AFFINISEP

SAMPLING & SAMPLE PREPARATION CATALOG

Solid Phase Extraction, High-Throughput SPE, Passive sampling, QuEChERS, SLE and associated products

V21

EXAMPLES OF SPE APPLICATIONS

	SPE product- ANALYTES	SPE product- ANALYTES	MATRICES	PAGE
Mycotoxins	Single Mycotoxin			
	Patulin	AFFINIMIP® SPE Patulin	All Apple-based products (Juice, puree, concentrate…)	22
	Zearalenone	AFFINIMIP® SPE Zearalenone	Maize, Wheat, Cereal-based baby food, Rice, Edible corn oil	27
	Ochratoxin A	AFFINIMIP® SPE Ochratoxin A	Wheat, Maize, Pepper, Paprika, Red and White Wine	25
	Deoxynivalenol (DON)	AFFINIMIP® SPE Deoxynivalenol	Wheat, Maize, Oat	26
	Multimycotoxins			
	Aflatoxins, Ochratoxin A, HT-2, T-2, Fumonisins, Zearalenone, Deoxynivalenol	AFFINIMIP® SPE Multimyco LCMSMS	Cereals	29
	Fumonisins AND Zearalenone	AFFINIMIP® SPE FumoZON	Maize, Maize-based baby food	28
Endocrine Disruptor	Estrone, 17α-Estradiol, 17β-Estradiol, Estriol, 17α-Ethynilestradiol	AFFINIMIP® SPE Estrogens	Water, Serum, Plasma	35
	Bisphenol A, Bisphenol AP, Bisphenol AF, Bisphenol B, Bisphenol S, Bisphenol F…	AFFINIMIP® SPE Bisphenols	A broad variety of liquid and solid foods	37
	Parabens	AFFINIMIP® SPE Phenolics	Shampoo, cream	40
	Phenolic compounds	AFFINIMIP® SPE Phenolics	Food matrices	40
Drug Residues	Amphetamine, Methamphetamine, MDA, MDMA, MDEA	AFFINIMIP® SPE Amphetamines	Serum, Urine	42
	Zeranol, Zearalanone, α and β Zearalanol, α and β Zearalenol, Resorcylic acid lactones	AFFINIMIP® SPE Zeranol Residues	Urine, Plasma	39
	Chloramphenicol	AFFINIMIP® SPE Chloramphenicol	Honey, Urine, Shrimp	34
	Tamoxifen	AFFINIMIP® SPE Tamoxifen	Urine	45

See our application notebook for more applications and details…

	SPE product- ANALYTES	SPE product- ANALYTES	MATRICES	PAGE
Antibiotics and Drugs residues	Nicotine, Procaïnamide	AttractSPE™ HLB	Urine	50
	Caffeine	AttractSPE™ HLB	Urine, Water	50
	Propranolol	AttractSPE™ HLB	Urine, Water	50
	Tetracyclines - Tetracycline, Oxytetracycline, Chlortetacycline, Doxycycline	AFFINIMIP® SPE Tetracyclines	Milk	33
	Sulfonamides – Sulfadimethoxine , Sulfaethoxypyridazine…	AttractSPE™ SCX	Milk	54
	Caffeine, Acetaminophen, Diclofenac, Ibuprofen, Ketoprofen, Naproxen, Carbamazepine	AttractSPE™ HLB	Waste water, water	50
	Antibacterial Aminoglycosides - - Streptomycin, Dihydrostreptomycin,…	AttractSPE™ HLB	Tissue, Milk	50
	Antibiotics – Quinolones, Macrolides, Lincosamides, Sulfonamides, Penicillins, Cephalosporine, Pleuromutilins, Diamino pyrimidine derivatives	AttractSPE™ HLB	Tissue, Milk	50
	NSAID (Non Steroidal Anti inflammatory drug) - Salicylic acid, Phenylbutazone, Flunixin, Tolfenamic acid, Meloxicam, Desoximethasome (IS), Ketoprofen	AttractSPE™ HLB	Tissue	50
	Penicillin based antibacterials - Ampicillin, Amoxicillin…	AttractSPE™ HLB	Tissue	50
	Glucocorticoids - Cortisone, Corticosterone, Aldosterone, Betamethasone, Dexamethasone, Flumethasone, Prednisone, Prednisolone, Methylprednisolone	AttractSPE™ HLB	Tissue	50
	Erythromycin and Clindamycin	AttractSPE™ HLB	Tissue	50
	Praziquantel and Tiamulin	AttractSPE™ HLB	Tissue	50
	Cephalexin	AttractSPE™ HLB	Fish	50
	Quinoxaline-2 -carboxylic acid and 3-methyl quinoxaline-2-carboxylic acid	AttractSPE™ SAX	Muscle, Liver, Kidneys	53
	Vancomycin	AttractSPE™ SCX	Fish	54
	Valnemulin and Tiamulin	AttractSPE™ HLB	Fish	50
	Phenolic compounds	AFFINIMIP® SPE Phenolics	biological matrices	40

See our application notebook for more applications and details…

EXAMPLES OF SPE APPLICATIONS

	SPE product- ANALYTES	SPE product- ANALYTES	MATRICES	PAGE
Pesticides - Herbicides	Glyphosate, AMPA	AFFINIMIP® SPE Glyphosate – AMPA	Waters	30
	Aminopyralid, Clopyralid, Picloram	AFFINIMIP® SPE Picolinic Herbicides	Water, Compost, Soil	31
	16 common pesticides - Linuron, Iprodione, Desysopropylatrazine, Desethylatrazine, Aldocarb, Simazine, Carbofuran, Metalaxyl, Atrazin, 2, 4-D, Metazachlor, Dicloran, Phenmedipham, Procymidone, Fenitrothion, Vinclozolin	AttractSPE™ HLB	Water	50
	Triazine Herbicides - Simazine, Cyanazine, Atrazine…	AttractSPE™ HLB	Water	50
	Acetamide Herbicides - Metolachlor and metabolites, Alachlor…	AttractSPE™ HLB	Water	50
	Fungicides - Carbendazim, Thiabendazole	AttractSPE™ SCX	Fruit Juice	54
	Pesticides by GC-MS : Metamidophos, Dichlorvos, Acephate, Trifluralin, Diazinon, Chlorothalonil, Dimethipin, Vinclozoline, Methyl parathion, Methyl primophos, Triadimenol-1, DDE, Cypermethrin-3, Difenoconazole-1, Imibenconazole, Tebuthiuron, Bromacil…	AttractSPE™ Carbon/PSA	Food matrices	65
PAHs	**Hydroxylated Polycyclic Aromatic Hydrocarbons** - 2-Naphtol, 2-Hydroxyfluorene, 9-Phenanthrol…	AFFINIMIP® SPE Phenolics	Contaminated soils	40
	Polycyclic Aromatic Hydrocarbons (PAH)	AFFINIMIP® SPE PAHs	Fats and oil	32
		AttractSPE™ HLB	Waste water	50
		SilactSPE™ CN/SiOH	soil	66
Phenolics	Guaïacol	AFFINIMIP® SPE Phenolics	Wines, water	40
	Carnosic acid	AFFINIMIP® SPE Phenolics	Meat, water	40
	Hydroquinone	AFFINIMIP® SPE Phenolics	Water	40

See our application notebook for more applications and details…

	SPE product- ANALYTES	SPE product- ANALYTES	MATRICES	PAGE
Removal of compounds	**Transitions metals ions**	**AttractSPE™ IDA**	Aqueous solution	66
	Removal of anionic contaminants and neutralization of highly acidic samples	**AttractSPE™ SAX-HCO3**	Aqueous solutions	67
	Removal of alkaline earth and neutralization of basic samples	**AttractSPE™ PS-H**	Aqueous solutions	67
	Removal of Halides ions (chloride, iodide, bromide)	**AttractSPE™ PS-Ag**	Aqueous solutions	68
	Removal of sulfate ions	**AttractSPE™ PS-Ba**	Aqueous solutions	68
	Removal of WATER	**SilactSPE™ Dry**		64
Biological application	Removal of phospholipids	**AttractSPE™ LipRem**	plasma	74
	Removal of precipitated proteins	**SilactSPE™ Double fritted & Single fritted**	Aqueous solutions	74
	Supported liquid extraction	**SilactSPE™ SLE**	Aqueous solutions	75
	NNAL	**AFFINIMIP® SPE NNAL**	Urine	41
	Dopamine, Noradrenaline, Adrenaline, ...	**AFFINIMIP® SPE Catecholamines**	Plasma, Serum	43
	Metanephrine, Normetanephrine and 3-Methoxytyramine, ...	**AFFINIMIP® SPE Metanephrines**	Plasma, Serum	44
Miscellaneous	Melamine	**AttractSPE™ SCX**	Milk, food	54
	Cyanuric acid	**AttractSPE™ SAX**	Milk	53
	ARTIFICIAL SWEETENERS - Acesulfame, Aspartame, Cyclamate, Neohespiridine dihydrochalcone, Saccharin, Sucralose	**AttractSPE™ HLB**	Water	50
	COCAINE AND MAIN METABOLITES - Cocaine, benzoylecgonine and ecgonine methyl ester	**AttractSPE™ HLB**	Waste water	50
	Hydrocarbons in water (ISO9377-4)	**SilactSPE™ Na_2SO_4 / Florisil**	water	64

See our application notebook for more applications and details…

AFFINIMIP® SPE

Selective Solid Phase Extraction

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

Be selective


Food / Feed QC


Environment


Cosmetics

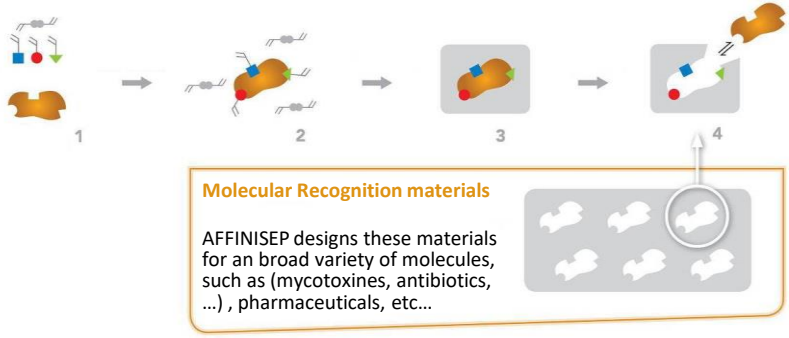

Pharmaceutical R&D

Selective Solid Phase Extraction

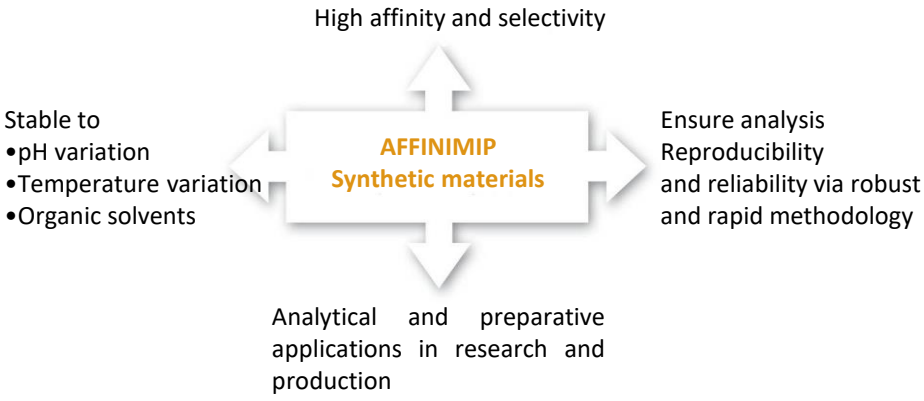
Molecularly Imprinted Polymers for the Selective Extraction of Trace Analytes from Complex Matrices

New Extraction Phase Based on Molecularly Imprinted Polymers (MIPs)

MIPs are polymers with shape «memory» and functional groups affine to a template molecule. Using an imprinting process, AFFINISEP designs these materials in order to recognize selectively a target molecule, even in the presence of compounds with structure and functionality similar to the template.



Advantages of SPE based molecularly imprinted polymers



AFFINIMIP® SPE is a selective solid phase extraction based on Molecularly Imprinted Polymers (MIP). It combines the advantages of immune-affinity columns regarding the selectivity and of a classic Solid Phase Extraction (SPE) in terms of robustness and costs.

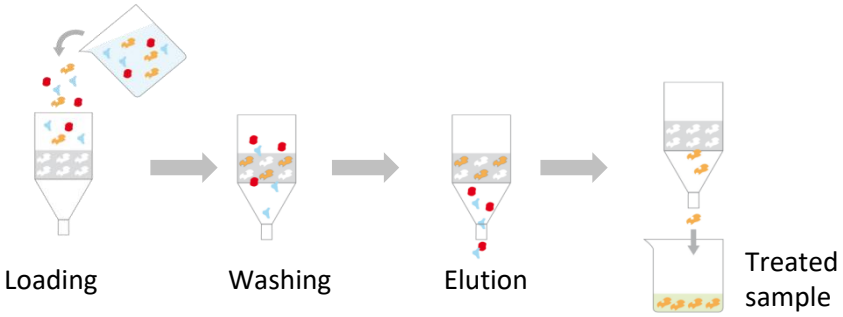
AFFINIMIP® SPE Selective Extraction Cartridges

Perfect clean-up system for trace analysis

Thanks to the selectivity of **AFFINIMIP®SPE**, stringent washing steps can be applied in order to remove all interferences and thus minimize matrix effects. It also **reduces ion-suppression effects.**

Minimal or no method development required

A protocol based on three steps (loading, washing and elution) is supplied with **AFFINIMIP®SPE** kits for tested matrices. No extra-equipment than the usual required for SPE experiments is necessary.

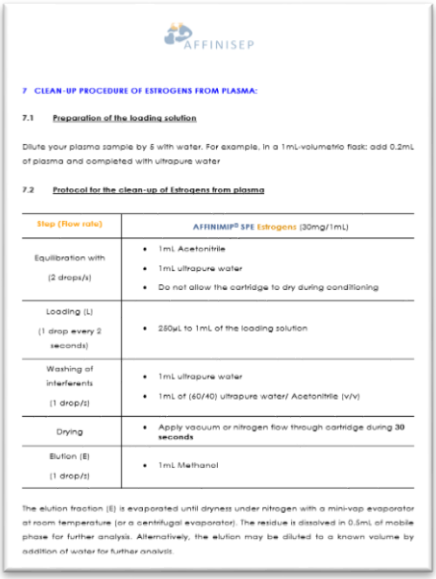


AFFINIMIP® SPE protocols are as well defined by 3 steps of loading, washing and elution. All steps have been already developed in detail by AFFINISEP and an instruction sheet is supplied with the product.

The advantages of **AFFINIMIP® SPE** are essential in trace analysis from a complex matrice in food safety, environment and pharmaceutical analysis such as Mycotoxins (Patulin, Ochratoxin A, Zearalenone, …), Phenolics, Endocrines Disruptors (Estrogens, Bisphenol A, Phenolics), Drug residues (Amphetamines, Zeranol residues, Chloramphenicol, Tetracyclines), pesticides (glyphosate & AMPA, Aminopyralid, Clopyralid, Picloram) and others applications (PAHs, NNAL, Catecholamines, Metanephrines).

The SPE protocol is supplied in an instruction sheet for various complex matrices.

For other matrices, please contact our technical support to help you with your application.



AFFINISEP

7 CLEAN-UP PROCEDURE OF ESTROGENS FROM PLASMA:

7.1 Preparation of the loading solution

Dilute your plasma sample by 5 with water. For example, in a 1mL-volumetric flask: add 0.2mL of plasma and completed with ultrapure water

7.2 Protocol for the clean-up of Estrogens from plasma

Step (Flow rate)	AFFINIMIP® SPE Estrogens (30mg/1mL)
Equilibration with (2 drops/s)	• 1mL Acetonitrile • 1mL ultrapure water • Do not allow the cartridge to dry during conditioning
Loading (L) (1 drop every 2 seconds)	• 250µL to 1mL of the loading solution
Washing of interferents (1 drop/s)	• 1mL ultrapure water • 1mL of (60/40) ultrapure water/ Acetonitrile (v/v)
Drying	• Apply vacuum or nitrogen flow through cartridge during 30 seconds
Elution (E) (1 drop/s)	• 1mL Methanol

The elution fraction (E) is evaporated until dryness under nitrogen with a mini-vap evaporator at room temperature (or a centrifugal evaporator). The residue is dissolved in 0.5mL of mobile phase for further analysis. Alternatively, the elution may be diluted to a known volume by addition of water for further analysis.

Example of an instruction sheet supplied with **AFFINIMIP® SPE**

Mycotoxins are toxic secondary metabolites produced by different fungi present in agricultural commodities. They are regulated in food and feed due to nephrotoxic, neurotoxic, carcinogenic, estrogenics, and immunosuppressive effects.

AFFINISEP has developed two sets of product for mycotoxins analyses:

Single mycotoxin extraction: Designed for the analysis of one specific family of mycotoxin:

AFFINIMIP® SPE Patulin
AFFINIMIP® SPE Ochratoxin A
AFFINIMIP® SPE Zearalenone
AFFINIMIP® SPE Fumonisins
AFFINIMIP® SPE Deoxynivalenol

Multimycotoxins extraction: Designed for the simultaneous extraction of several mycotoxins which are present in the same matrix prior to LC-MS/MS analyses

These mycotoxins are all present in the same matrix to be analyzed. Their extraction is done all at once by SPE.

AFFINIMIP® SPE FumoZON for the analyses of
Fumonisins
Zearalenone

AFFINIMIP® SPE Multimyco LCMSMS for the analyses of
Fumonisins
Aflatoxins
Ochratoxin A
T-2 and HT-2
Zearalenone
Deoxynivalenol

AFFINIMIP® SPE Patulin are selective solid-phase extraction cartridges that selectively clean and concentrate this toxin prior to analysis by HPLC from complex matrices such as apple juice, compote, apple puree including based on baby food.

The FDA and the European Union recommend a maximum concentration of 50µg/L in apple juice and 25µk/kg in apple puree. Member countries of the European Union have set maximum allowable levels of patulin at 10µg/kg in apple juice and solid apple products, including apple compote and apple puree, for infants and young children (European Commission Regulation (EC) 1881/2006).

Analyte	•Patulin
Tested matrices	•Apple juice (clear & cloudy), Apple and Multifruit puree, baby food, cider, Alcohol, pommeau, manzella, Dried apple, Blueberry, Tomato Ketchup
Detection method	•HPLC- UV
Recovery yield	• Higher than 80% , considerable decrease of 5-Hydroxymethylfurfural signal

Product information

Format : 3 mL, 6mL, 10mL LRC cartridges
Particle diameter range : 25-80 µm
Storage : Ambient temperature

For other matrices or formats,
please contact our technical support

Perfect and robust clean-up with AFFINIMIP® SPE Patulin

Sample preparation

C° of Patulin (ng/mL)	Recoveries %	% RSD_R
10	97.9	11 (n=9)
40	90.6	11 (n=41)

Protocol

Loading solution: 2.5mL apple juice and 2.5mL of water-2% acetic acid are mixed.

Equilibration: 2mL Acetonitrile, 1mL water

Loading : 4mL of loading solution

Washing 1 : 1mL $NaHCO_3$ in Water, 2mL Water

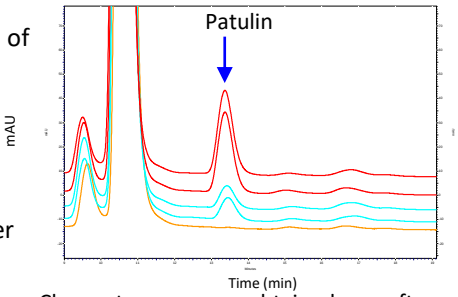
Drying by applying vacuum 10 seconds

Washing 2 1mL Diethyl Ether

Elution 2mL Ethyl Acetate

The elution fraction was evaporated and dissolved in water - 0.1% acetic acid before HPLC analysis.

APPLE JUICE



Chromatograms obtained after AFFINIMIP® SPE Patulin Clean-up of an apple juice spiked at 40µg/kg (tested twice, red) or at 10µg/kg (tested twice, blue) with Patulin or not spiked (orange)

HPLC Method
Column: Atlantis T3 column, 150mm x 2.1mm
Mobile phase: Deionized water/ACN (95/5, v/v) Flow rate: 0.2mL/min
Detection: UV - 276nm
Injection volume: 100µL.

Advantages

- Unique extraction method available on the market
- Easier and faster than Liquid – Liquid Extraction
- Perfect clean-up system for trace analysis of Patulin
- Ready for use and optimized extraction protocol
- Applicable to several apple derived matrices
- Considerable decrease of 5-Hydroxymethylfurfural signal

Designation	Description	25c/box	50 c/box
AFFINIMIP® SPE Patulin	3mL – 100mg - Patulin	FS102-02	FS102-03
	6mL – 200mg - Patulin	FS102-02B-200mg	FS102-03B-200mg
	10mL LRC – 100mg - Patulin	FS102-02LRC	FS102-03LRC
AFFINIMIP® SPE Patulin & Pectinase kit	Kit of 3mL cartridges for Patulin + 50mL Pectinase solution	FS102-02K	FS102-03K
	Kit of 6mL - 200mg cartridges for Patulin + 50mL Pectinase solution	FS102-02KB-200mg	FS102-03KB-200mg
AFFINIMIP® SPE Patulin & standard solution	Kit of selective SPE cartridges for Patulin -3mL + 1mL Standard 100µg/mL	FS102-02KS	FS102-03KS
	Kit of selective SPE cartridges for Patulin -6mL + 1mL Standard 100µg/mL	FS102-02BKS	FS102-03BKS
AFFINIMIP® SPE Patulin & Pectinase & standard solution	kit of selective SPE cartridges for Patulin -3mL + 50mL Pectinase + 1mL Standard 100µg/mL	FS102-02KSP	FS102-03KSP
	kit of selective SPE cartridges for Patulin -3mL + 50mL Pectinase + 1mL Standard 100µg/mL	FS102-02BKSP	FS102-03BKSP
Pectinase solution	50 mL Pectinase enzyme solution – 1 unit	REA-001-50mL	
Patulin Standard	1 mL of Patulin standard solution at 100 µg/mL in acetonitrile – 1 unit	REA-PAT-1mL	

AFFINIMIP® SPE Ochratoxin A is selective solid-phase extraction cartridges for Ochratoxin A that selectively clean and concentrate the toxin prior to analysis by HPLC from matrices such as Wheat, Maize, Pepper, Paprika, Red and White Wine.

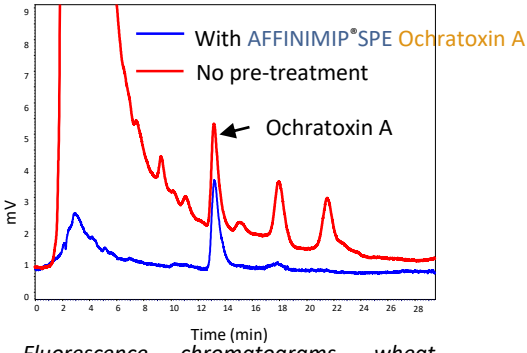
In Europe, Regulation (EC) N°1881/2006 sets maximum levels for Ochratoxin A in foodstuffs such as 5µg/kg in cereals and 2ppb in wine. The regulation (EC) N°105/2010 also defines maximum levels for spices and liquorice products.

Analyte	•Ochratoxin A
Tested matrices	•Wheat, Maize, red and white Wine, Several spices (Paprika, Pepper, ginger…), Coco, Humain urine, …
Detection method	•HPLC-Fluorescence, LC/MS
Recovery yield	• Higher than 80%

Product information

Format : 3 mL, 6mL, 10mL LRC cartridges
Particle diameter range : 25-80 µm
Storage : Ambient temperature

For other matrices or formats,
please contact our technical support



Fluorescence chromatograms, wheat sample (2.5µg/kg of Ochratoxin A)

Catalog #:

Designation	Description	25c/box	50 c/box
AFFINIMIP® SPE Ochratoxin A	3mL	FS101-02	FS101-03
	6mL	FS101-02B	FS101-03B
	10mL LRC	FS101-02LRC	FS101-03LRC

AFFINIMIP® SPE Deoxynivalenol are selective solid-phase extraction cartridges for the extraction of Deoxynivalenol and its prior to analysis.

In Europe, Regulation (EC) N°1126/2007 sets maximum levels for Deoxynivalenol in cereals with, for instance, respectively 1750µg/kg for unprocessed maize, 750µg/Kg for cereal flours and 200µg/kg for babyfood. The U.S. Food and Drug Administration has established a level of 1 ppm (parts per million) restriction of vomitoxin.

Analyte	•Deoxynivalenol, 3-AcetylDON and 15-AcetylDON
Tested matrices	•Oat, wheat, corn, baby food, meat, animal feed,
Detection method	•LC/MS •UV
Recovery yield	• Higher than 80%

Product information

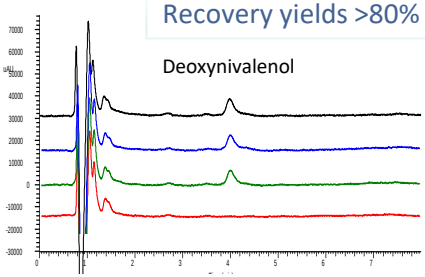
Format : 6mL cartridges

Particle diameter range : 25-80 µm

Storage : Ambient temperature

For other matrices or formats, please contact@affinisep.com.

Recovery yields >80%



UV chromatograms of corn spiked with DON (800µg/Kg) and not spiked (red) after AFFINIMIP®SPE Deoxynivalenol clean-up

Catalog #:

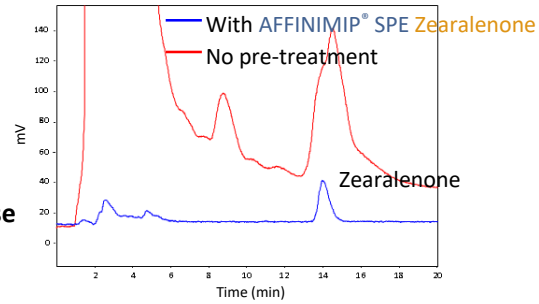
Designation	Description	25c/box	50 c/box
AFFINIMIP®SPE Deoxynivalenol	6mL -100mg in food and babyfood	FS117-02B	FS117-03B
	6mL – 200mg in feed	FS117-02B-200mg	FS117-03B-200mg

AFFINIMIP® SPE Zearalenone are selective solid-phase extraction cartridges for Zearalenone from complex matrices such as Maize, Cereal-based Baby Food and Rice.

In Europe, Regulation (EC) N°1881/2006 sets maximum levels for Zearalenone in foodstuffs such as 100µg/kg in cereals and 20µg/kg in maize-based babyfood.

Analyte	•Zearalenone
Tested matrices	•Wheat, Maize, Cereal-based baby food, Edible corn oil and Rice
Detection method	•LC/MS •HPLC-Fluorescence
Recovery yield	• Higher than 80%

Fluorescence chromatograms obtained after a purification with AFFINIMIP® SPE Zearalenone of a cereal sample (80µg/kg of Zearalenone)



Product information

Format : 3mL, 10mL LRC cartridges
Particle diameter range : 25-80 µm
Storage : Ambient temperature

For other matrices or formats, please contact@affinisep.com

Catalog #:

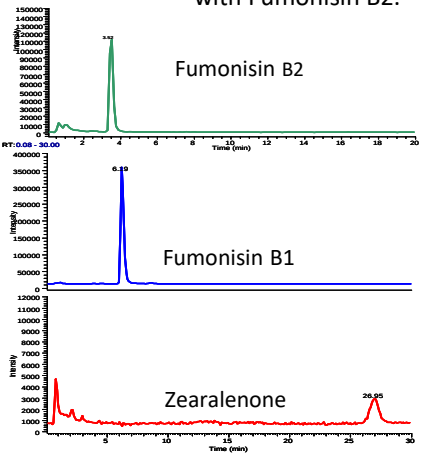
Designation	Description	25c/box	50 c/box
AFFINIMIP® SPE Zearalenone	3mL	FS100-02	FS100-03
	10mL LRC	FS100-02LRC	FS100-03LRC

AFFINIMIP® SPE FumoZON are solid-phase extraction cartridges that selectively and SIMULTANEOUSLY clean and concentrate Fumonisins and Zearalenone prior to analysis by HPLC from complex matrices such as maize and cereal-based baby food. In Europe, Regulation (EC) N°1126/2007 sets maximum levels of 20µg/kg and 200µg/kg on maize-based babyfood for respectively Zearalenone and Fumonisins.

Analyte	•SIMULTANEOUS Extraction of Fumonisins B1+B2 & Zearalenone
Tested matrices	•Wheat, Maize, Cereal-based baby food,
Detection method	•LC/MS
Recovery yield	• Higher than 80%

Chromatograms obtained after AFFINIMIP® SPE FumoZON Clean-up of a maize flour solution spiked at 38µg/kg with ZON, 2408µg/kg with Fumonisin B1 and 630µg/kg with Fumonisin B2.

Sample	C° µg/kg	Mean µg/kg	Recoverie %	% RSD_R
Zearalenone	20	16.9	84.4	1.6 (n=4)
Fumonisin B1	200	168.6	84.3	1.4 (n=3)
Fumonisin B2	200	185.6	92.8	1.9 (n=3)



Catalog #:

Designation	Description	25c/box	50 c/box
AFFINIMIP® SPE FumoZON	3mL	FS109-02	FS109-03
	10mL LRC -	FS109-02LRC	FS109-03LRC

AFFINIMIP® SPE Multimyco LCMSMS are Multimycotoxins solid-phase extraction cartridges that selectively and SIMULTANEOUSLY clean-up and concentrate Fumonisins, Aflatoxins, Ochratoxin A, T-2, HT-2, Zearalenone and Deoxynivalenol prior to analysis by LC-MS/MS from complex matrices such as cereals. In Europe, these mycotoxins are all regulated and they are also present in the same matrices..

Analyte	•Fumonisins, Aflatoxins, Ochratoxin A, T-2 and HT-2, Zearalenone, Deoxynivalenol
Tested matrices	•Wheat, Maize
Detection method	•LC/MS
Recovery yield	• Higher than 70%

Recovery of multimycotoxins analyzed after AFFINIMIP® SPE Multimyco LCMSMS clean-up from cereals

analytes	C° µg/kg	R%
Aflatoxin B1	0,4	80
Fumonisin B1	4	75
HT-2	4	97
T-2	4	96
Zearalenone	10	95
Ochratoxin A	4	83
Deoxynivalenol	10600	82

Product information

Format : 3mL , 6mL, 10mL LRC cartridges

Particle diameter range : 25-80 µm

Storage : Ambient temperature

Catalog #:

Designation	Description	25c/box	50 c/box
AFFINIMIP® SPE Multimyco LCMSMS	3mL	FS118-02	FS118-03
	6mL	FS118-02B	FS118-03B
	10mL LRC	FS118-02LRC	FS118-03LRC

AFFINIMIP® SPE Glyphosate – AMPA cartridges enable the extraction and analysis of Glyphosate [(N-phosphonomethyl)glycine] and its main metabolite aminomethylphosphonic acid (AMPA).
Both molecules are very difficult to analyze due to their high solubility in water and their insolubility in organic solvents, making liquid extraction difficult.

Analyte	•Glyphosate , AMPA
Tested matrices	•Water, Geothermal, mineral water, river, underground water
Detection method	•LC-MS / Fluo, on line SPE/UPLC/MS/MS
Recovery yield	• Higher than 85% - **High CAPACITY**

	Wide variety of water tested by **UPLC-MS/MS detection**		Capacity testing by **fluorescence detection**		
Analyte	[ ] range	Recoveries %	[ ]	Recoveries %	$\%RSD_R$
Glyphosate	50 to 450ng/L	>80%	160ng/mL	87%	6%
AMPA	50 to 550ng/L	>75%	78ng/mL	90%	4%

(Courtesy of ANR PROJECT ECOTECH ORIGAMI)

Catalog #:

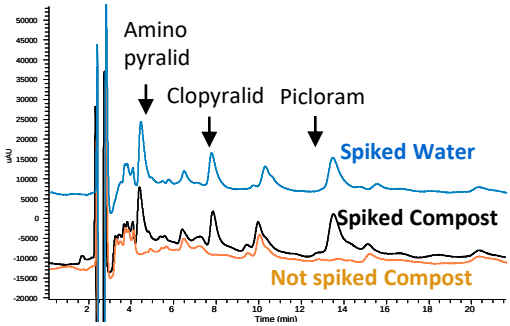
Designation	Description	25c/box	50 c/box
AFFINIMIP® SPE Glyphosate -AMPA	3mL	FS113-02	FS113-03
	6mL	FS113-02B	FS113-03B
	10mL LRC	FS113-02LRC	FS113-03LRC
	12mL	FS113-02C	

AFFINIMIP® SPE Picolinic Herbicides are selective solid-phase extraction cartridges for the extraction of Picolinic acids based herbicides such as Picloram, Aminopyralid and Clopyralid from water or compost.

Analyte	•Picloram, Aminopyralid and Clopyralid
Tested matrices	•Water, Composte, soil…
Detection method	•LC/MS
Recovery yield	• Higher than 85%

UV chromatogram of compost or water spiked with Aminopyralid, Picloram and Clopyralid after **AFFINIMIP®SPE Picolinic Herbicides** clean-up

Analytes	Recov. % Water	Recov. % Compost	% RSDr compost
Amino pyralid	95	84	3
Clopyralid	109	120	4
Picloram	88	89	3



Catalog #:

Designation	Description	25c/box	50 c/box
AFFINIMIP® SPE Picolinic Herbicides	3mL	FS115-02	FS115-03
	6mL	FS115-02B	FS115-03B
	10mL LRC	FS115-02LRC	FS115-03LRC
	12mL	FS115-02C	

AFFINIMIP® SPE PAHs are selective solid-phase extraction cartridges that selectively clean and concentrate Polycyclic aromatic hydrocarbons prior to further analysis. HAPs are neutral, non polar fused aromatic rings. These environmental carcinogenic compounds can be found in food, soils or water. Their hydrophobic characters lead to their concentration in fats and oil. A maximum limits for PAHs have been set by European Regulation in food.

Analytes	•Benzo[a]anthracen B[a]A; Benzo[a]pyren B[a]P; Benzo[a] fluoranthen B[a]F; Chrysen (CHR)
Tested matrices	•Edible oil, fatty food
Detection method	•LC/MS, HPLC/UV, Fluo
Recovery yield	• Higher than 80%

PAHs	Recovery yield in cyclohexane	Recovery yield in edible oil
B[a]A	101%	108%
B[a]P	83%	120%
B[b]F	91%	111%
CHR	91%	72%

Catalog #:

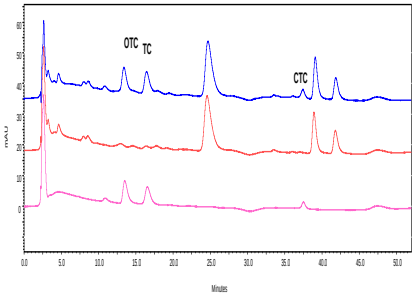
Designation	Description	25c/box	50 c/box
AFFINIMIP® SPE PAHs	3mL	FS119-02	FS119-03
	6mL	FS119-02B	FS119-03B
	10mL LRC	FS119-02LRC	FS119-03LRC
	12mL	FS119-02C	
	96 well plate – 1 unit	FS119-1.96W	

AFFINIMIP® SPE Tetracyclines are solid phase extraction cartridges that selectively clean and concentrate Chloramphenicol from complex matrices such as Milk. Various international health organizations have established the maximum residual limit of Tetracyclines in all circulating milk in their countries. Worldwide maximum residue levels for tetracycline antibiotics are 100ppb (µg/L).

Analyte	•Tetracycline, Chlortetracycline, Oxytetracycline, their epimers and Doxycycline.
Tested matrices	•Meat, Tissues, Animal source foods , milk, …
Detection method	•LC/MS, HPLC-UV
Recovery yield	• Higher than 80%

UV Chromatograms (355nm) spiked with Tetracyclines at 50µg/L (blue) or not spiked (red) or of 1.5mL of water spiked with Tetracyclines at 50µg/L (pink)

Tetracyclines	C° (µg/L)	Mean (µg/L)	Recoveries %	% RSD_R (n=3)
Tetracycline	50	44.3	88.7	9.5
Oxy tetracycline	50	53.7	107.3	10.7
Chlor tetracycline	50	40.7	81.3	9.6



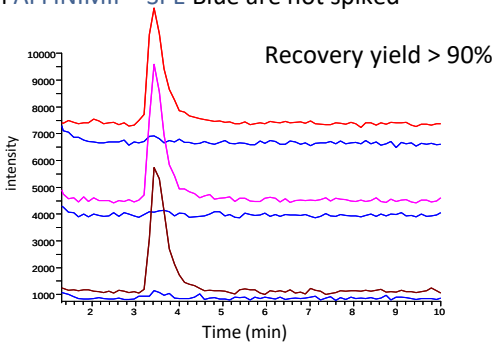
Catalog #:

Designation	Description	25c/box	50 c/box
AFFINIMIP® SPE Tetracyclines	1mL	FS112-02A	FS112-03A
	3mL	FS112-02	FS112-03
	LRC 10mL	FS112-02LRC	FS112-03LRC
	96 well plate – 1 unit	FS112-1.96W	

AFFINIMIP® SPE Chloramphenicol are selective solid phase extraction cartridges that clean and concentrate Chloramphenicol from complex matrices such as Honey. Several countries (e.g. U.S.A, E.U, Canada…) have prohibited the use of Chloramphenicol for food-producing animals. As no permited limit has been established, E. U has defined a minimum required performance limits (MRPLs) of 0.3µg/kg for products of animal origin (Commission decision 2003/181/EC).

Analyte	•Chloramphenicol
Tested matrices	•Honey, Milk, Shrimp, Bovine Urine
Detection method	•LC/MS
Recovery yield	• Higher than 87%

MS chromatogram (SIM) of several honeys spiked with 15.7 µg/kg of Chloramphenicol after clean-up with AFFINIMIP® SPE Blue are not spiked



•Direct percolation of honey diluted in water

•High loading capacity: Up to 10g of honey analysed

Catalog #:

Designation	Description	25c/box	50 c/box
AFFINIMIP® SPE Chloramphenicol	1mL	FS110-02A	FS110-03A
	3mL	FS110-02	FS110-03
	LRC 10mL	FS110-02LRC	FS110-03LRC
	96 well plate – 1 unit	FS110-1.96W	

AFFINIMIP® SPE Estrogens are selective solid-phase extraction cartridges that selectively clean and concentrate the natural or synthetic estrogens family prior to further analysis from complex matrices such as Water, Plasma or Serum.

Analyte	•a broad family of natural and synthetic estrogens
Tested matrices	•Water, river water and sediment, Plasma, treated sewage, animal body fluid
Detection method	•LC/MS, GC/MS
Recovery yield	• higher than 80%

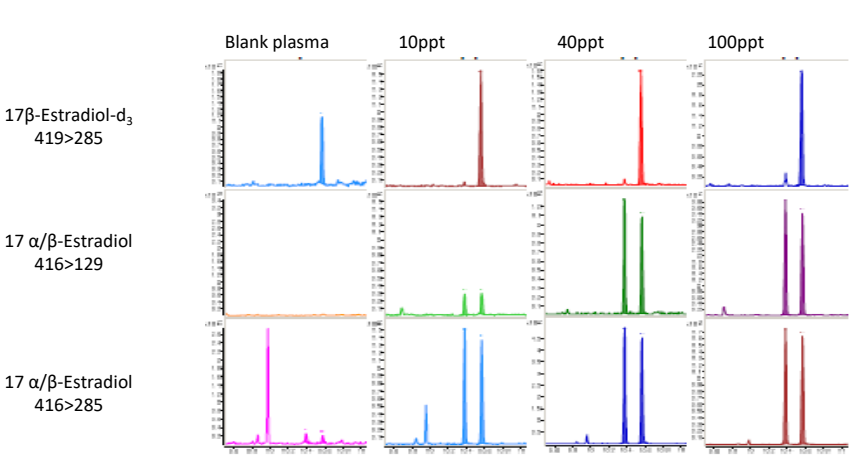
Product information

Format : 1mL, 3mL, 6mL, 10mL LRC, 12mL cartridges, automate format, 96 well plate and on-line SPE, POCIS, 0.7 and 2mL Reversible cartridges
Particle diameter range : 25-80 µm
Storage : Ambient temperature
For other matrices or formats, please contact@affinisep.com

Catalog #:

Products	Designation	Description	25c/box	50 c/box
Estrogens	AFFINIMIP® SPE Estrogens	1mL	FS104-02A	FS104-03A
		3mL	FS104-02	FS104-03
		6mL	FS104-02B	FS104-03B
		10mL LRC	FS104-02LRC	FS104-03LRC
		12mL	FS104-02C	
		96 well plate – 1 unit	FS104-1.96W	
		Reversible cart. – 0.7mL	FS104-02Rev1	FS104-03Rev1
		Reversible cart. – 2 mL	FS104-02Rev2	FS104-03Rev2

MRM chromatograms from GC-MS/MS analysis of fortified calves' plasma samples at 0, 10, 40 and 100 pg.mL^{-1} with 17α-estradiol, 17β-estradiol and estrone. Chromatograms obtained after a clean-up with AFFINIMIP® SPE Estrogens (Courtesy of Emmanuelle Bichon - LABERCA)



Publications

-Unraveling estradiol metabolism and involvement in the reproductive cycle of non-vertebrate animals: the sea urchin model. S. Mercurio, P. Tremolada, M. Nobile, D. Fernandes, C. Porte, M. Sugni, Steroids (2015)

- On-line molecularly imprinted solid-phase extraction coupled to liquid chromatography-tandem mass spectrometry for the determination of hormones in water and sediment samples, D. Matějíček, J. Vlček, A. Burešová, P. Pelcová, J. Sep. Sci., 36 (9-10), 1509-1515, 2013.

- The use of molecularly imprinted polymers for the multicomponent determination of endocrine-disrupting compounds in water and sediment, D. Matějíček, A. Grycová, J. Vlček, J. Sep. Sci., 36(6), 1097-1103, 2013.

- Molecularly imprinted polymer applied to the selective isolation of urinary steroid hormones: An efficient tool in the control of natural steroid hormones abuse in cattle, M. Doué, E. Bichon, G. Dervilly-Pinel, V. Pichon, F. Chapuis-Hugon, E. Lesellier, C. West, F. Monteau, B. Le Bizec, J. Chrom A, 1270, 51-56, 2012.

-Solid-phase extraction using molecularly imprinted polymer for selective extraction of natural and synthetic estrogens from aqueous samples, P. Lucci, O. Núñez, M.T. Galceran, J. Chrom. A, 1218,(30), 4828-4833, 2011.

For more publications, please visit our website or contact@affinisep.com

AFFINIMIP® SPE Bisphenols are selective solid-phase extraction cartridges that clean and concentrate Bisphenols such as Bisphenol A and closely related structures prior to their analysis.

The European commission has defined a specific migration limit at a maximum level of 0.6 mg of BPA/kg of food (Directive 2011/8/EU of 28 January 2011). In addition, the directive prohibits the use of BPA to manufacture infant feeding bottles. In France, the the use of bisphenol A (BPA) in food contact materials has been banned scince January 2015.

Analyte	•Bisphenols such as Bisphenol A and closely 18 related structures
Tested matrices	•Water, milk (infant formula), powdered infant formula, canned food, vegetable puree for infant, Beer, urine, …
Detection method	•LC/MS, GC/MS, fluorescence
Recovery yield	• higher than 80%

Product information

Format : 1, 3mL cartridges, automate formate, PP and Glass cartridges

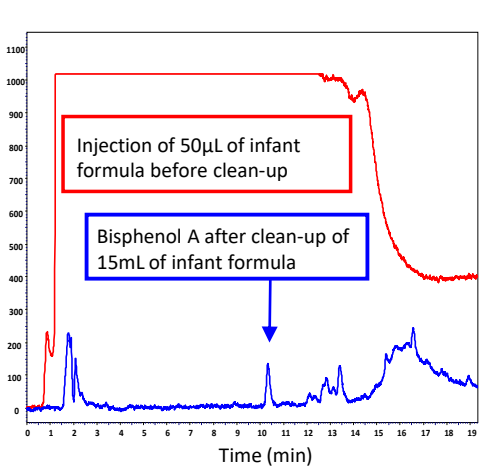
Particle diameter range : 25-80 µm

Storage : Ambient temperature

Catalog #:

Designation	Description	25c/box	50 c/box
AFFINIMIP® SPE Bisphenols	3mL (PP)	FS106-02	FS106-03
	6mL (PP)	FS106-02B	FS106-03B
	6mL (Glass)	FS106-02G	FS106-03G
	10mL LRC (PP)	FS106-02LRC	FS106-03LRC
	12mL (PP)	FS106-02C	FS106-03C
	96 well plate – 1 unit	FS106-1.96W	

Fluorescence chromatograms of infantil formula spiked with 1µg/L Bisphenol A before (Red) and after purification (Blue) with AFFINIMIP® SPE Bisphenols.



•Perfect clean-up system suitable for all chromatography techniques: LC, GC, MS, fluorescence detection

•2 grades: glass and polypropylene cartridges

Publications

- Xenobiotic-contaminated diets affect hepatic lipid metabolism: implications for liver steatosis in Sparus aurata juveniles. Maradonna, F., Nozzi, V., Santangeli, S., Traversi, I., Gallo, P., Fattore, E., Mita, D.G., Mandich, A., Carnevali, O. Aquatic Toxicology, 257-264 ,2015.
This article describes the metabolic effects induced by feed contaminated with nonylphenol (NP), 4-tert-octylphenol (t-OP) or bisphenol A (BPA) in juvenile sea bream liver. For this study, Nonylphenol (NP), 4-tert-Octylphenol (t-OP) and Bisphenol A (BPA) are extracted with AFFINIMIP®SPE BISPHENOLS.

- Determination of bisphenol A and related substitutes/analogues in human breast milk using gas chromatography-tandem mass spectrometry, Y. Deceuninck, E. Bichon, P. Marchand, C.-Y. Boquien, A. Legrand, C. Boscher, J. P. Antignac, B. Le Bizec, Anal. and Bioanal. Chem., 407 (9), 2485-2497, 2015.
List of the 18 Bisphenol analogues analyzed: Bisphenol B (BPB), bisphenol AP (BPAP), bisphenol AF (BPAF), bisphenol BP (BPBP), bisphenol C (BPC), bisphenol Cl2 (BPCl2), bisphenol E (BPE), bisphenol PH (BPPH), bisphenol S (BPS), bisphenol F (BPF), [4,4'-dihydroxydiphenyl ether (DHDPE), bisphenol FL (BPFL), bisphenol Z (BPZ), biphenyl-4,4'-diol (BP4,4'), bisphenol M (BPM), bisphenol P (BPP), bis-2(hydroxyphenyl)methane (BIS2) and biphenyl-2,2'-diol (BP2,2').

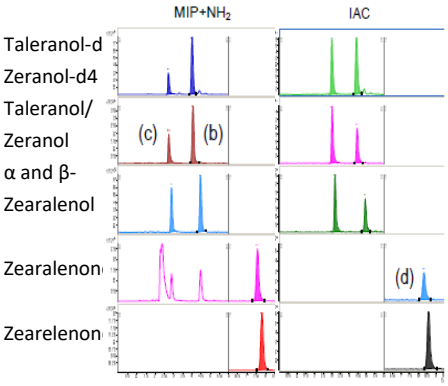
For more publications, please visit our website or contact@affinisep.com

AFFINIMIP® SPE Zeranol Residues are selective solid-phase extraction cartridges for Zeranol (or α-Zearalanol)and its residues from complex matrices such as urine or meat. Its use is banned in several countries (e.g. European directive 96/22/EC and in China).

Analyte	•Zeranol, Zearalenone, β-Zearalanol (Taleranol), α and β-Zearalenol, Zearalanone Resorcylic acid lactones
Tested matrices	•Meat, Urine, Tissues, Plasma
Detection method	•LC/MS, HPLC-Fluorescence
Recovery yield	• Higher than 85%

Quantification of a mixture (Zeranol, Zearalenone, β-Zearalanol, α and β-Zearalenol and Zearelenone) in bovine urine spiked at 1ng/mL. Comparison of a clean-up made with AFFINIMIP® SPE Zeranol Residues + NH_2 cartridges and with IAC clean-up.

CATTLE URINE SPIKED AT 1ng/mL of 6 main Zeranol metabolites



Publications

New technological tools for isolating and measuring growth promoting agents in edible tissues and biological fluids, Emmanuelle Bichon et al. (LABERCA) Conference, RAFA 2011

Catalog #:

Designation	Description	25c/box	50 c/box
AFFINIMIP® SPE Zeranol Residues	3mL	FS105-02	FS105-03
	LRC 10mL	FS105-02LRC	FS105-03LRC

AFFINIMIP® SPE Phenolics are selective solid-phase extraction cartridges that selectively clean and concentrate a broad range of phenolic compounds prior to further analysis.

Phenolics include a large group of several hundred chemical compounds, characterized by having at least one aromatic ring with one hydroxyl group attached. Phenolic compounds are an important family of products found as natural substances in plants and life sciences or as synthetic products such as drugs.

Analyte	•Phenolic like Parabens, Tocopherols, Nitrophenols, Chlorophenols, Catechins, …
Tested matrices	•Food, Cosmetic, wine
Detection method	•LC/MS, HPLC/UV
Recovery yield	• Higher than 80%

Example of applications

- **Guaïacol in wine**
- **Parabens in cosmetic products**
- **Carnosic acid in meat**
- **Hydroxylated polycyclic aromatic hydrocarbons in soils**

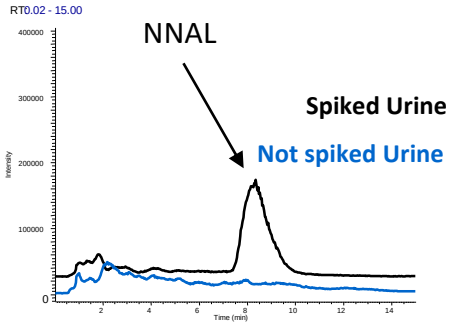
Catalog #:

Designation	Description	25c/box	50 c/box
AFFINIMIP® SPE Phenolics	3mL	FS103-02	FS103-03
	6mL	FS103-02B	FS103-03B
	10mL LRC	FS103-02LRC	FS103-03LRC
	12mL	FS103-02C	
	96 well plate – 1 unit	FS103-1.96W	
	Reversible cart. – 0.7mL	FS103-02Rev1	FS103-03Rev1
	Reversible cart. – 2 mL	FS103-02Rev2	FS103-03Rev2

AFFINIMIP® SPE NNAL are selective solid phase extraction cartridges that selectively clean and concentrate NNAL from complex matrices such as Urine. NNAL is a metabolite of NNK a component of tobacco smoke. NNAL (either free and/or total forms) may be used as a biomarker for exposure to NNK among active smokers, and also among nonsmokers following exposure to secondhand smoke.

Analyte	•**Total and free NNAL** (4-(methyl nitrosamino) -1-(3-pyridyl) -1-butanol)
Tested matrices	•Urine
Detection method	•LC-MS & LC-MS/MS
Recovery yield	• Higher than 80%

LC-MS chromatogram of urine spiked with NNAL after **AFFINIMIP®SPE NNAL** clean-up



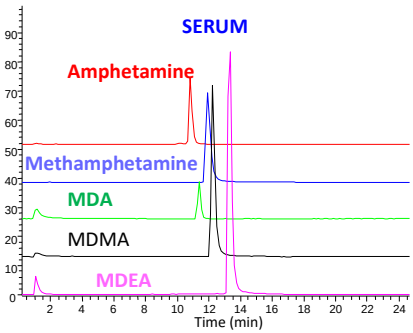
Catalog #:

Designation	Description	25c/box	50 c/box
AFFINIMIP® SPE NNAL	3mL	DG103-02	DG103-03
	10mL LRC	DG103-02LRC	DG103-03LRC
	96 well plate – 1 unit	DG103-1.96W	

AFFINIMIP® SPE Amphetamines are selective solid phase extraction cartridges that selectively clean and concentrate Amphetamine and Metamphetamine derivatives from complex matrices such as Serum or Urine. As a stupefiant, Amphetamines consumption is prohibited in main european countries. French regulation has set up an analytical threshold of 50ng/mL in blood for drivers.

Analyte	•Amphetamine and Methamphetamine derivatives
Tested matrices	•Urine , Serum
Detection method	•LC/MS
Recovery yield	• Higher than 80%

Analyte	Recovery %	% RSD
Amphetamine	91.0	5.1
Methamphetamine	90.7	1.9
MDA	92.0	3.7
MDMA	92.2	2.5
MDEA	98.2	5.0



Mass chromatogram (SIM) of 0.5mL of serum spiked with 100ng/mL of each Amphetamine and Methamphetamine derivatives after clean-up with AFFINIMIP® SPE. Amphetamine (m/z=136); Methamphetamine (m/z=150); MDA: 3,4-Methylenedioxyamphetamine (m/z=180); MDMA, 3,4-Methylenedioxymethamphetamine (m/z=194); MDEA, 3,4-Methylenedioxy-N-ethyl-amphetamine *(m/z=208).*

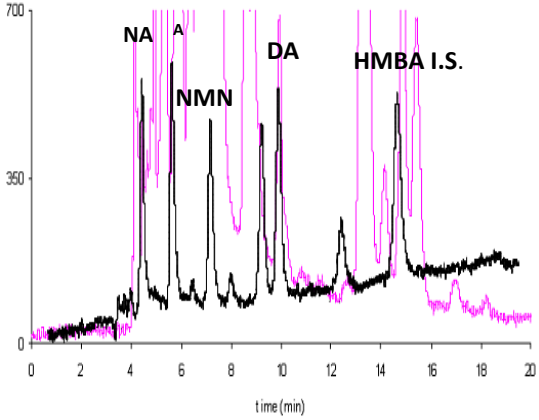
Catalog #:

Designation	Description	25c/box	50 c/box
AFFINIMIP® SPE Amphetamines	3mL	DG102-02	DG102-03
	10mL LRC	DG102-02LRC	DG102-03LRC
	96 well plate – 1 unit	DG102-1.96W	

AFFINIMIP® SPE Catecholamines are selective solid-phase extraction cartridges that selectively clean and concentrate the Catecholamines and its amino metabolites from complex matrices such as Plasma or Serum.

Analyte	•Dopamine (DA), Norepinephrine or Noradrenaline (NA), Epinephrine or Adrenaline (A)
Tested matrices	•Plasma , Serum
Detection method	•LC/MS, HPLC/UV
Recovery yield	• Higher than 80%

LC-UV chromatogram of a serum sample spiked with Catecholamines at 450nM with (—) and without (—) AFFINIMIP® SPE Catecholamines



Publications

Analysis of urinary neurotransmitters by capillary electrophoresis: Sensitivity enhancement using field-amplified sample injection and molecular imprinted polymer solid phase extraction, Bérengère Claude *et al.*, Analytica Chimica Acta, 699 (2), 242–248, 2011.

Catalog #:

Designation	Description	25c/box	50 c/box
AFFINIMIP® SPE Catecholamines	1mL	DG100-02A	DG100-03A
	3mL	DG100-02	DG100-03
	10mL LRC	DG100-02LRC	DG100-03LRC
	12mL	DG100-02C	
	96 well plate – 1 unit	DG100-1.96W	

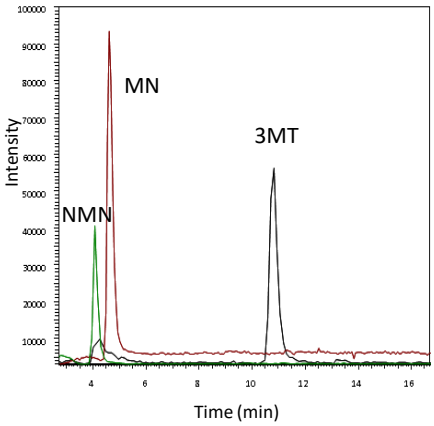
AFFINIMIP® SPE Metanephrines are solid phase extraction cartridges that selectively clean and concentrate Metanephrines from complex matrices such as Plasma or Serum.

Quantification of free metanephrines in Plasma is considered to be a highly sensitive test for the diagnosis of Pheochromocytoma and the follow-up of patients. Free Metanephrines are in a very low concentration in this complex matrix which makes a reliable determination of the compound an analytical challenge.

Analyte	•Metanephrine, Normetanephrine and 3-methoxytyramine
Tested matrices	•Plasma , Serum
Detection method	•LC/MS, HPLC/UV
Recovery yield	• Higher than 80%

Mass chromatogram (SIM+) of plasma spiked with 60nM of Metanephrines after clean-up with AFFINIMIP® SPE Metanephrines

MN: Metanephrine (m/z=180); NMN: Normetanephrine (m/z=166); 3MT: 3-Methoxytyramine (m/z=151) (Courtesy of B. Claude and P. Morin, ICOA, Orléans, France)



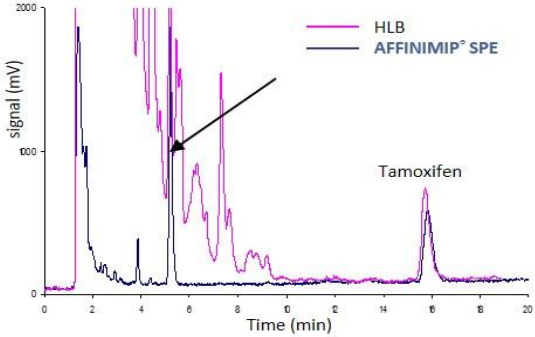
Catalog #:

Designation	Description	25c/box	50 c/box
AFFINIMIP® SPE Metanephrines	1mL	DG101-02A	DG101-03A
	3mL	DG101-02	DG101-03
	10mL LRC	DG101-02LRC	DG101-03LRC
	96 well plate – 1 unit	DG101-1.96W	

AFFINIMIP® SPE Tamoxifen are solid phase extraction cartridges that selectively extract Tamoxifen and its metabolites in biofluids, such as urine (clean-up and pre-concentration of sample at trace levels).

Since January 2000, Tamoxifen (antioestrogenic molecule) has been included in the list of prohibited substances by the International Olympic Committee. So, the presence of these compounds in urine is a doping proof. The analysis of complex samples, like biofluids, requires a sample preparation step prior to analysis.

Analyte	•Tamoxifen and its metabolite 4-HydroxyTamoxifen
Tested matrices	•Biofluids such as urine
Detection method	•LC/MS, HPLC/UV
Recovery yield	• Higher than 80%



LC-UV comparison of urine sample spiked with tamoxifen and 4-OH tamoxifen (its main metabolite) after extraction through HLB and AFFINIMIP® SPE

Publications

Interest of molecularly imprinted polymers in the fight against doping. Extraction of tamoxifen and its main metabolite from urine followed by high-performance liquid chromatography with UV detection. *J. Chrom. A*, 1196–1197, 81–88, 2008.

Catalog #:

Designation	Description	25c/box	50 c/box
AFFINIMIP® SPE Tamoxifen	3mL	PH101-02	PH101-03

AFFINIMIP® SPE THC are solid phase extraction cartridges that selectively extract Tetrahydrocannabinol and its metabolites in biofluids, such as urine (clean-up and pre-concentration of sample at trace levels).

Tetrahydrocannabinol is the principal psychoactive constituent (or cannabinoid) of cannabis, an illicit substance in most countries of the world and its metabolites such as hydroxyl-THC (THC-OH) and carboxy-THC (THC-COOH) can be found in blood, saliva or urine after smoking or ingestion of cannabis. The analysis of these biofluids requires a sample preparation step prior to analysis.

Analyte	•Tetrahydrocannabinol (THC) and its metabolites, THC-OH and THC-COOH
Tested matrices	•Biofluids such as urine, saliva, blood
Detection method	•LC/MS
Recovery yield	• Higher than 80%

Catalog #:

Designation	Description	25c/box	50 c/box
AFFINIMIP® SPE THC	3mL	PH123-02	PH123-03
AFFINIMIP® SPE THC	6mL	PH123-02B	PH123-03B
AFFINIMIP® SPE THC	10mL LRC	PH123-02LRC	PH123-03LRC