Blank	Spiked	Blank	Spiked
Caffeine	0	98%	0	54%
Diclofenac	0	102%	0	33%
Metolachlor ESA	0	88%	0	13%

Catalog number:

AttractSPE® Disks HLB - 47mm diameter, 20/pk : **SPE-Disks-HLB-47.T1.20**

** The testings were carried out with SPE-DEX 4790 Automated Extractor System by Toxem (Le Havre, France)

PROTOCOL OF PURIFICATION

Sample preparation

One liter of water was spiked at 1 µg/L of aminopyralid, clopyralid and picloram.

Purification with a AttractSPE®Disks

Anion exchange SR

Equilibration

- Put the SPE disk on the holder
- 50 mL of methanol
- 50mL of ultrapure water

Loading

- 1 L of loading solution

Washing (E)

- 50 mL Ultrapure water

Elution (E)

- 50 mL Methanol with 3% formic acid

Dilute by 10 with mobile phase prior to analysis

Conditions of analysis:

LC-MS/MS HPLC U3000 - QTRAP 4000. Column: Hypersil Gold 150x2.1cm 3µm, pre-column (hypersil gold 1cm) at 30°C. Injection volume: 20 µL. Gradient: Water with 0.1% Formic acid and Acetonitrile with 0.1% Formic acid. Flow rate: 0.3 mL/min.

RESULTS

Recovery yields obtained for the loading of 1L of water spiked with 1µg/L each using **AttractSPE® Disks Anion exchange SR** to concentrate

	Recovery yield %		
	Amino pyralid	Clo pyralid	Picloram
Ultrapure water	102	102	108
Tap water	80	90	87



Catalog number:

AttractSPE® Disks Anion Exchange SR - 47mm diameter, 20/pk : SPE-Disks-SAX-47.T1.20

PROTOCOL OF PURIFICATION

Sample preparation

One liter of water was spiked at 1 µg/L of metolachlor OA and metolachlor ESA.

Purification with a AttractSPE® Disks HLB

Equilibration

- Put the SPE disk on the holder
- 50 mL of methanol
- 50mL of ultrapure water

Loading

- 1 L of loading solution

Washing (E)

- 50 mL Ultrapure water

Elution (E)

- 50 mL Methanol with 3% formic acid

Dilute by 10 with mobile phase prior to analysis.

Conditions of analysis:

LC-MS/MS HPLC U3000 - QTRAP 4000. Column: Hypersil Gold 150x2.1cm 3µm, pre-column (hypersil gold 1cm) at 30°C. Injection volume: 20 µL. Gradient: Water with 0.1% Formic acid and Acetonitrile with 0.1% Formic acid. Flow rate: 0.3 mL/min.

RESULTS

Recovery yields obtained for the loading of 1L of water spiked with 1µg/L each using **AttractSPE® Disks HLB** to concentrate

	Recovery yield %	
	Metolachlor OA	Metolachlor ESA
Ultrapure water	100	102
Tap water	98	90



Catalog number:

AttractSPE® Disks HLB - 47mm diameter, 20/pk :
SPE-Disks-HLB-47.T1.20

AttractSPE® Disks HLB was successfully tested for the seven tetracyclines above and showed high recovery yields.



Analyte	Blank	Spiked recovery	Concentration
		%	(ng/L)
4-epitetracycline	ND	70	68,6
4-epioxytetracycline	ND	97	36,6
Oxytetracycline	ND	87	96,6
Tetracycline	ND	75	71,3
4-epichlorotetracycline	ND	105	59,9
Chlorotetracycline	ND	75	66,6
Doxycycline	ND	93	66,6

Loading solution: To one liter of water, 22,195g of Disodium Hydrogen Phosphate heptahydrate, 11,257g of Citric Acid, and 500mg of ETDA- $\text{Na}_4 \cdot 2\text{H}_2\text{O}$ are added. The solution is mixed until total dissolution (pH measured = 4,2) and spiked with tetracyclines.

Important: For each conditioning and elution step, apply a fast vacuum to soak the disk and wait 1 minute before starting elution.

Condition of analysis: LC/MS-MS ESI+, Please find complete method available at our website.

CONDITIONING Step

Put the SPE disk on the holder

- 20 mL Acetone
- 50 mL Methanol
- 20 mL of ultrapure water

LOADING

- 1 L of loading solution in 15 minutes

WASHING

- 20 mL ultrapure water
- Apply vacuum for 30 s to dry the disk

ELUTION

- 20 mL Methanol
- 20 mL Methanol +3% Formic Acid

ANALYSIS

- Evaporation under N_2 and dissolved with water 5mM Oxalic Acid, prior to analysis.

Table: Recovery yields obtained for the loading of 1L of spiked solution.

Catalog number:

AttractSPE® Disks HLB - 47mm diameter,
20/pk : SPE-Disks-HLB-47.T1.20

PROTOCOL OF PURIFICATION

Purification with a 6mL AFFINIMIP® SPE Glyphosate cartridge

Equilibration

6mL pure Water

Loading

100mL spiked water

Washing of interferences

6mL Water

Elution (E)

8mL water with HCl 0.1M

Elutions are evaporated under vacuum at 60°C for 2 hours and dissolved in 3 mL of mobile phase containing EDTA-Na₂ 0,8mM.

HPLC Method with LC – MS/MS

Analysis by HPLC – MS/MS (QTRAP 4000)

Column: Acclaim trinity Q1 100mm x 3mm ID (3µm)

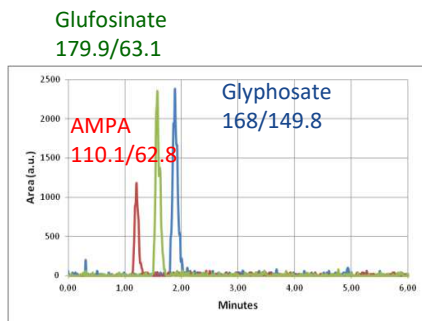
Mobile phase: gradient with Ammonium formate 50 mM pH = 2.9 (A) – Acetonitrile (B)

Time (min)	% A	% B
0	100	0
3	100	0
3,2	0	100
6,0	0	100
6,2	100	0
10,2	100	0

Flow rate: 0,5mL/min

Injection volume: 20µL.

RESULTS



Chromatograms obtained after a clean-up with AFFINIMIP® SPE Glyphosate for 100mL water spiked at 3µg/L of each molecule

Recovery of Glyphosate, AMPA and Glufosinate after AFFINIMIP® SPE Glyphosate clean-up of water spiked at 3µg/L each. No derivatization was performed.

	Glyphosate	AMPA	Glufosinate
Yield (%)	91 %	70 %	80 %
RSD (n=3)	2 %	1 %	6 %

Catalog number:

6mL format with enhanced performances
FS113-15-03B for 50 cartridges

12mL format

FS113-03C for 50 cartridges

Efficient clean-up and enrichment

PROTOCOL OF PURIFICATION

Sample preparation

Purification with a 6mL AFFINIMIP® SPE Glyphosate cartridge

Equilibration

6mL pure Water

Loading

3 to 500 mL

Washing of interferences

3mL Water

Elution (E)

4-8 mL water with HCl 0.1M

CE analysis (no derivatization)

Column: fused-silica capillary of 60.2 cm (effective length, 50 cm) x 50 µm ID at 25°C

Mobile phase: 7.5 mM phthalic acid - 51.3 mM histidine running buffer (pH 6.5, ionic strength of 21.8 mM, buffer capacity 25 mM L⁻¹ pH⁻¹) containing 1 mM CTAB

Voltage : +25kV

Detection UV-DAD (240nm)

RESULTS

Recovery yields of glyphosate and AMPA after AFFINIMIP® SPE Glyphosate clean-up of mineral water spiked at 25µg/mL.

Loading volume 3mL

Analysis done by CE without derivatization

Analytes	Recoveries %
Glyphosate	85
AMPA	87

Publication:

Preliminary recovery study of a commercial molecularly imprinted polymer for the extraction of glyphosate and AMPA in different environmental waters using MS, B. Claude, C. Berho, S. Bayouhd, L. Amalric, E. Coisy, R. Nehmé, P. Morin, *Environ Sci Pollut Res*, 24: 12293 (2017).

Catalog number:

6mL format

FS113-03B for 50 cartridges

Performance not affected by physico chemical properties of Water Loading with up to 1L

Physico chemical properties of tested waters

Salt concentrations (mg/L) and pH of analyzed solutions

	Ca	Na	Mg	K	HCO ₃	Cl	NO ₃	SO ₄	Fe	pH
Groundwater	15,7	11,3	4,9	1,3	76	9,7	<0,5	1,2	7,5	7,1
Groundwater	22,3	105,7	17	4,7	136	159	8,9	15,8	0,17	6,4
Groundwater	104,1	13,9	6,9	1,8	203	28,1	113,7	33		7,1
Geothermal water	799	5163,5	189,5	71,9		9759,7		702,2	3,2	
Mineral water	80	6,5	24	1	360	3,8	3,7	12,6		7,2

AFFINIMIP® SPE Glyphosate performance for tested waters

Above five waters spiked at various concentrations with AMPA and Glyphosate

Sample	Concentration range	Average Recoveries %
Glyphosate	100 to 750ng/L	>70%
AMPA	100 to 750ng/L	>75%

Method UPLC – MS/MS

Column: UPLC HSS T3 (2.1mm x 100mm, 1,8µm)

Mobile phase: A:
Water/Ammonium Acetate 5mM
B: Acetonitrile

Time (min)	A %	B %
0	90	10
2	90	10
7	50	50
7.5	0	100
11	0	100

Flow rate: 0.2mL/min

MS detection: m/z 321 (ESI⁻)

Injection volume: 20µL.

Same protocol than previous page

Publication:

B. Claude, C. Berho, S. Bayouhd, L. Amalric, E. Coisy, R. Nehmé, P. Morin, *Environ Sci Pollut Res*, 24: 12293 (2017).

Catalog number:

6mL format

FS113-03B for 50 cartridges



AFFINIMIP® POCIS
Glyphosate

Passive Sampling with POCIS

Polar Organic Chemical Integrative Sampler (POCIS) is a passive sampler designed to provide the time weighted average (TWA) concentration of chemicals during a sampling period of several weeks.

AFFINIMIP® POCIS Glyphosate enables the sampling of Glyphosate and AMPA in water (Groundwater, geothermal, mineral...). Then the powder is collected in an empty SPE column for the extraction of Glyphosate and AMPA.

PROTOCOL OF EXTRACTION

Extraction of collected Glyphosate and AMPA from AFFINIMIP® POCIS Glyphosate with a SPE.

Extraction of the analytes (E)

HCl solution (100mM)

The extraction solution is then evaporated and reconstituted with water prior analysis.

Catalog number:

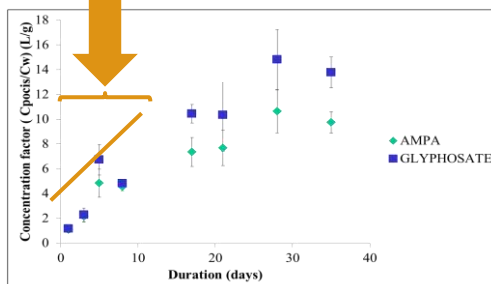
POCIS-GLY.90.55.A.1 for 1 **AFFINIMIP® POCIS Glyphosate**

POCIS-GLY.90.55.A.10 for 10 **AFFINIMIP® POCIS Glyphosate**

RESULTS

Laboratory sampling rates estimation for AMPA and glyphosate using the AFFINIMIP® POCIS Glyphosate

Sampling rates: 130mL/day/200mg AFFINIMIP® POCIS Glyphosate in agreement with other pesticides in classical POCIS.



Mineral water (pH = 7) fortified at 500ng/L of AMPA and glyphosate. Concentrations kept constant during whole experiment.

Pesticides concentration in the tank, temperature, TOC and conductivity monitored during the experimental period to verify the stability of physico-chemical conditions in water.

Publications:

Laboratory calibration of a POCIS-like sampler based on molecularly imprinted polymers for glyphosate and AMPA sampling in water, C. Berho, B. Claude, E. Coisy, A. Togola, S. Bayouhdh, P. Morin, L. Amalric, *Anal Bioanal Chem* 409: 2029 (2017)

PROTOCOL OF PURIFICATION

Sample preparation

100mL of tap water spiked with 17β -E2- d_3 to a final concentration of 75ng/L was the loading solution.

Purification with a 3mL AFFINIMIP® SPE Estrogens cartridge

Equilibration

- 3mL Acetonitrile
- 3mL Water

Loading solution from sample preparation

Washing of interferences

- 3mL water
- 3mL Water/Acetonitrile (60/40)

Elution (E)

3mL Methanol

The elution fraction was then evaporated to dryness under a stream of nitrogen. Residues was treated with 10 μ L of a mixture containing BSTFA +1 % TMCS and 8 μ L of pyridine (dried with solid KOH). After a vortex stirring, derivatisation was performed for 30 min at 55 °C. The derivatives were cooled to room temperature, 2- μ L aliquots of the recovery standard (pyrene-d10) were added to each vial and the samples were subjected to GC-MS analysis.

GC-MS/MS Analysis

Column: Rtx-5 fused silica capillary columns (30 m, 0.25-mm ID, 0.25- μ m film thickness)

Gas carrier: Helium at a flow 1.2mL/min

Injection temperature: 50 to 300 °C at 100 °C/min, held at 300 °C for 10 min

GC-MS transfer line temperature: 280°C

Temperature program: 100°C during 2min;

10°C/min to 265°C; 265°C during 2min ;

10°C/min to 300°C; 300°C during 3 min ;

20°C/min to 310°C; 310°C during 3min

Injection volume: 5 μ L

Detector : GC-MS/MS EI+ mode

Detection mode: Selected reaction monitoring (SRM)

RESULTS

Method validation for 17β -E2 and 17α -EE2 by GC-MS/MS

	17β -E2	17α -EE2
Linearity range,ng/ L	0.08-80.0	0.08-80.0
Linearity (R ²)	0.995	0.9998
m-LOQ, ng/L	0.08	0.08
Spiking level ng/L (n=5)	4	4
Recovery %	111	104
Precision (n=5)	6.2	6.8
Spiking level ng/L (n=5)	20	20
Recovery %	108	110
Precision (n=5)	9.7	15.3

Publications

Data extracted from **Determination of steroidal oestrogens in tap water samples using solid-phase extraction on a molecularly imprinted polymer sorbent and quantification with gas chromatography-mass spectrometry (GC-MS)**, D. Zacs, I. Perkons, V. Bartkevics, *Environ Monit Assess* 188, 433, 2016.

Catalog number:

3mL format

FS104-03 for 50 cartridges

PROTOCOL OF PURIFICATION

Sample preparation

100mL of tap water spiked with 17 β -E2-d₃ to a final concentration of 75ng/L was the loading solution.

Purification with a 3mL/100mg AFFINIMIP® SPE Estrogens cartridge

Equilibration

- 3mL Acetonitrile
- 3mL Water

Loading solution from sample preparation

Washing of interferents

- 3mL water
- 3mL Water/Acetonitrile (60/40)

Elution (E)

3mL Methanol

The elution fraction was then evaporated to dryness under a stream of nitrogen. Residues was treated with 10 μ L of a mixture containing BSTFA +1 % TMCS and 8 μ L of pyridine (dried with solid KOH). After a vortex stirring, derivatisation was performed for 30 min at 55 °C. The derivatives were cooled to room temperature, 2- μ L aliquots of the recovery standard (pyrene-d10) were added to each vial and the samples were subjected to GC-MS analysis.

GC-HRMS Analysis

Column: Rtx-5 fused silica capillary columns (30 m, 0.25-mm ID, 0.25- μ m film thickness)

Gas carrier: Helium at a flow 1.2mL/min

Injection temperature: 260°C

GC-MS transfer line temperature: 280°C

Temperature program: 100°C during 2min; 10°C/min to 265°C; 265°C during 2min ; 10°C/min to 300°C; 300°C during 3 min ; 20°C/min to 310°C; 310°C during 3min

Injection volume: 1 μ L

Detector : GC-MS/MS EI⁺ mode

Detection mode: Selected Ion Recording (SIR)

RESULTS

Method validation for 17 β -E2 and 17 α -EE2 by GC-MS/MS

	17 β -E2	17 α -EE2
Linearity range,ng/ L	0.08-80.0	0.08-80.0
Linearity (R ²)	0.9990	0.9990
m-LOQ, ng/L	0.08	0.08
Spiking level ng/L (n=5)	4	4
Recovery %	113	111
Precision (n=5)	4.6	5.4
Spiking level ng/L (n=5)	20	20
Recovery %	99	106
Precision (n=5)	4.3	14.3

Publications

Data extracted from **Determination of steroidal oestrogens in tap water samples using solid-phase extraction on a molecularly imprinted polymer sorbent and quantification with gas chromatography-mass spectrometry (GC-MS)**, D. Zacs, I. Perkons, V. Bartkevics, *Environ Monit Assess* 188, 433, 2016.

Catalog number:

3mL format

FS104-03 for 50 cartridges



THE ART OF MAKING SAMPLE PREPARATION EASIER

ABOUT

AffiniseP is a **worldwide expert in sample preparation applications**. Dedicated to the development of analytical applications in various fields such as water monitoring, food quality control and bioanalysis, AffiniseP offers a complete set of products for passive sampling and sample preparation.

Brands

AFFINIMIP®

AttractSPE®

SilactSPE™ ...

Applications

Sample Preparation
Passive Sampling
Filtration
Microextraction of
peptides/proteins

Matrices

Food, Feed, Soil,
Oil, Water,
Biological fluids,
Proteolytic digest

Analytical chemists can find any solution for sample preparation, selective extraction and sample clean-up needs in various sectors: food and feed safety and quality, life science and quality control, clinical diagnosis, environment and doping.

In addition, proteomics users can find a complete set of microextraction products for protein/peptides fractionation or desalting.