The Complete Guide to Solid Phase Extraction (SPE)

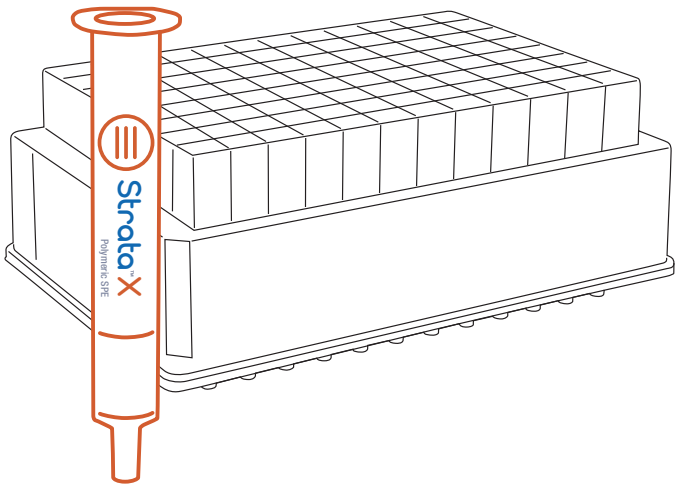
A Method Development and Application Guide

Revision: 3
PHEN-RUO-00202

Strata™
Solid Phase Extraction

Strata™-X
Polymeric SPE

Strata™-XPro
A Rapid Solid Phase Extraction Solution



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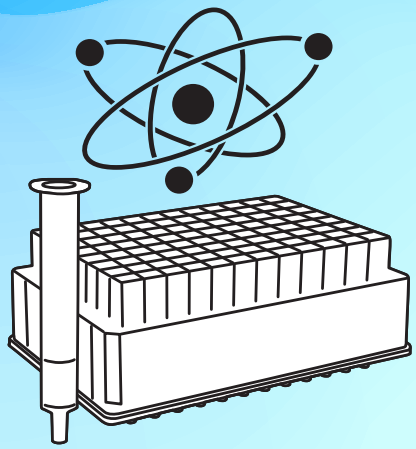
Solid Phase Extraction (SPE)

A targeted form of sample preparation that allows you to isolate your analyte of interest.

Removing any interfering compounds that may be in your sample.

- Ultra clean extracts
- Concentration of samples for better chromatographic results
- Solvent switching for GC or LC compatibility
- Longer column lifetime and improved chromatographic results



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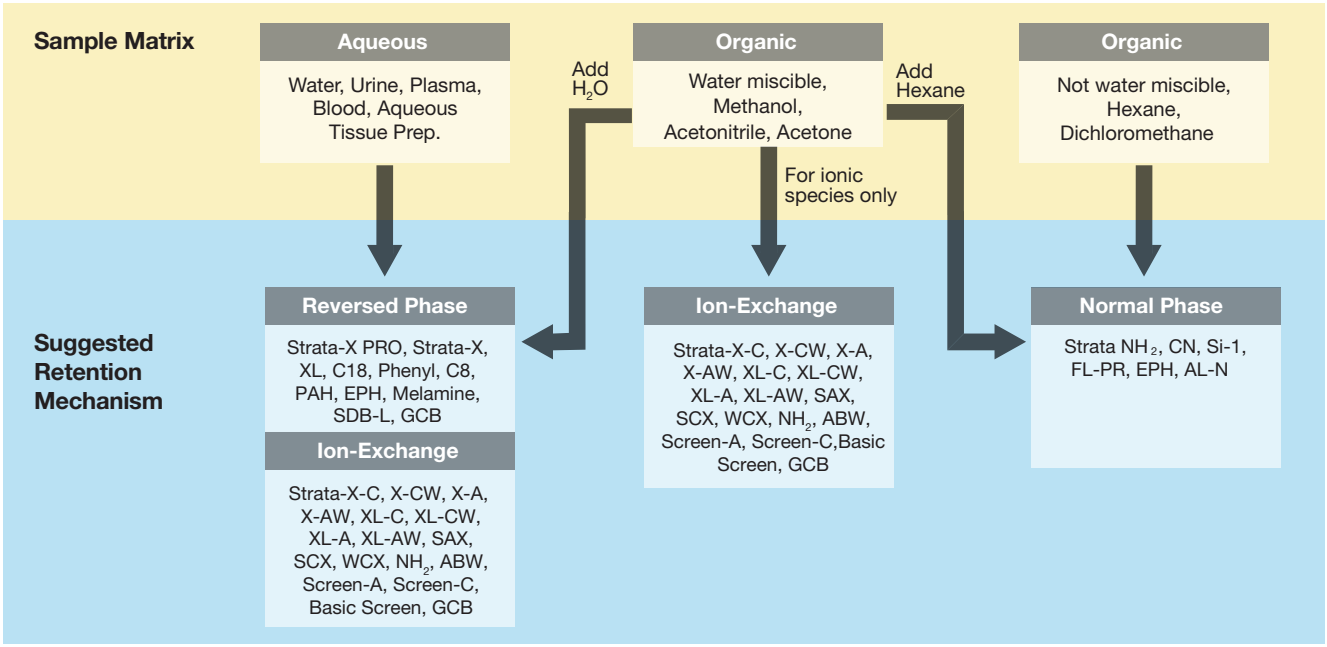
Getting Started: Follow 3 Easy Steps

and start implementing your complete SPE method.

Step 1
Select a Sorbent

Selecting The Right Sorbent: Strata™ Silica-Based, Strata-X Polymer-Based Sorbents, and Strata-X PRO

Identify the SPE Retention Mechanism



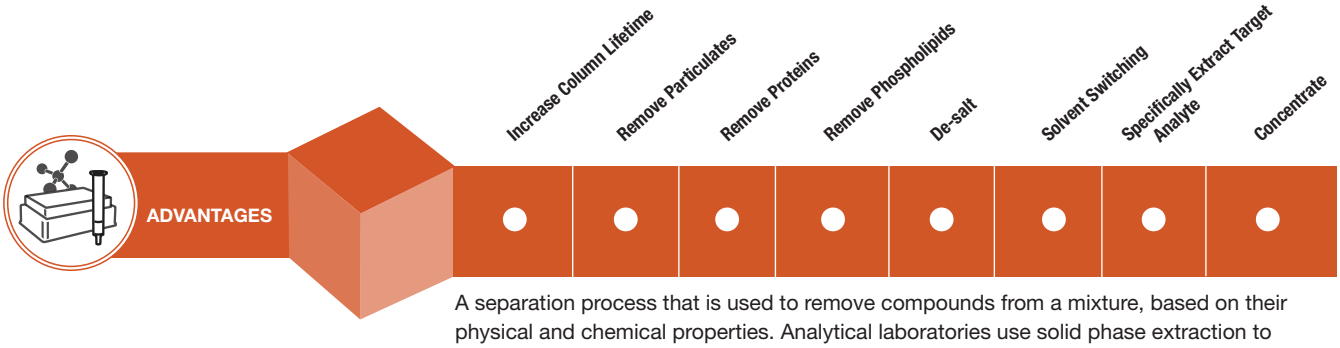
Available Formats

Sample Matrix	96-Well Plates	Microelution Plates	1, 3, and 6 mL Tubes	Giga™ Tubes (12 mL - 150 mL)	On-line Extraction Cartridge	Bulk Sorbent
Strata-X PRO SPE	X	X	X			
Strata-X Polymeric SPE	X	X	X	X	X	X
Strata Traditional SPE	X	100 mg	X	X	X	X

Determine the Sorbent Chemistry

SPE Mechanism	Analyte Functional Group	Sorbent Functional Group	Strata-X PRO Sorbent	Strata-X Sorbent	Strata Sorbent
Reversed Phase	R hydrocarbon aromatic	R hydrocarbon aromatic	X PRO	X, XL	C18-E, C18-U, C8 C18-T Phenyl, SDBL
Normal Phase	R - OH hydroxyl R - NH_2 amino	CN polar OH polar			CN, NH_2 Si-1, CN, EPH
Ion-Exchange	NR4+ strong RNH_3+ weak RSO3- strong RCO_2- weak	$-O_2C$—weak $-O_3S$—strong $+H_3N$—weak $+R_3N$—strong		X-CW, XL-CW X-C X-AW, XL-AW X-A, XL-A	WCX Screen-C, SCX NH_2 Screen-A, SAX
			Strata-X-PRO	**Strata-X**	**Strata**
			Continue to Page 10	Continue to Page11	Continue to Page 14

Step 1
Solid Phase Extraction



A separation process that is used to remove compounds from a mixture, based on their physical and chemical properties. Analytical laboratories use solid phase extraction to concentrate and purify samples for analysis from a wide variety of matrices.

3 Unique Sorbent Platforms

Strata™-XPro
A Rapid Solid Phase Extraction Solution

Rapid reversed phase polymer with matrix removal technology offers a faster, cleaner way to perform SP.

RAPID 3 STEPS

SUPER EXPRESS 2 STEPS

Strata™-X
Polymeric SPE

Polymeric sorbent available in reversed phase and ion-exchange capabilities for wide range of applications.

RELIABLE 5 STEPS

Strata™
Solid Phase Extraction

Silica-based SPE sorbent provides a reliable and clean extracts with high recoveries for target analytes across all sample matrices.

RELIABLE 5 STEPS

Sorbert Properties

SPE Overview	Strata-X PRO	Strata-X	Strata
Increase Detection Sensitivity by removing matrix contaminants	•	•	•
Increase Column Lifetime by removing matrix contaminants	•	•	•
Quality Guaranteed by more than 20 QA and QC measures	•	•	•
Increase Reproducibility with robust methods	•	•	•
Save Time by processing multiple samples simultaneously or automating method	•	•	•
Specific Selectivity for your target analytes	•	•	•
Decreased Solvent Consumption with the highest loadability	•	•	
Decreased Blow-down Time with smaller elution volumes	•	•	
Decreased Sample Variation with deconditioning resistant sorbent	•	•	
pH Stable from 1-14	•	•	
Fast 2/3 Step SPE method.	•		

Step 1
Select a Sorbent: Strata™-X PRO

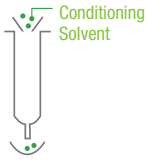
Select a Sorbent

An innovative solid phase extraction (SPE) sorbent that offers a faster, cleaner way to extract your samples, completely revolutionizing traditional SPE methods.

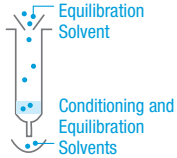
Traditional SPE

RELIABLE 5 STEPS

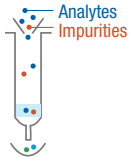
1 CONDITION



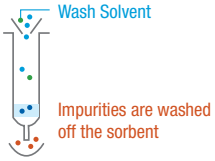
2 EQUILIBRATE



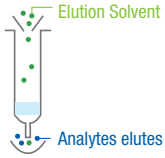
3 LOAD SAMPLE



4 WASH IMPURITIES



5 ELUTE ANALYTES



Strata™-XPro
A Rapid Solid Phase Extraction Solution

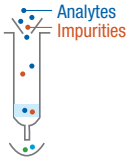
RAPID 3 STEPS

1 

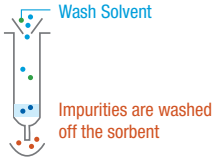
2 

NO CONDITION OR EQUILIBRATION STEPS!

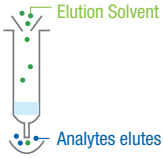
3 LOAD SAMPLE



4 WASH IMPURITIES



5 ELUTE ANALYTES



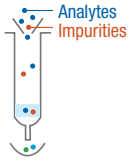
Strata™-XPro
A Rapid Solid Phase Extraction Solution

SUPER EXPRESS 2 STEPS

1 

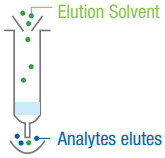
2 

3 LOAD SAMPLE



4 

2 RINSE



Step 1
Strata™-X Polymeric SPE

Sorbert Properties

SPE Overview	Strata-X PRO	Strata-X	Strata
Increase Detection Sensitivity by removing matrix contaminants	•	•	•
Increase Column Lifetime by removing matrix contaminants	•	•	•
Quality Guaranteed by more than 20 QA and QC measures	•	•	•
Increase Reproducibility with robust methods	•	•	•
Save Time by processing multiple samples simultaneously or automating method	•	•	•
Specific Selectivity for your target analytes	•	•	•
Decreased Solvent Consumption with the highest loadability	•	•	
Decreased Blow-down Time with smaller elution volumes	•	•	
Decreased Sample Variation with deconditioning resistant sorbent	•	•	
pH Stable from 1-14	•	•	
Fast 2/3 Step SPE method.	•		

Select Your Particle and Pore Size	Strata-X, X-C, X-A, X-CW, X-AW	Strata-XL, XL-C, XL-A, XL-CW, XL-AW
Particle & Pore Size	33 µm, 85 Å	100 µm, 300 Å
High Concentration Samples	•	
Small Sample Volume/ Less Viscous Samples	•	
Large Volume Samples		•
Viscous Samples / More Viscous		•

Polymer-Based Sorbents Loading Capacities

Sample Matrix	Sorbent Mass	Strata-X, X-C, X-CW, X-A, X-AW	Strata-XL, XL-C, XL-CW, XL-A, XL-AW
Blood, serum, plasma	30 mg	250 µL	125 µL
Urine	30 mg	1 mL	500 µL
Filtered tissue homogenates	60 mg	100 mg	50 mg
Environmental Samples	**Sorbent Mass**	**Strata-X, X-C, X-CW, X-A, X-AW**	**Strata-XL, XL-C, XL-CW, XL-A, XL-AW**
Water (particulate-free) drinking	200 mg	100 - 400 mL	50 - 200 mL
Water (particulate-laden) rivers, runoff, etc.	500 mg	100 - 400 mL	50 - 200 mL
Soil extracts	500 mg	100 g	50 g

Sorbent Wash and Elution Volumes*

The volume of solvent needed for the wash and elution steps is directly related to the mass of sorbent in the SPE tube and more specifically the “bed volume” of the SPE device. Typically 4 – 16 bed volumes are used in SPE methods.

Strata-X-Pro A Rapid Solid Phase Extraction Solution Sorbent Mass	2 mg	10 mg	30 mg	60 mg	100 mg	150 mg	200 mg	500 mg	1 g	2 g	5 g	10 g
Practical Minimum Wash and Elution Volume 4 bed volumes	25 µL	100 µL	300 µL	600 µL	1 mL	1.5 mL	2 mL	5 mL	10 mL	20 mL	50 mL	100 mL
Recommended Wash and Elution Volume 8 bed volumes	5 µL	200 µL	600 µL	1.2 mL	2 mL	3 mL	4 mL	10 mL	20 mL	40 mL	100 mL	200 mL

* The elution volumes are specific to the chemical nature of the analyte being extracted, its concentration in the sample, the chemical nature of the eluting solvent and the bed mass used. The above is a guideline. An elution study should be conducted to determine the appropriate volume to use.

Sorbert Properties

SPE Overview	Strata-X PRO	Strata-X	Strata
Increase Detection Sensitivity by removing matrix contaminants	•	•	•
Increase Column Lifetime by removing matrix contaminants	•	•	•
Quality Guaranteed by more than 20 QA and QC measures	•	•	•
Increase Reproducibility with robust methods	•	•	•
Save Time by processing multiple samples simultaneously or automating method	•	•	•
Specific Selectivity for your target analytes	•	•	•
Decreased Solvent Consumption with the highest loadability	•	•	
Decreased Blow-down Time with smaller elution volumes	•	•	
Decreased Sample Variation with deconditioning resistant sorbent	•	•	
pH Stable from 1-14	•	•	
Fast 2/3 Step SPE method.	•		

Select Your Particle and Pore Size	Strata	Strata
Particle & Pore Size	33 µm, 85 Å	100 µm, 300 Å
High Concentration Samples	•	
Large Volume Samples		•
Viscous Samples		•

Silica-Based Sorbents Loading Capacities

Sample Matrix	Sorbent Mass
Blood, serum, plasma	50 mg sorbent per 250 µL
Urine	50 mg sorbent per 500 µL
Filtered tissue homogenates	100 mg sorbent per 100 mg tissue
Environmental Samples	**Sorbent Mass**
Water (particulate-free) drinking	500 mg/100 mL - 500 mL sample
Water (particulate-laden) rivers, runoff, etc.	1 g/100 mL - 500 mL sample
Soil extracts	1 g/100 g of soil extract

Sorbent Wash and Elution Volumes*

The volume of solvent needed for the wash and elution steps is directly related to the mass of sorbent in the SPE tube and more specifically the "bed volume" of the SPE device. Typically 4 – 16 bed volumes are used in SPE methods.

Strata™ Solid Phase Extraction Sorbent Mass	10 mg	50 mg	100 mg	150 mg	200 mg	500 mg	1 g	2 g	5 g	10 g
Practical Minimum Wash and Elution Volume 4 bed volumes	60 µL	300 µL	600 µL	900 µL	1.2 mL	3 mL	6 mL	12 mL	30 mL	60 mL
Recommended Wash and Elution Volume 8 bed volumes	120 µL	600 µL	1.2 mL	1.8 mL	2.4 mL	6 mL	12 mL	24 mL	60 mL	120 mL

*The elution volumes are specific to the chemical nature of the analyte being extracted, its concentration in the sample, the chemical nature of the eluting solvent and the bed mass used. The above is a guideline. An elution study should be conducted to determine the appropriate volume to use.

Step 2
Sample Pre-treatment

Reproducible, high efficiency solid phase extraction requires that the sample be made liquid prior to loading onto a SPE device. The SPE sample should meet the following conditions:

- Liquid of low viscosity (to pass through the cartridge)
- Low solids or particulate contaminants (to prevent clogging)
- Solvent composition that is suitable for retention (each mechanism has different matrix solvent composition requirements for proper retention)

Biological Samples (solid)		
	**Urine, Whole blood, Serum, Plasma, Bile, etc.**	Dilute sample 1:2 with appropriate buffer, precipitate proteins if proteinaceous ($ZnSO_4$, ACN), hydrolyze urinary glucuronides, disruption of protein binding (sonication, enzymatic, acids/bases).
Biological Samples (solid)		
	**Organ tissues, Feces, GI contents**	Homogenize with organic or aqueous solvent depending upon analyte solubility. Settle, decant, centrifuge or filter supernatant. Perform direct Matrix Solid Phase Dispersion (MSPD) extraction on tissue.
Sample Matrix		
	**Water (waste, river, etc.)**	Buffer to appropriate pH and filter particulates from sample.
	**Soil, Sludge**	Homogenize with organic or aqueous solvent depending upon analyte solubility. Settle, decant and filter supernatant; perform Soxhlet extraction.
	**Ointments, Creams**	Oil-based Dissolve in non-polar organic (hexane) and extract via polar SPE. Water-based Dissolve in water or water miscible organic (methanol) and extract via non-polar SPE.
	**Fruit, Vegetable, Herbs**	Homogenize with organic or aqueous solvent depending upon analyte solubility and filter supernatant. Use appropriate SPE mechanism for the dissolution solvent (hexane = polar mechanism; aqueous = non-polar mechanism; methanol/ACN = either non-polar or polar after proper dilution).

Strata™-X PRO

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Strata™-X

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Strata™

Continue to Page 14

Sample Preparation Support at Your Fingertips

Dedicated sample preparation team available to assist your method development needs.

Support@Phenomenex.com

Step 3
Strata™-X PRO: Faster and Quicker Methods

Strata™-X PRO also improves on traditional SPE by implementing straightforward recommended methods that will work with most extractions, and optimization is only optional. This helps to save even more time in the lab and get you back to the things you really want to be doing. Like asking yourself, is a narwhal real? Yes, and now so is Strata-X PRO.

Sorbent Properties

SPE Mechanism	Analyte Functional Group	Sorbent Functional Group	Strata™-X Polymeric SPE
Reversed Phase	R hydrocarbon aromatic	R hydrocarbon aromatic	

SUPER EXPRESS 2 STEPS

2-Step Protocol

Non-retentive SPE method to help achieve the fastest extraction.

Load

1 mL Pre-treated sample/0.1 % Formic acid in Acetonitrile (1:4)
Apply 5" Hg vacuum until all tubes or wells have cleared

Elute

75 µL Water/0.1 % Formic acid in Acetonitrile (1:4)
Apply 5" Hg vacuum until all tubes or wells have cleared

Protocols are written for 30 mg/1 mL tubes, adjust based on sorbent size.

RAPID 3 STEPS

3-Step Protocol

Rapid protocol to reduce matrix effects and increase recovery of polar analytes.

Load

500 µL Pre-treated sample/buffer* (1:1)
Apply 2-5" Hg vacuum until liquid is no longer visible above top frit

Wash

600 µL 5 % Methanol in Water

Elute

600 µL 0.1 % Formic acid in Acetonitrile/Methanol (90:10)
Apply 2-5" Hg vacuum for 1 minute

Protocols are written for 30 mg/1 mL tubes, adjust based on sorbent size.

Select a buffer that maximizes the hydrophobicity of the analytes. For example, if an analyte is basic, dilute with a base.

Methods are written for 30 mg/1 mL tube; adjust based on sorbent size.

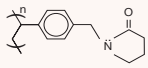
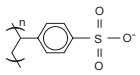
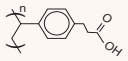
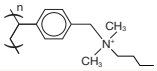
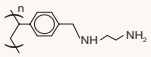
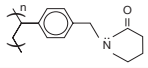
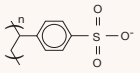
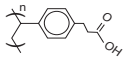
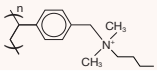
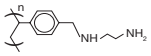
Search Hundreds of Applications

Know the name of your analyte? Immediately find key Sample Prep applications for small molecules and biomolecules by entering the name or the chemical properties of the analyte.

www.phenomenex.com/applications

Strata-X Polymeric SPE Phase Overview

- Clean extracts from biological sample matrices
- Streamlined method development and simple processing

Strata-X Phase	Functional Group	Mode	Analyte	Recommended Alternative to Waters®
Strata-X		Reversed Phase	Polar and Non-Polar	Oasis® HLB
Strata-X-C		Reversed Phase and Strong Cation-Exchange	Bases	Oasis MCX
Strata-X-CW		Reversed Phase and Weak Cation-Exchange	Bases (including Quaternary Amines)	Oasis WCX
Strata-X-A		Reversed Phase and Strong Anion-Exchange	Acids	Oasis MAX
Strata-X-AW		Reversed Phase and Weak Anion-Exchange	Acids (including Sulfonic acids)	Oasis WAX
Strata-XL		Large Particle Reversed Phase	Polar and Non-Polar	Oasis HLB
Strata-XL-C		Large Particle Reversed Phase and Strong Cation-Exchange	Bases	Oasis MCX
Strata-XL-CW		Large Particle Reversed Phase and Weak Cation-Exchange	Bases (including Quaternary Amines)	Oasis WCX
Strata-XL-A		Large Particle Reversed Phase and Strong Anion-Exchange	Acids	Oasis MAX
Strata-XL-AW		Large Particle Reversed Phase and Weak Anion-Exchange	Acids (including Sulfonic acids)	Oasis WAX

Strata-X / Strata-XL Reversed Phase

For Neutral Compounds

Condition
1 mL Methanol

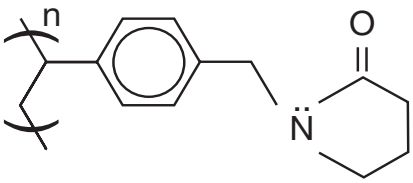
Equilibrate
1 mL Water

Load
Diluted Sample

Wash
1 mL 5-60 % Methanol

Elute
2x 500 µL 2 % Formic Acid in Methanol/Acetonitrile

Reversed Phase



*Based on 30 mg/1 mL sorbent mass. The above is a convenient starting point for SPE method development. Further optimization may be required to tailor the method to your specific needs.

Strata-X-C / Strata-XL-C

Strong Cation-exchange & Reversed Phase

For Bases with pK_a ≤ 10.5

Condition
1 mL Methanol

Equilibrate
1 mL Acidified Water

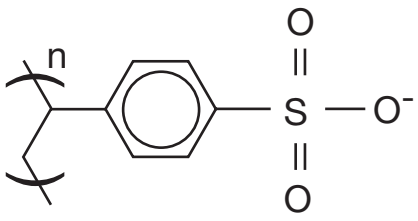
Load
Diluted Acidified Sample

Wash 1
1 mL 0.1 N HCl in Water
(collect this fraction to analyze Polar Neutrals)

Wash 2
1 mL 0.1 N HCl in Methanol
(collect this fraction to analyze Neutrals/Acids)

Elute Bases
2x 500 µL 5 % NH_4OH in Methanol

Strong Cation-exchange: sulfonic acid ligand



Strata-X-CW / Strata-XL-CW

Weak Cation-Exchange & Reversed Phase

For Bases with pK_a > 8

Condition
1 mL Methanol

Equilibrate
1 mL Water, pH 6-7

Load
Diluted Sample, pH 6-7

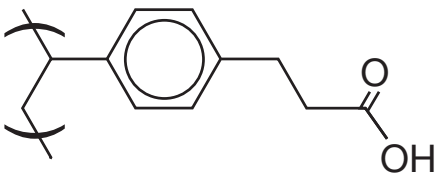
Wash 1
1 mL Water, pH 6-7

Wash 2
1 mL Methanol
(collect this fraction to analyze Neutrals/Acids)

Elute Any Acids
2x 500 µL 5 % Formic Acid in Methanol

Elute Weak Acids
2x 500 µL 5 % NH_4OH in Methanol

Weak Cation-exchange: carboxylic acid ligand



* Based on 30 mg/1 mL sorbent mass. The above is a convenient starting point for SPE method development. Further optimization may be required to tailor the method to your specific needs.

Strata-X-A / Strata-XL-A

Strong Anion-exchange & Reversed Phase

For Acids with pK_a > 2

Condition
1 mL Methanol

Equilibrate
1 mL Water, pH 6-7

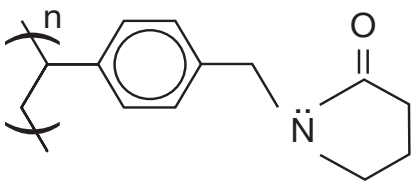
Load
Diluted Sample pH 6-7

Wash 1
1 mL 25 mM Ammonium Acetate Buffered, pH 6-7

Wash 2
1 mL Methanol
(collect this fraction to analyze Neutral/Bases)

Elute Acids
2x 500 µL 5 % Formic Acid in Methanol

Strong Anion-exchange: di-methylbutyl quaternary amine ligand



Strata-X-AW / Strata-XL-AW

Weak Anion-exchange & Reversed Phase

For Acids with pK_a < 5

Condition
1 mL Methanol

Equilibrate
1 mL Water, pH 6-7

Load
Diluted Sample pH 6-7

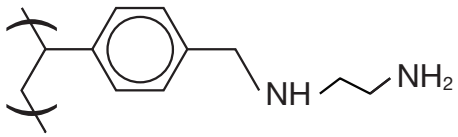
Wash 1
1 mL 25 mM Ammonium Acetate Buffered, pH 6-7

Wash 2
1 mL Methanol

Elute Any Acids
2x 500 µL 5 % NH_4OH in Methanol

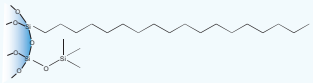
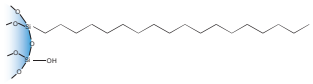
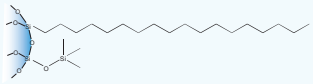
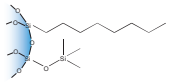
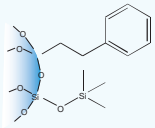
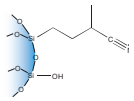
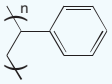
Elute Weak Acids
2x 500 µL 5 % Formic Acid in Methanol

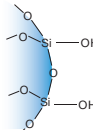
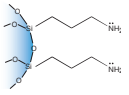
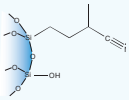
Weak Anion-exchange: di-amino ligand



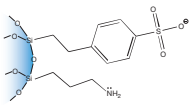
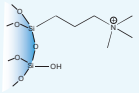
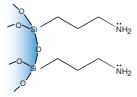
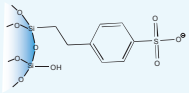
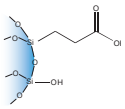
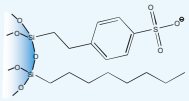
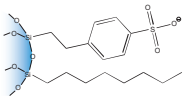
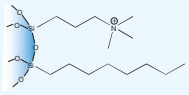
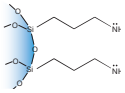
* Based on 30 mg/1 mL sorbent mass. The above is a convenient starting point for SPE method development. Further optimization may be required to tailor the method to your specific needs.

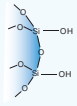
Strata Silica-Based SPE Phase Overview

Reversed Phase Sorbents				Recommended Alternative to:				
Strata Phase	Phase Benefits	Sorbent Chemistry	Recommended Method (See pp. 16-17)	Waters® Sep-Pak®	Agilent® SampliQ® Bond Elut®	Biotage® IST® ISOLUTE®	UCT® CleanScreen® StyreScreen®	Supelco® Discovery®
C18-E	Extraction of hydrophobic molecules		METHOD 1	C18	SampliQ, C18EC, Bond Elut, C18	C18 (EC)	C18	DSC-18
C18-U	Enhanced cleanup of hydrophobic compounds that contain hydroxy or amine functional groups		METHOD 1		Bond Elut, C18-OH	C18		
C18-T	Wide pore for the extraction of large hydrophobic molecules (up to 75 kDa)		METHOD 1	C18	Bond Elut, C18-EWP			DSC-18Lt
C8	Extraction of extremely hydrophobic compounds that are retained too tightly on C18-E		METHOD 1	C8	SampliQ C8, Octyl, Bond Elut, C8	C8(EC)	C8	DSC-8
Phenyl (PH)	Extraction of aromatic compounds		METHOD 1		SampliQ, Phenyl, Bond Elut, PH	PH	Phenyl	DSC-Ph
CN	Extraction of polar compounds		METHOD 1	CN	SampliQ, Cyano (CN), Bond Elut, Cyano (CN-E)	CN	CN	DSC-CN
SDB-L	Extraction of non-polar and polar compounds; pH resistant sorbent		METHOD 1		SampliQ, DVB, Bond Elut, ENV, Bond Elut, LMS	101	StyreScreen® DVB	DSC-PS/ DVB
Activated Carbon	For better retention of polar compounds	Proprietary	METHOD 1 (A)	AC2			Enviro Clean 521	Coconut Charcoal

Normal Phase Sorbents				Recommended Alternative to:				
Strata Phase	Phase Benefits	Sorbent Chemistry	Recommended Method (See pp. 16-17)	Waters® Sep-Pak®	Agilent® SampliQ® Bond Elut®	Biotage® IST® ISOLUTE®	UCT® CleanScreen® StyreScreen®	Supelco® Discovery®
Si-1 (Silica)	Extraction of polar compounds that are similar in structure		METHOD 6	Silica	SampliQ Silica, Bond Elut SI	SI	Silica	DSC-Si
FL-PR (Florisil®)	Extraction of pesticides	Florisil	METHOD 6	Florisil®	SampliQ, Florisil® PR, Bond Elut, Florisil®	FL	Florisil® PR	ENVI-Florisil®
NH_2	Extraction of strong anions		METHOD 6	NH_2	SampliQ, Amino (NH_2), Bond Elut, Aminopropyl (NH_2)	NH_2	Amino Propyl	DSC-NH_2
CN	Extraction of polar compounds		METHOD 6	CN	SampliQ, Cyano (CN), Bond Elut, Cyano (CN-E)	CN	CN	DSC-CN

Strata Silica-Based Phase Overview

Ion-Exchange Sorbents				Recommended Alternative to:				
Strata Phase	Phase Benefits	Sorbent Chemistry	Recommended Method (See pp. 16-17)	Waters® Sep-Pak®	Agilent® SampliQ® Bond Elut®	Biotage® IST® ISOLUTE®	UCT® CleanScreen® StyreScreen®	Supelco® Discovery®
ABW	Fractionation of neutral compounds such as amides from acidic and basic analytes		INQUIRE					
SAX	Extraction of weak anions		METHOD 5	Accell Plus QMA	SampliQ, Si-SAX, Bond Elut, SAX	SAX	Quaternary Amine	DSC-SAX
WAX	Complete retention of strong acidic compounds (pK_a <5)		METHOD 5	OASIS WAX	PFAS	WAX	Enviro Clean WAX	ENVI-WAX
SCX	Extraction of 1°, 2°, and 3° amines		METHOD 3		SampliQ, Si-SCX, Bond Elut, SCX	SCX-3	Benzene Sulfonic Acid	DSC-SCX
WCX	Extraction of quaternary amines		METHOD 3	Accell Plus CM	Bond Elut CBA	CBA	Carboxylic Acid	DSC-WCX
Screen-C	Mixed-mode cation-exchange that also provides hydrophobic retention		METHOD 3		SampliQ, C8/Si-SCX, Mixed Mode, Bond Elut, Certify®	HCX	Clean Screen® DAU	
Screen-C GF	Large particle size, mixed-mode cation-exchange that also provides hydrophobic retention		METHOD 3		Bond Elut, Certify®, I HF		Xtract® DAU	
Screen-A	Mixed-mode anion-exchange that also provides hydrophobic retention		METHOD 5		Bond Elut, Certify® II	HAX	Clean Screen THC	
NH_2	Extraction of strong anions		METHOD 4	NH_2	SampliQ, Amino (NH_2), Bond Elut, Aminopropyl (NH_2)	NH_2	Amino Propyl	DSC-NH_2

Special Sorbents				Recommended Alternative to:				
Strata Phase	Phase Benefits	Sorbent Chemistry	Recommended Method (See pp. 16-17)	Waters® Sep-Pak®	Agilent® SampliQ® Bond Elut®	Biotage® IST® ISOLUTE®	UCT® CleanScreen® StyreScreen®	Supelco® Discovery®
Alumina-N (AL-N)	Extraction of polar compounds from food and environmental samples	Proprietary	METHOD 6	Alumina-N				
EPH (Extractable Petroleum Hydrocarbons)	Fractionation of aliphatic and aromatic hydrocarbons from environmental samples		METHOD 6					

Strata

Reversed Phase

Method 1

Condition
1 mL Methanol

Equilibrate
1 mL DI Water

Load
Pretreated sample

Wash 1
1 mL 5 % Methanol in DI Water, dry under vacuum for 2-5 min

Elute
1 mL Methanol

Strata

Activated Carbon

Method 1 (A)

Condition
2x10 mL Methylene Chloride
2x10mL Methanol

Equilibrate
2x10mL DI water

Load
500 mL water sample spiked with internal standard. Dry for 10 minutes

Elute
3x3 mL Methylene Chloride

Strata WCX

Weak Cation - Exchange

Method 2

Condition
1 mL Methanol

Equilibrate
1 mL DI Water, pH 6-7

Load
Pretreated sample, pH 6-7

Wash 1
1 mL Water, pH 6-7

Wash 2
1 mL Methanol, dry under vacuum for 2-5 min

Elute Any Base
1 mL 5 % Formic Acid in Methanol

Elute Weak Bases
1 mL 5 % NH_4OH in Methanol

Strata SCX

Strong Cation - Exchange

Method 3

Condition
1 mL Methanol

Equilibrate
1 mL Acidified Water

Load
Pretreated sample (acidified)

Wash 1
1 mL 0.1N HCl in Water

Wash 2
1 mL 0.1N HCl in Methanol, dry under vacuum for 2-5 min

Elute
1 mL 5 % NH_4OH in Methanol

*100 mg sorbent mass

Strata NH_2

(WAX) Weak Anion - Exchange — **Method 4**

Condition
1 mL Methanol

Equilibrate
1 mL Water, pH 6-7

Load
Pretreated sample, pH 6-7

Wash 1
1 mL 25 mM Ammonium Acetate Buffer, pH 6-7

Wash 2
1 mL Methanol, dry under vacuum for 2-5 min

Elute Any Base
1 mL 5 % NH_4OH in Methanol

Elute Weak Bases
1 mL 5 % Formic Acid in Methanol

Strata SAX/WAX

Strong Anion - Exchange — **Method 5**

Condition
1 mL Methanol

Equilibrate
1 mL Water

Load
Pretreated sample, pH 6-7

Wash 1
1 mL 25 mM Ammonium Acetate Buffer, pH 6-7

Wash 2
1 mL Methanol, dry under vacuum for 2-5 min

Elute
1 mL 5 % Formic Acid in Methanol

Strata

Normal Phase Method — **Method 6**

Condition
IPA / DCM

Equilibrate
Hexane

Load
Pretreated sample

Wash 1
5 % DCM in Hexane

Elute
1:1 Hexane / DCM or 1:1 Hexane / IPA

*100 mg sorbent mass

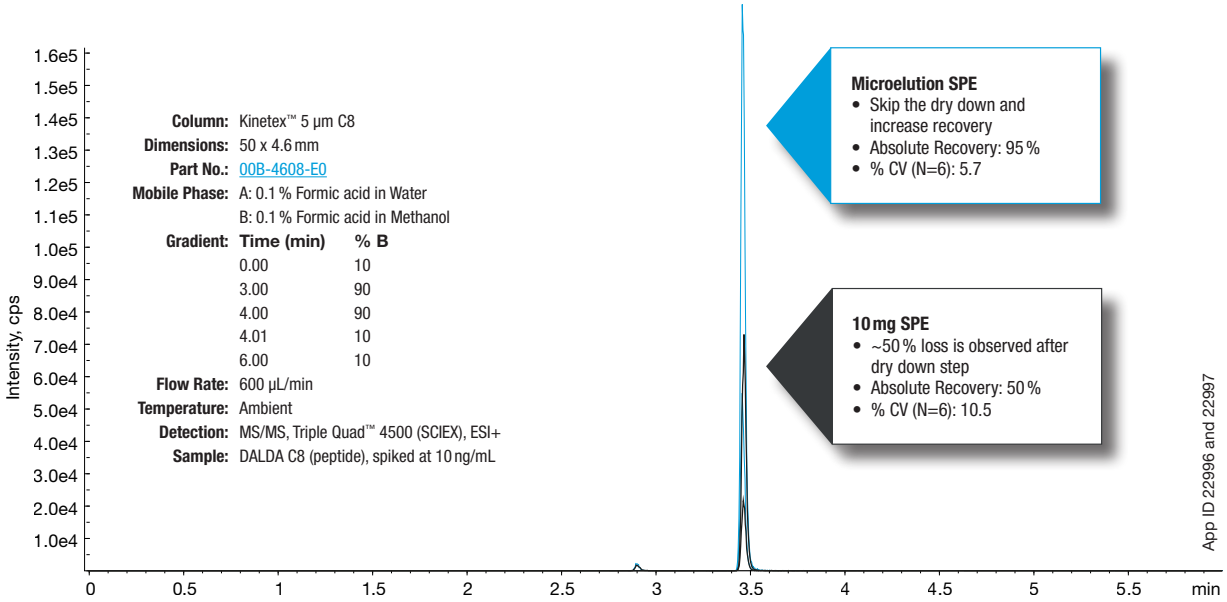
Preventing Analyte Loss by Skipping the Dry Down Step Using Microelution SPE

Many target analytes, such as peptides and thermolabile compounds, can be lost during dry down steps. Stop risking analyte loss and skip the dry down, without losing sensitivity using Strata™-X microelution plates. A new format that provides increased sensitivity for analytes of interest.

SPE Protocol

	Strata-X 96-Well Plate, 10 mg/well	Strata-X Microelution 96-Well Plate, 2 mg/well
Part No.	8E-S100-AGB	8M-S100-4GA
Condition	400 µL Methanol	200 µL Methanol
Equilibrate	400 µL Water	200 µL Water
Load	400 µL diluted serum (200 µL serum diluted 1:1 with 4 % Phosphoric acid in water)	400 µL diluted serum (200 µL serum diluted 1:1 with 4 % Phosphoric acid in water)
Wash 1	400 µL 2 % Formic acid in water	200 µL 2 % Formic acid in water
Wash 2	400 µL 20 % Acetonitrile in water	200 µL 20 % Acetonitrile in water
Elute	2x 175 µL Trifluoroacetic acid/acetonitrile/water (1:74:25)	2x 25 µL Trifluoroacetic acid/acetonitrile/water (1:74:25)
Dry Down	Dry down under a gentle stream of Nitrogen and reconstitute in 50 µL Trifluoroacetic acid/ acetonitrile/ water (1:74:25)	NOT REQUIRED
Injection	10 µL	10 µL

DALDA C8 (peptide) Extracted from Serum



Improved Clean Up and Recovery of Pharmaceutical Compounds From Plasma: SPE vs. Liquid-liquid Extraction

Although liquid-liquid extraction (LLE) has been frequently used in the past, newer techniques with improved specificity towards particular analytes have allowed analysts to improve recovery and reproducibility of their samples. It was found that SPE provides cleaner extracts, higher recoveries, and better reproducibility which can greatly improve results when working with pharmaceutical compounds from plasma.

SPE Protocol

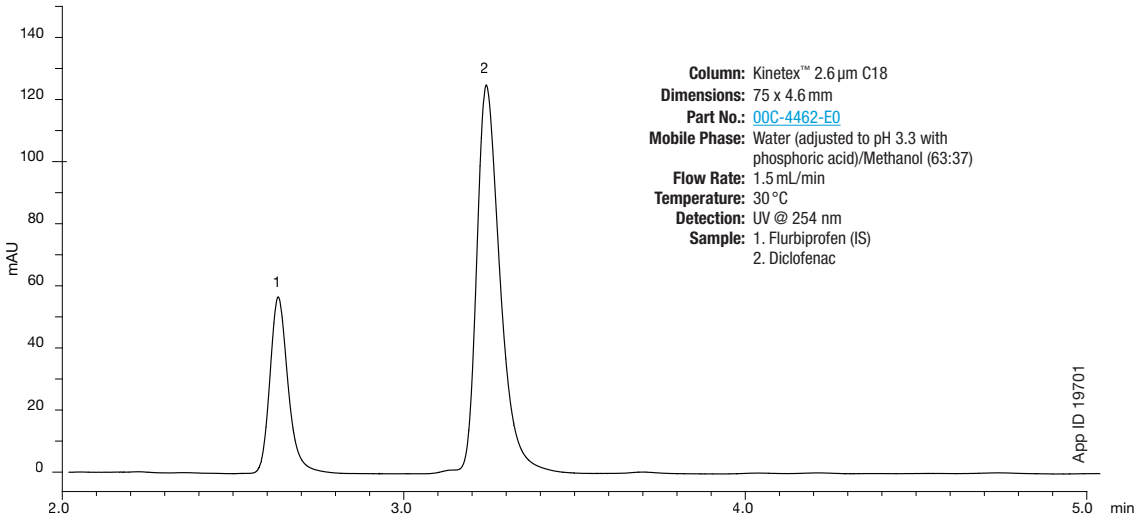
	Strata™-X 30 mg/1 mL
Part No.	8B-S100-TAK
Condition	1 mL Methanol
Equilibrate	2 mL Water
Load	1.6 mL Pre-treated plasma
Wash	1 mL 5 % Methanol
Dry	1 minute under vacuum at 10 inches Hg
Elute	1 mL Methanol
Dry Down	Dry down @ 53 °C under a stream of nitrogen for 20 minutes
Reconstitute	Reconstitute in 500 µL of mobile phase

% Absolute Recovery for Diclofenac

	Spiked Concentration	Diclofenac
SPE	15 µg/mL	86 % (n=4)
LLE	15 µg/mL	46 % (n=4)

Diclofenac spiked plasma sample (50 µg/mL) after extraction with Strata™-X. Flurbiprofen (IS) was added post-extraction at a concentration of 160 µg/mL. Note: the flurbiprofen was added post blow down, which is also post-extraction.

Chromatogram after SPE Extraction from a Plasma Matrix



To learn more about this method and others, visit:

www.phenomenex.com/SPE

Amphetamines from Urine Using Microelution SPE

An extraction method to isolate five amphetamines from urine using Strata™-X-C Microelution 96-well SPE plates followed by LC/MS/MS analysis. By utilizing the microelution SPE format, the dry down step was skipped saving at least 30 minutes without negatively impacting the sensitivity of our analysis. The five amphetamines were accurately quantified at detection levels down to 25 % below the cutoff levels specified by the Substance Abuse and Mental Health Services Administration (SAMHSA).

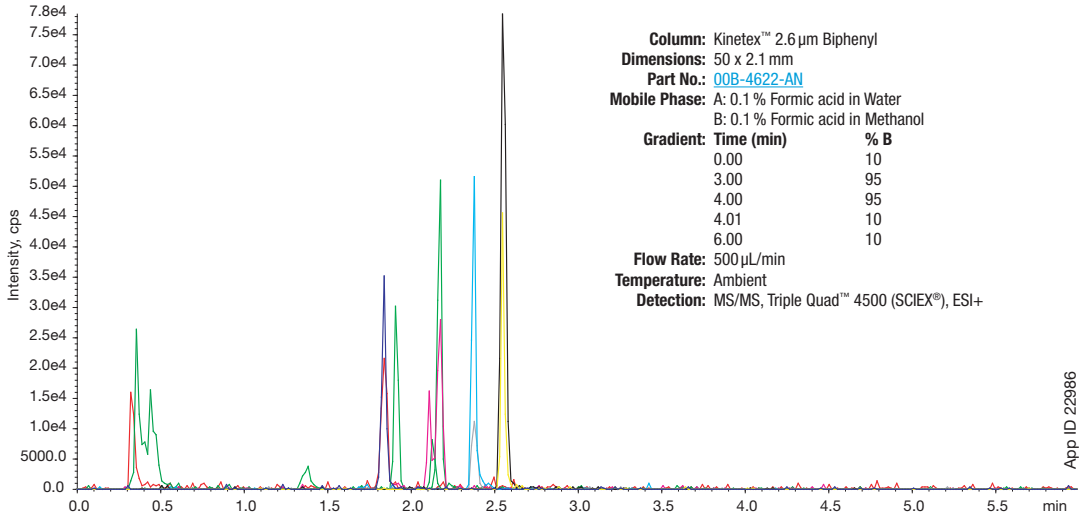
SPE Protocol

	Strata-X-C Microelution 96-Well Plate, 2 mg/well
Part No.	8M-S029-4GA
Condition	200 µL Methanol
Equilibrate	200 µL Water
Load	400 µL diluted urine (200 µL urine diluted 1:1 with water)
Wash 1	200 µL 2 % Formic acid in water
Wash 2	200 µL Methanol
Elute	2x 25 µL 5 % Ammonium hydroxide in acetonitrile/methanol (60:40)
Injection	2 µL

Amphetamines Extracted from Human Urine

Amphetamines	Concentration (ng/mL) (25 % below SAMHSA cut off)	RT (min)	% Absolute Recovery	% CV (N=8)
Amphetamine	125	1.83	82	13.1
Methamphetamine	125	2.12	107	15.1
MDA	62.25	2.15	106	4.2
MDMA	62.25	2.36	99	15.7
MDEA	62.25	2.53	108	10.5

Chromatogram of Amphetamines Extracted from Human Urine



Industry Applications Clinical: Barbiturates, Opiates, Analgesics, Benzodiazepines

Using a generic method to extract multiple panels is another way Strata-X PRO excels. While the different panels of analytes are highlighted to show the ease of method development, changing the wash solvent could further optimize the method and provide even cleaner results. Using a stronger percent of organic in the wash will provide even cleaner results.

- Barbiturates
- Analgesics
- Opiates
- Benzodiazepines

SPE Protocol

96-Well Plates: Strata™-X PRO, 30 mg/well

Part No.: 8E-S536-TGA

Load: 400 µL Human serum/1 % Formic acid in Water (1:1)

Wash: 600 µL 5 % Methanol in Water

Dry: 2-3 minutes @ 5" Hg

Elute: 600 µL 0.1 % Formic acid in Acetonitrile/Methanol (90:10)

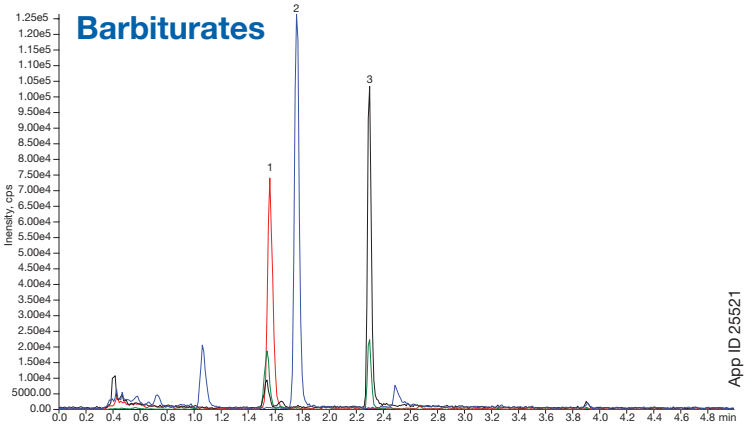
Dry Down: Under a gentle stream of Nitrogen at 40 °C to dryness

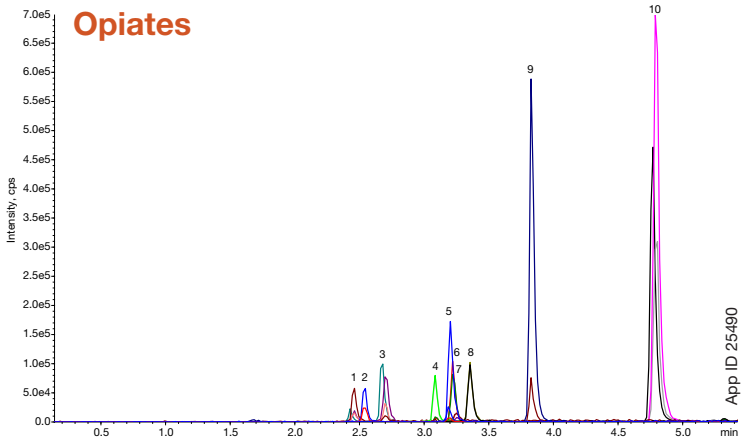
Reconstitute: 200 µL 0.1 % Formic acid in water/0.1 % Formic acid in Methanol

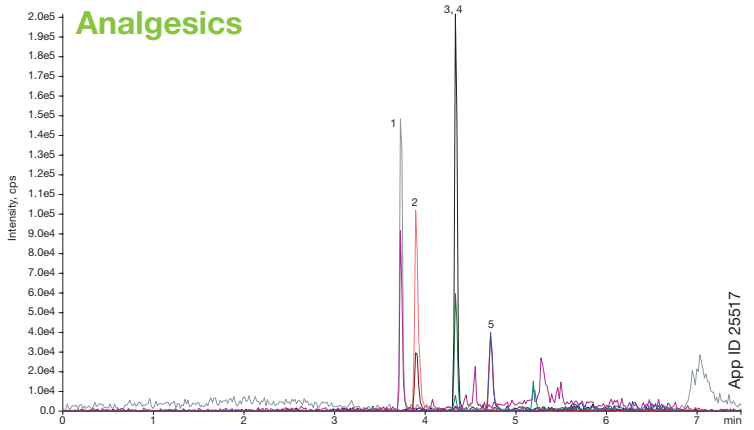
Analyte	RT (min)	% Recovery	% CV
1. Phenobarbital	1.56	91	3.4
2. Butalbital	1.76	103	2.3
3. Secobarbital	2.3	98	2.1
1. Morphine	2.43	68	3.8
2. Oxymorphone	2.54	80	8.6
3. Hydromorphone	2.67	75	10.5
4. Naloxone	3.09	83	3.9
5. 6-MAM	3.2	77	7
6. Codeine	3.2	70	9
7. Oxycodone	3.36	64	0.6
8. Hydrocodone	3.41	73	3.2
9. Norfentanyl	3.83	57	3.2
10. Fentanyl	4.78	79	3.9
1. Meprobamate	3.73	70	9.2
2. Tramadol	3.9	71	5.1
3. Carisoprodol	4.3	66	9.6
4. Norbuprenorphine	4.3	70	8.4
5. Buprenorphine	4.7	60	1.6
1. Lorazepam	4.74	61	19.5
2. Oxazepam	4.86	45	14.1
3. α-Hydroxy alprazolam	5	60	14.2
4. Nordiazepam	5.05	63	13
5. Temazepam	5.19	66	6.5
6. Alprazolam	5.26	50	5
7. Diazepam	5.44	68	8

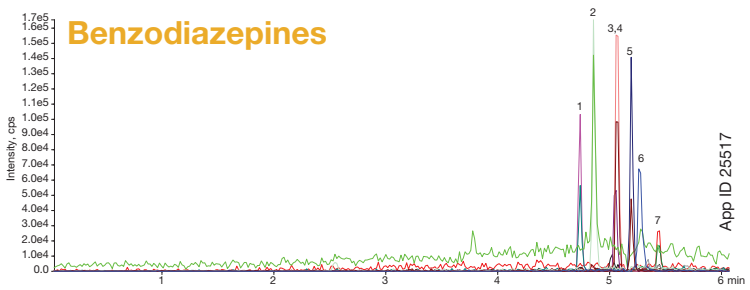
Industry Applications
Clinical Research: Barbiturates, Opiates, Analgesics, Benzodiazepines

Strata™-X PRO displays high sensitivity with less matrix effects for multiple panels of analytes with diverse properties and reduces phospholipids in the sample. In a comparison with a traditional protein precipitation method to clean up serum, Strata-X PRO removes the phospholipids to provide a cleaner background for more sensitive results and less maintenance to the MS.









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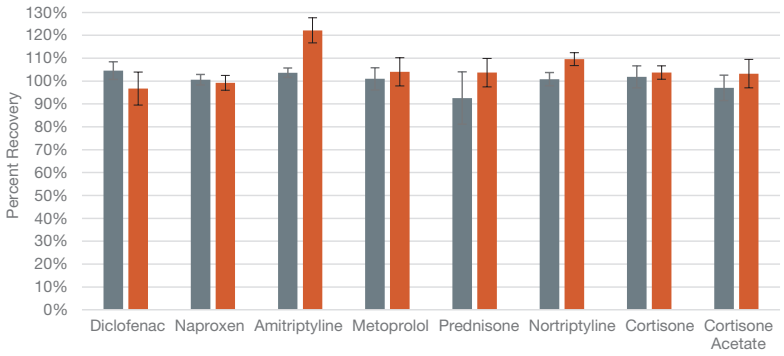
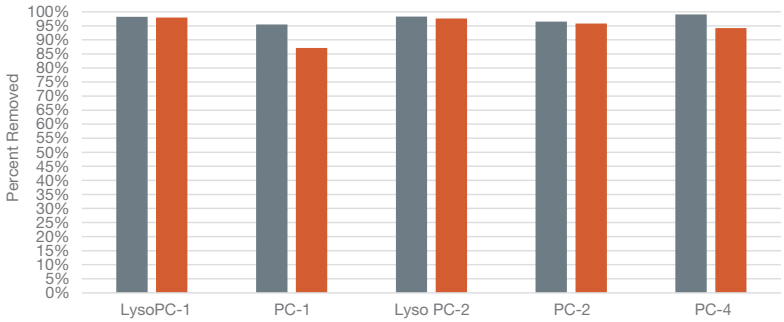
Recoveries of Analytes From Plasma for Strata™-X PRO and Waters™ Oasis PRiME



Comparison of Removal of Phospholipids from Plasma



Lyso 1: 1 Palmitoyl 2 OH sn glycero phosphocholine, (16:0)

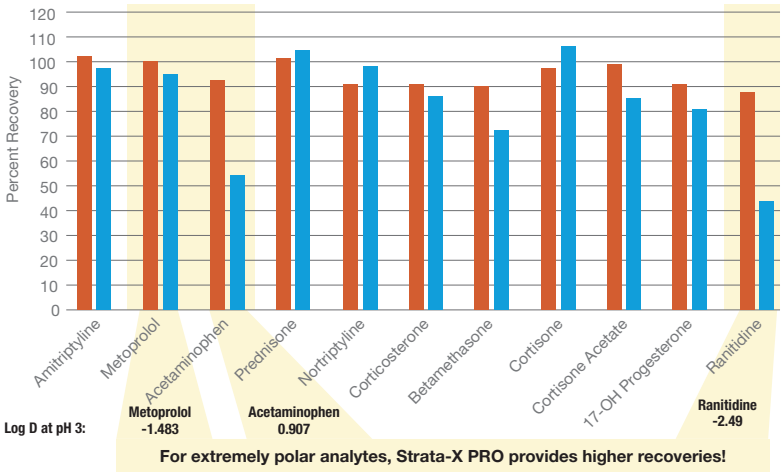
Lyso 2: 1 Oleoyl 2 OH sn glycero phosphocholine, (18:1) m

PC 1: 1 Palmitoyl 2 Oleoyl sn glycerol phosphocholine, (16:0, 18:1)

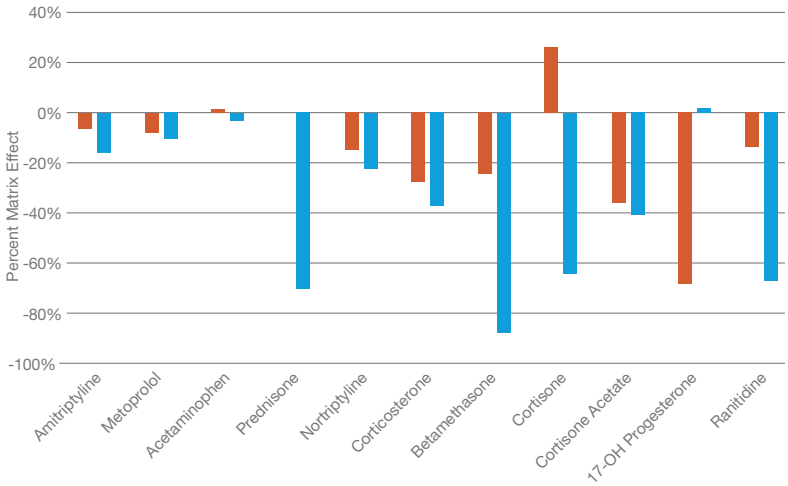
PC 2: 1 Stearoyl 2 Lindoleoyl sn glycerol phosphocholine, (18:0, 18:2)

PC 4: 1 Oleoyl 2 Lindoleoyl sn glycerol phosphocholine, (18:1, 18:2)

Recovery from Human Plasma

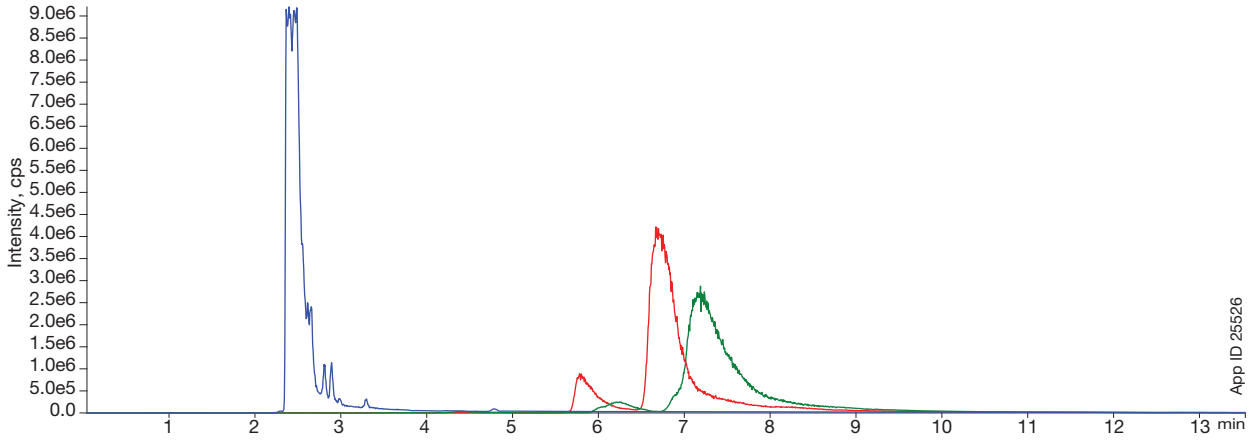


Matrix Effects

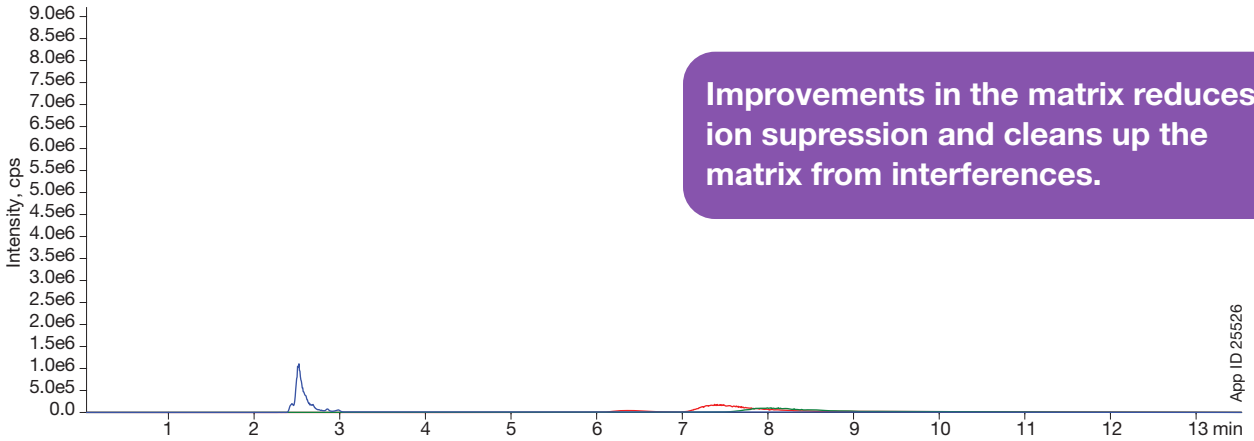


Comparative Phospholipid Trace of Clean-up Methods

Phospholipid Trace of Human Serum Sample After Protein Precipitation



Phospholipid Trace of Human Serum Sample After Strata™-X PRO Extraction



Improvements in the matrix reduces ion supression and cleans up the matrix from interferences.

LC Conditions for Phospholipid Comparison

Column: Kinetex™ 2.6 µm C18
Dimensions: 50 x 2.1 mm
Part No.: 00B-4462-AN
SecurityGuard™ ULTRA: AJ0-8782
Mobile Phase: A: 0.1 % Formic acid in Water
B: 0.1 % Formic acid in Methanol

Gradient:

Time (min)	% B
0	40
0.5	95
15.5	95
15.51	40
17	40

Flow Rate: 0.4 mL/min
Injection Volume: 5 µL
Temperature: 30 °C
Detector: SCIEX® Triple Quad™ 4500
Sample: Phospholipid (Retention time in minute)
1. Lyso PC (2.4), MRM transition 496.4/184.2
2. PC-1 (6.7), MRM transition 760.7/184.2
3. PC-2 (7.2), MRM transition 786.8/184.2

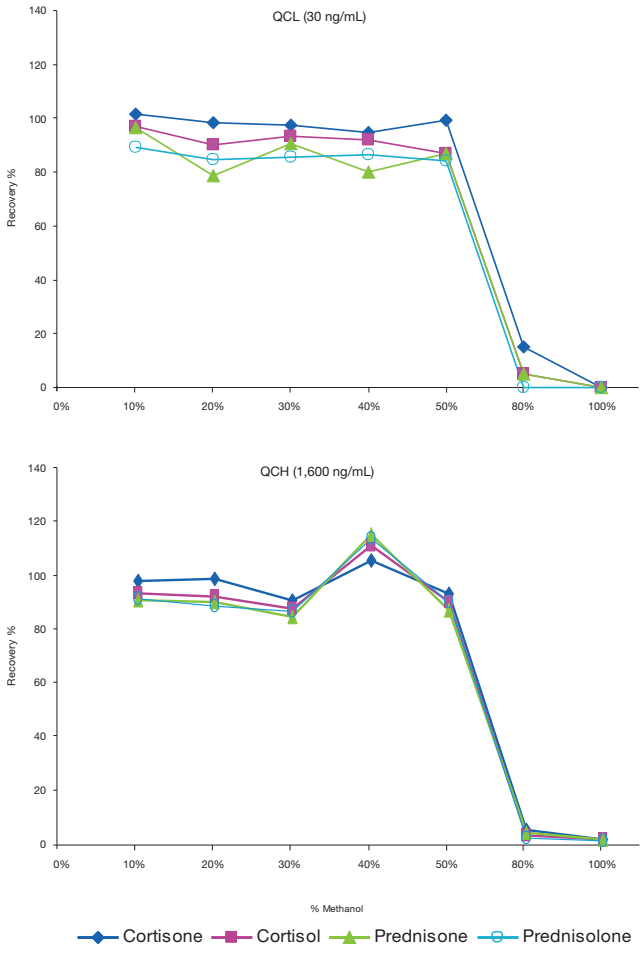
Urinary Steroids using Strata™-X SPE

We evaluated a variety of silica-based and polymer-based SPE sorbents for the quantification of cortisol, cortisone, prednisolone, and prednisone, each of which provides a different retention mechanism. The evaluation showed that the Strata-X polymer-based SPE sorbent, with a unique elution solvent has been found to be a robust, reproducible, and cost effective sample preparation solution for the laboratory in human urine for all four corticosteroids.

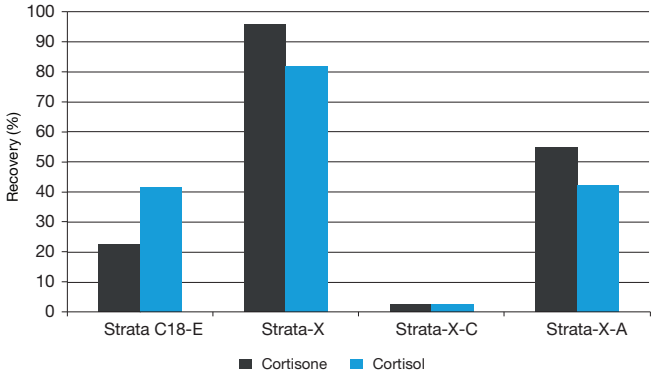
SPE Protocol

	Strata-X 30 mg/1 mL
Part No.	8E-S100-UGB
Condition	1 mL Methanol
Equilibrate	1 mL Water
Load	300 µL human urine diluted in 300 µL Water with 1 µg/mL IS (Cortisol D4)
Wash 1	1 mL Water
Wash 2	1 mL 10 % Methanol in Water
Elute	2x 500 µL of 2 % Formic Acid in Ethyl acetate/Isopropanol (85:15)
Dry Down	To dryness under a gentle Nitrogen stream at 50 °C
Reconstitute	100 µL of 10 mM Ammonium acetate/10 mM Ammonium acetate in Methanol (50:50)

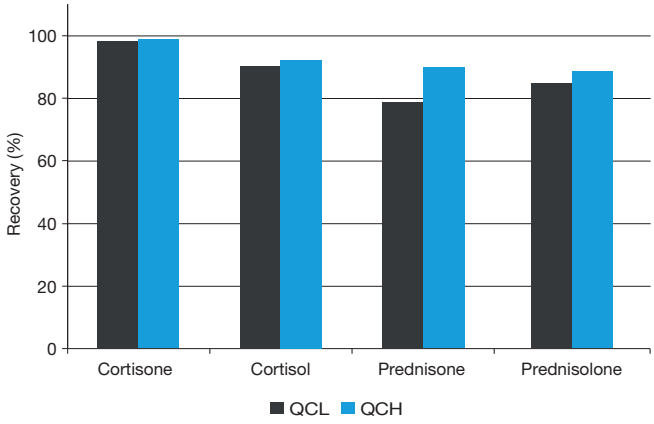
Wash Solvent Optimization



Recovery using SPE Sorbents



Recovery using Strata-X Across Low (QCL, 30 ng/mL) and High (QCH, 1600 ng/mL) QC Concentrations



Chlorinated Pesticides in Poultry Tissue Using Strata™ Alumina-N SPE

Animals used for food consumption are exposed to contaminants at levels that can pose harm to the human population. Presented is a method developed using Strata Alumina-N SPE and GC/ECD for pesticides analysis from poultry fat. This method improves upon the traditional procedure by reducing time and increasing accuracy and reliability.

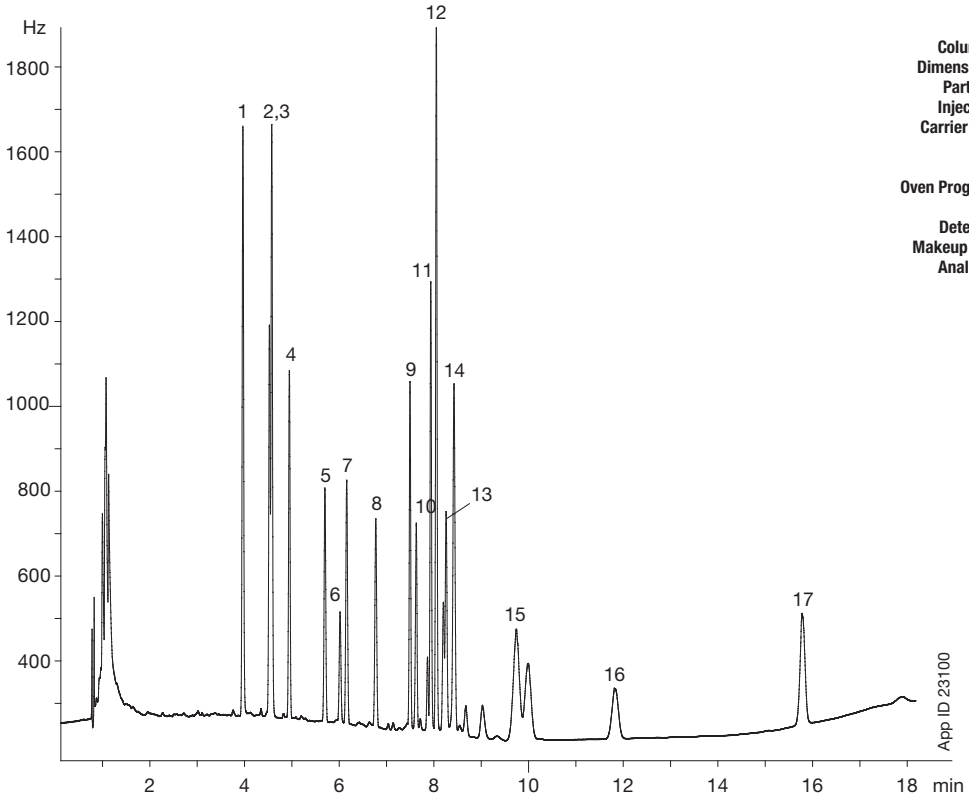
Pretreatment Protocol

1. Using 1 minute intervals with a microwave, render poultry fat pads ensuring the sample does not exceed 100 °C
2. Weigh 1 gram of rendered fat into a 10 mL volumetric flask and bring to volume with hexane containing internal standards 1 and 2
3. Vortex or shake volumetric flasks to ensure proper mixing

SPE Protocol

	Strata Alumina-N, 2 g/12 mL
Part No.	8B-S313-KDG
Condition	Methanol/Water (86:14) at 10 mL/min until dry
Equilibrate	Petroleum ether at full cartridge volume at 10 mL/min
Load	1 mL Pretreated sample
Elute	Ethyl Ether/Petroleum Ether (1.5:98.5) at full cartridge volume and collect eluent
Dry Down	Dry down at ambient temperatures under a stream of nitrogen and evaporate to dryness
Reconstitute	2 mL Hexane

GC / EDC Analysis of Chlorinated Hydrocarbons



Columns: Zebron™ ZB-MultiResidue™-1
Dimensions: 30 m x 0.32 mm x 0.50 µm
Part No.: 7HM-G016-17
Injection: Splitless @ 250 °C, 1.0 µL
Carrier Gas: Helium (ramped flow)
3.4 mL/min for 6 min ,ramp 5 mL/min to 8 mL/min, hold 12.08 min
Oven Program: 150 °C for 0.5 min to 220 °C @ 20 °C/min to 310 °C @ 6 °C/min
Detector: ECD @ 350 °C
Makeup Gas: 40 mL/min (N2)
Analytes:
1. 2,4,5,6-Tetrachloro-m-xylene (IS 1)
2. α-BHC
3. Hexachlorobenzene
4. Lindane
5. Heptachlor
6. Dursban® (Chlorpyrofos)
7. Aldrin
8. Heptachlor Epoxide
9. p,p'-DDE
10. Dieldrin
11. o,p-DDT
12. p,p'-DDE
13. Endrin
14. p,p'-DDT
15. Methoxychlor
16. Mirex
17. Decachlorobiphenyl (IS 2)

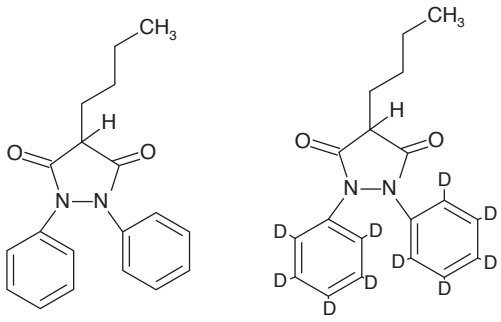
Phenylbutazone in Ground Meat using Strata™-X-A SPE

A simple yet effective SPE and cleanup method for phenylbutazone from meat with recovery values > 90 %. Highly specific LC/MS/MS data is generated using a Kinetex core-shell column enabling rapid run times under 5 minutes with excellent precision and accuracy.

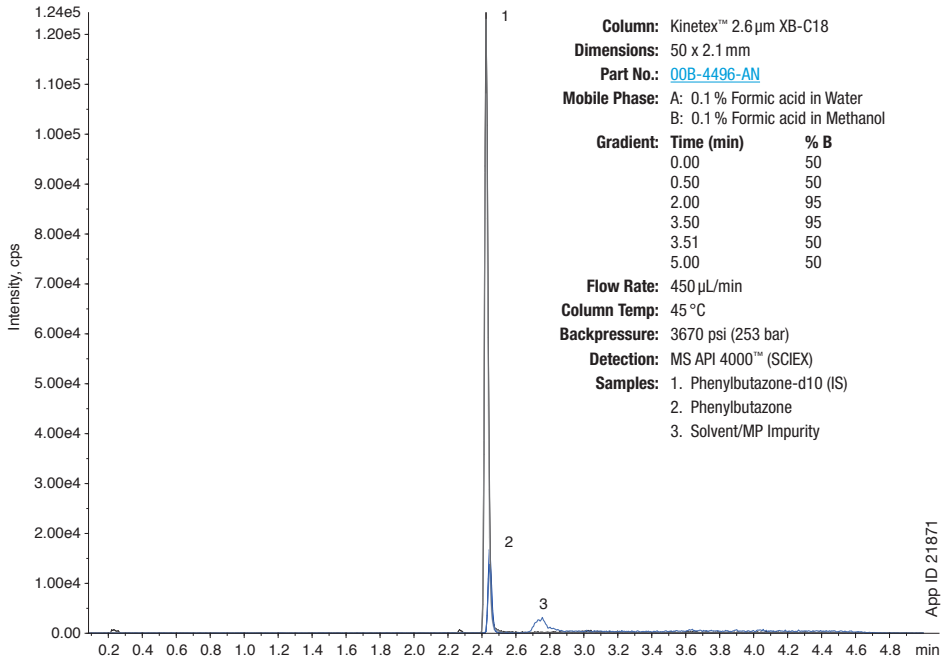
SPE Protocol

	Strata-X-A, 100 mg/6 mL
Part No.	8B-S123-ECH
Condition	3 mL Methanol
Equilibrate	3 mL DI Water
Load	4 mL of Pretreated sample
Wash 1	2 mL D.I. Water
Wash 2	2 mL Acetonitrile
Wash 3	2 mL Ethyl Acetate
Dry	5 minutes under full vacuum
Elute	2x 1.5 mL 1 % Formic Acid in Methanol
Dry Down	Evaporate under a stream of nitrogen gas at 50 °C to dryness
Reconstitute	Resuspend the residue with 500 µL of Methanol/ 0.1 % Formic Acid (50:50)

Phenylbutazone and Phenylbutazone-D10 Chemical Structures



Chromatogram of 10 ppb Phenylbutazone



Column: Kinetex™ 2.6 µm XB-C18
Dimensions: 50 x 2.1 mm
Part No.: 00B-4496-AN
Mobile Phase: A: 0.1 % Formic acid in Water
B: 0.1 % Formic acid in Methanol

Gradient:

Time (min)	% B
0.00	50
0.50	50
2.00	95
3.50	95
3.51	50
5.00	50

Flow Rate: 450 µL/min
Column Temp: 45 °C
Backpressure: 3670 psi (253 bar)
Detection: MS API 4000™ (SCIEX)
Samples:
1. Phenylbutazone-d10 (IS)
2. Phenylbutazone
3. Solvent/MP Impurity

% Recovery of Phenylbutazone

from Beef Extract at 5 ppb and 75 ppb (µg/kg) n=4

Spiked Conc.	%CV	Accuracy
5	8.02	100.7
75	5.0	90.3

Analysis of PFAS in Drinking Water

A Direct Comparison of the Accuracy and Precision of Manual and Automated SPE Sample Preparation

Method 537.1 is a solid phase extraction (SPE) liquid chromatography in tandem with mass spectrometry (LC-MS/MS) method for the determination of selected per- and polyfluorinated alkyl substances (PFAS) in drinking water. Method 537.1 will be part of the upcoming UCMR5, with a focus on PFAS. A critical part of the method is the SPE sample preparation-concentration step which employs a Styrene-DVB copolymer in tube format. EPA 533 is complementary to EPA 537.1. It analyzes 14 of the 18 compounds from EPA 537.1, plus an additional 11 "short chain" (C4-C12) PFAS compounds. Of the original EPA 537 and EPA 537.1 compounds, 4 were not included in EPA 533, since they had been shown not to be present in drinking water during the previous UCMR study. Of the new EPA 533 compounds, PFBA and PFPeA, had been intentionally excluded from EPA 537.1 because they were too polar to be extracted by a styrene di-vinylbenzene (SDVB) solid phase extraction (SPE) sorbent from the sample preparation step. However, EPA 533 was able to include these 2 compounds, along with the other short chain analytes, because this new method employs a polymeric weak anion-exchange (WAX) sorbent in the SPE sample preparation step which is very selective for the more polar/acidic PFAS analytes. An additional distinction of EPA 533 is that it uses the isotope dilution technique to enhance method accuracy and robustness..

Analyte	Low Fortification (ng/L)	Mean % Ra (n=7)	% RSDa	High Fortification (ng/L)	Mean % R (n=5)	% RSD
PFBA	10	128	8.6	80	98.4	2.4
PFMPA	10	108	4.5	80	98.1	2.2
PFPeA	10	107	4.9	80	99.6	3.6
PFBS	10	102	9.1	80	96.2	2.9
PFMBA	10	111	6.8	80	101	3.4
PFEESA	10	107	10	80	98.8	4.0
NFDHA	10	110	15	80	98.5	5.4
4:2FTS	10	94.4	14	80	100	5.7
PFHxA	10	102	8.0	80	97	7.7
PFPeS	10	99.5	19	80	101	7.8
HFPO-DA	10	102	9.7	80	102	4.7
PFHpA	10	108	7.0	80	104	4.1
PFHxS	10	103	9.0	80	97.7	5.5
ADONA	10	96.3	3.1	80	96.8	5.6
6:2FTS	10	109	15	80	111	11
PFOA	10	108	7.4	80	98.5	6.9
PFHpS	10	98.8	8.9	80	102	7.0
PFNA	10	109	6.2	80	99.6	5.6
PFOS	10	104	8.7	80	98.0	4.3
9Cl-PF3ONS	10	99.7	4.6	80	103	6.8
8:2FTS	10	100	17	80	100	13
PFDA	10	100	4.2	80	100	1.8
PFUnA	10	102	10	80	97.3	8.1
11Cl-PF3OUdS	10	106	5.3	80	102	6.1
PFDoA	10	101	6.2	80	96.3	5.1

Sample Preparation Protocol

Pre-treatment: 100-250 mL sample is fortified with isotopically labeled analogues of the method analytes
Cartridge: Strata™-X-AW 500 mg/6 mL
Part No.: 8B-S038-HCH
Load: Pass pre-treated sample through the cartridge
Wash 1: Aqueous Ammonium acetate followed by Methanol
Wash 2: Methanol
Elute: Ammonium hydroxide in Methanol
Dry Down: Under a gentle stream of Nitrogen in a heated water bath
Reconstitute: Adjust the final volume to 1 mL with 20 % Water in Methanol (v/v) before analyzing by LC-MS

LC Conditions

Column: Gemini™ 3 µm C18
Dimension: 50 x 2.0 mm
Part No.: 00B-4439-B0
Mobile Phase: A: 20 mM Ammonium Acetate
B: Methanol
Gradient:

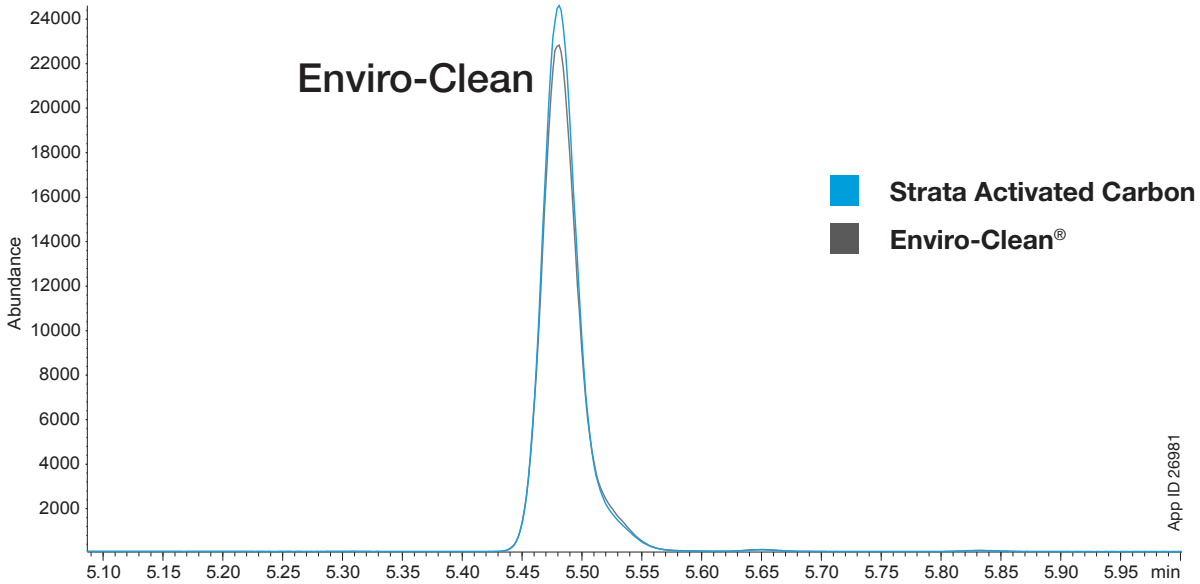
Time (min)	%B
0	5
0.5	5
3	40
16	80
18	80
20	95
22	95
25	5
35	5

Injection Volume: 2 µL
Flow Rate: 0.25 mL/min
MS Detection: Electrospray Ionization Tandem Mass Spectrometer (ESI-MS/MS)

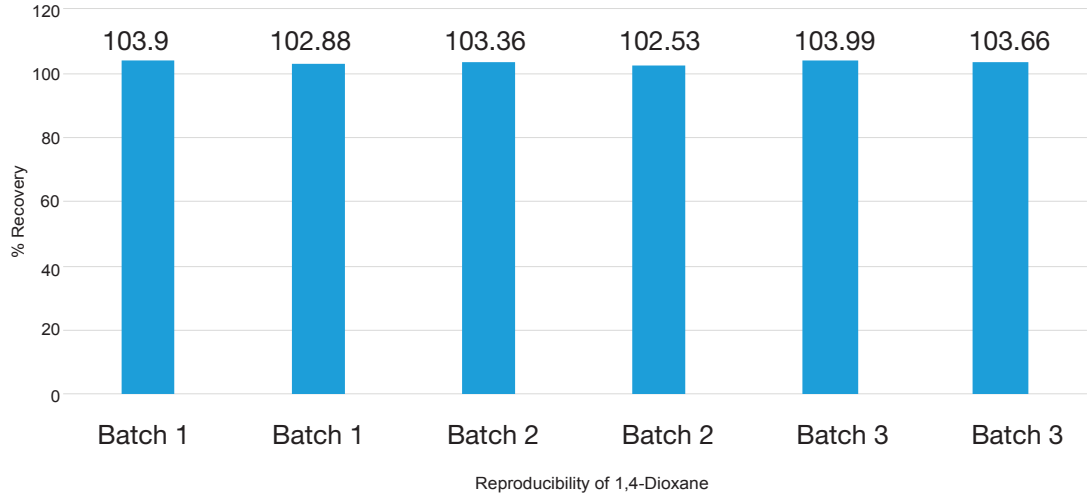
Reproducible Extraction of 1,4-Dioxane from Water (Modified EPA 8270 / 522)

Strata Activated Carbon

Higher response with Strata™ Activated Carbon extraction



Batch-to-Batch Reproducibility with Strata Activated Carbon



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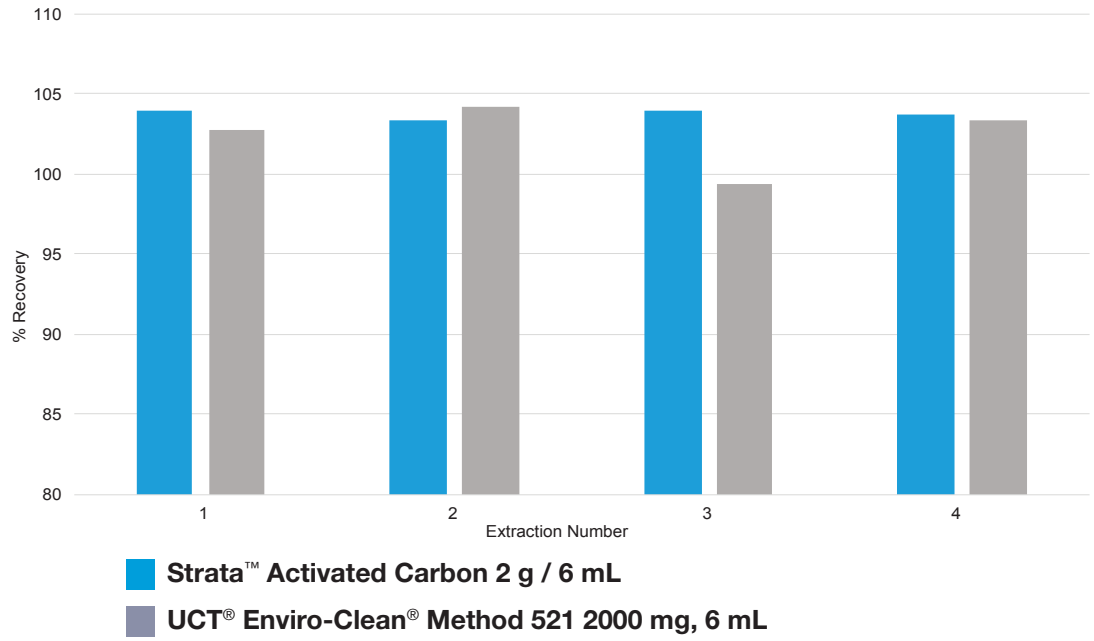
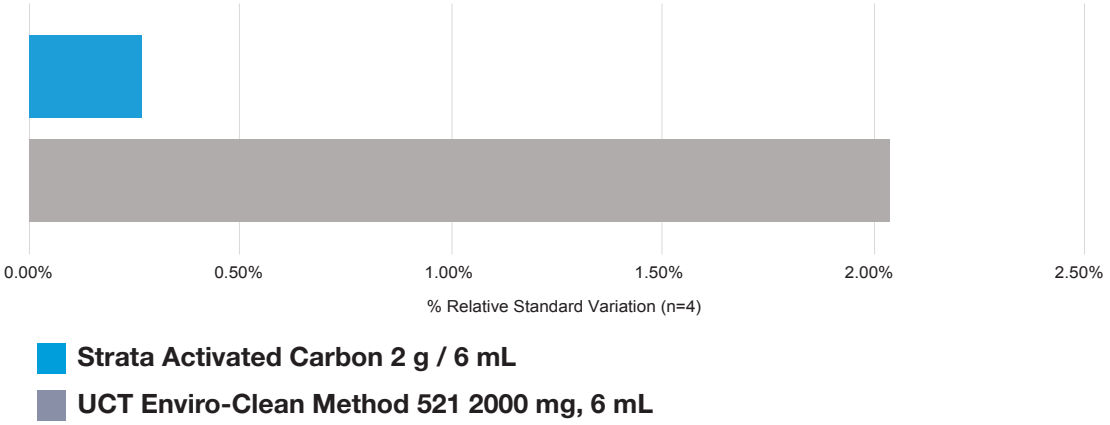
Reproducible Extraction of 1,4-Dioxane from Water (Modified EPA 8270 / 522)

Strata Activated Carbon

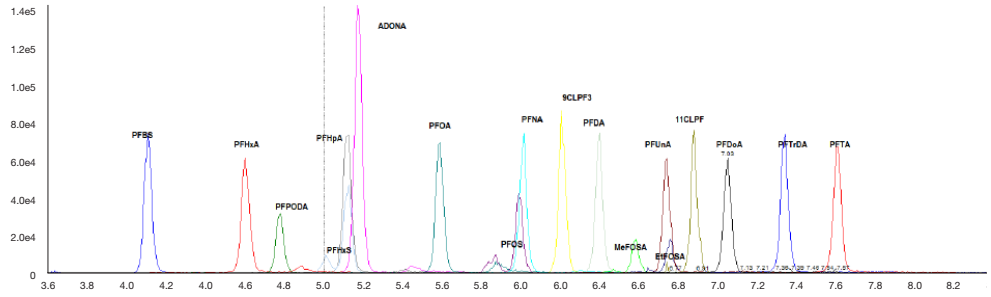
% Recovery for 1,4-Dioxane



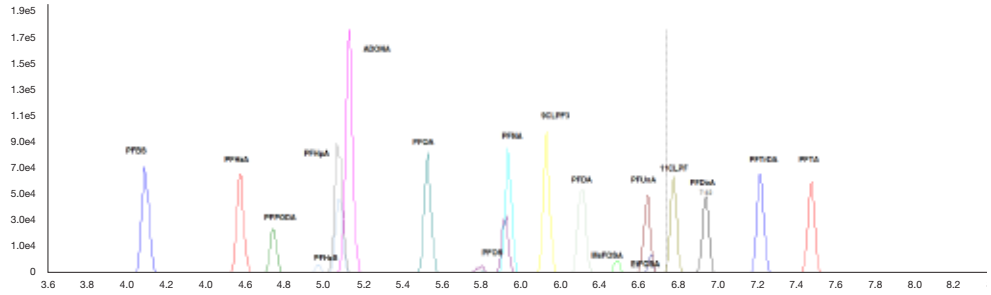
1,4-Dioxane Recovery Variability



HPLC Chromatogram of a 2 ng/L Internal Standard



HPLC Chromatogram of a 2 ng/L LFB



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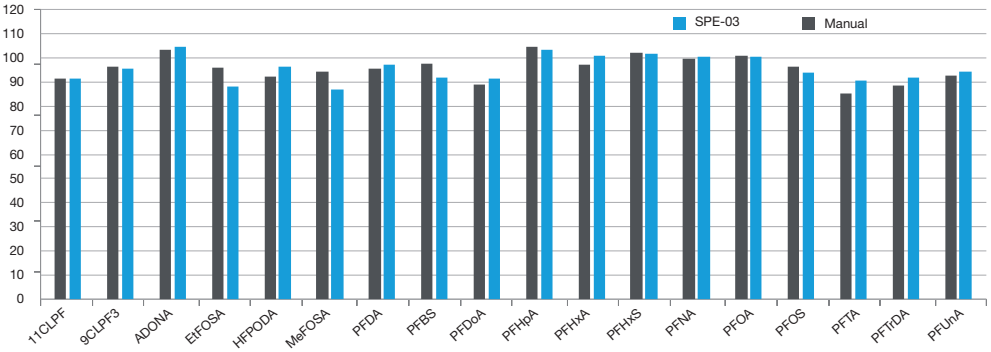
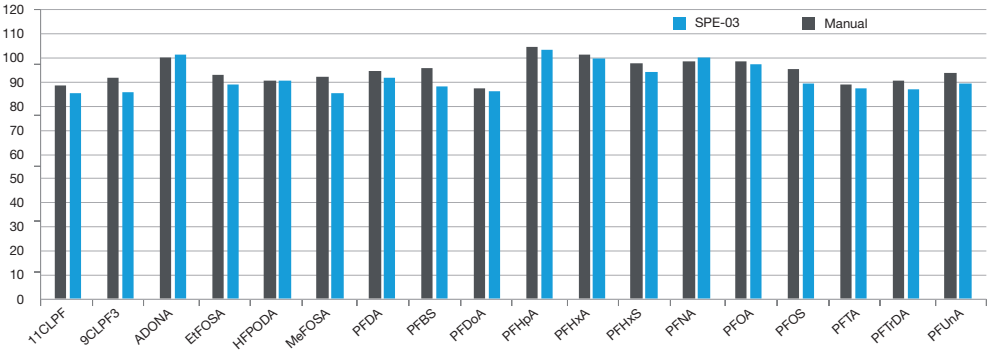
Comparison of Mean Analyte % Recoveries from 20 ng/L LFB, n=19



Comparison of Mean Analyte % Recoveries from 2 ng/L LFB, n=19



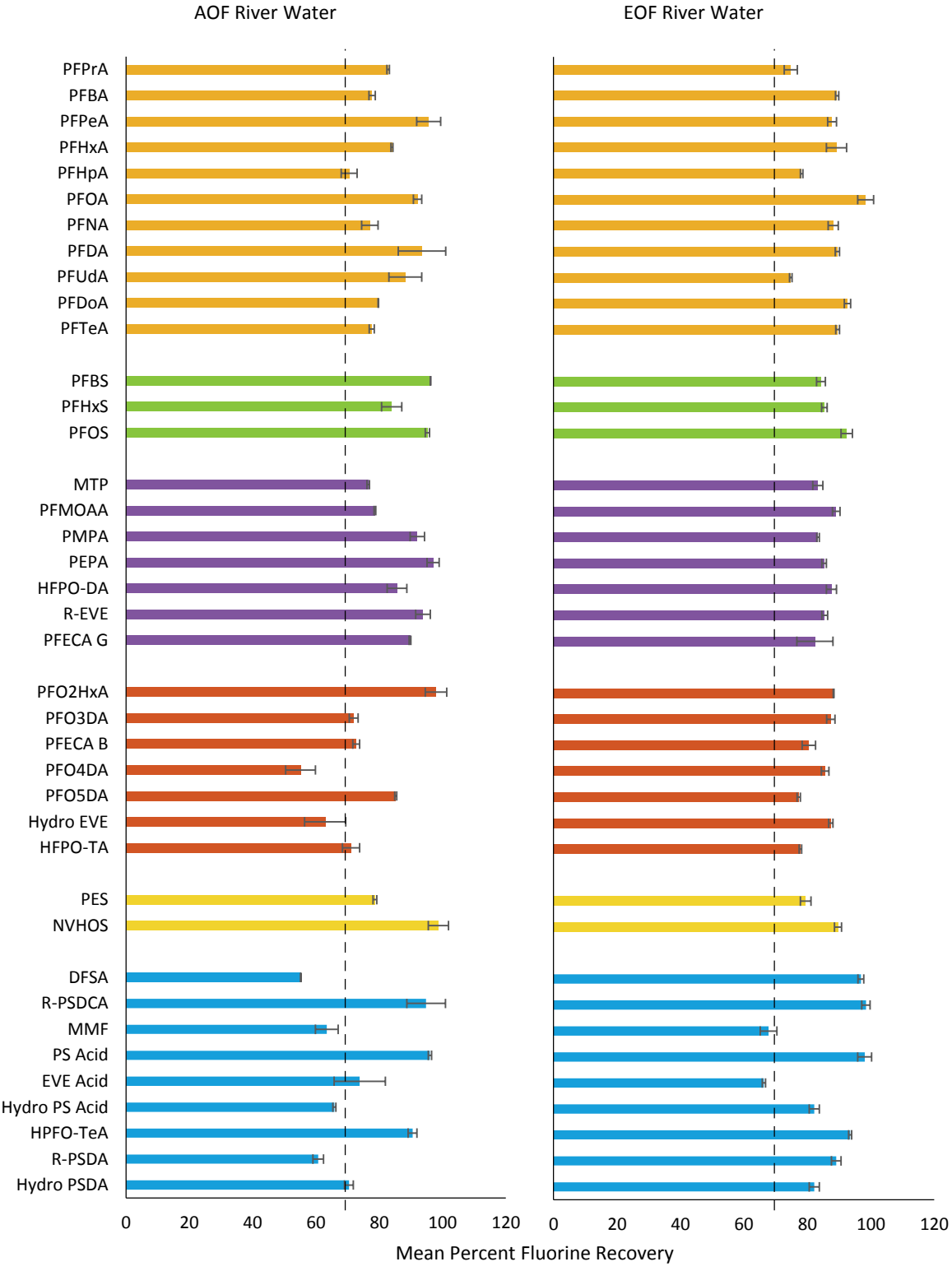
Evaluation of Extraction Options for EPA Method 1633

To sort out these challenge, Strata™ PFAS cartridges were developed as a single cartridge stacked with Strata-X-AW and Strata GCB sorbents that function as a traditional SPE cartridge with a built-in polishing step to meet the method guidelines. We have previously demonstrated the utility of the Strata PFAS stacked SPE format for PFAS analysis following DOD QSM 5.2/Table B15 for a variety of water matrices. We have shown that using a single, stacked WAX/GCB is cheaper, easier, and ultimately yields better recoveries for PFAS analytes from various water samples. This technical note presents a study to validate method performance for the broader compound list in EPA 1633 and demonstrate the same utility for both water and soil extracts.

		Strata™ PFAS GCB/WAX		Oasis® WAX + GCB dSPE	
Analyte	Spike (ng/g)	% Rec.	%RSD	% Rec.	%RSD
PFBA	23	102	1.2	105	1.4
PFPeA	11.5	102	0.9	105	1.9
PFHxA	5.8	101	2	105	1.6
PFHpA	5.8	102	1.4	104	1.6
PFOA	5.8	100	2.8	104	2.4
PFNA	5.8	100	1.2	104	3.3
PFDA	5.8	97.3	1.6	102	2.7
PFUnA	5.8	100	3.6	107	3.1
PFDoA	5.8	102	1.3	108	3.3
PFTrDA	5.8	103	1.8	104	3.9
PFTeDA	5.8	98.4	0.7	105	2.3
PFHxDA	5.8	95.3	4.8	106	5.2
PFoDA	5.8	73.8	21	138	23
PFBS	5.1	101	0.68	105	1.4
PFPeS	5.4	101	2.9	99.6	2.4
PFHxS	5.3	100.6	2.7	101	2.4
PFHpS	5.5	100	4.6	104	1.5
PFOS	5.3	99.7	4.4	104	2.4
PFNS	5.5	101	5.1	107	2.8
PFDS	5.6	98.5	4.7	102	2.8
PFDoS	5.6	91	5.9	106	6
4:2-FTS	21.6	103	3.3	101	3.2
6:2-FTS	21.9	99.8	2.3	107	5
8:2-FTS	22.1	96.6	3.3	105	2.6
10:2-FTS	22.3	101	3.6	105	4.3
PFOSA	5.8	99.4	1.4	112.6	5.6
MeFOSA	5.8	103	3.4	115	8
EtFOSA	5.8	105	7.4	116	8.2
MeFOSAA	5.8	101	3.7	104	5.4
EtFOSAA	5.8	104	3.2	107	3.2
MeFOSE	57.6	101	1.4	109	4.9
EtFOSE	57.6	99.5	1.5	104	6.4
HFPO-DA	23	106	1.3	102	1.5
ADONA	21.8	106	1.7	103	1
PFMPA	11.5	99.3	2.3	100	1.6

Mean Organic Fluorine Recovery of 39 Individual PFAS Standards Spiked into River Water

In this technical note, we report a new TOF method with improved recovery, detection limits, and quantity of PFAS studied (43 total) by implementing the Strata™ PFAS SPE cartridge.



Polycyclic Aromatic Hydrocarbons using Strata™ PAH as Compared to EPA Method 550.1

Polycyclic aromatic hydrocarbon compounds (PAHs) are effectively extracted from water samples while humic acids, which often interfere with chromatographic separation, are removed from the sample using a SPE sorbent, Strata PAH. It was also found that Strata PAH provides consistent, high recoveries of all 16 analytes listed under EPA Method 550.1.

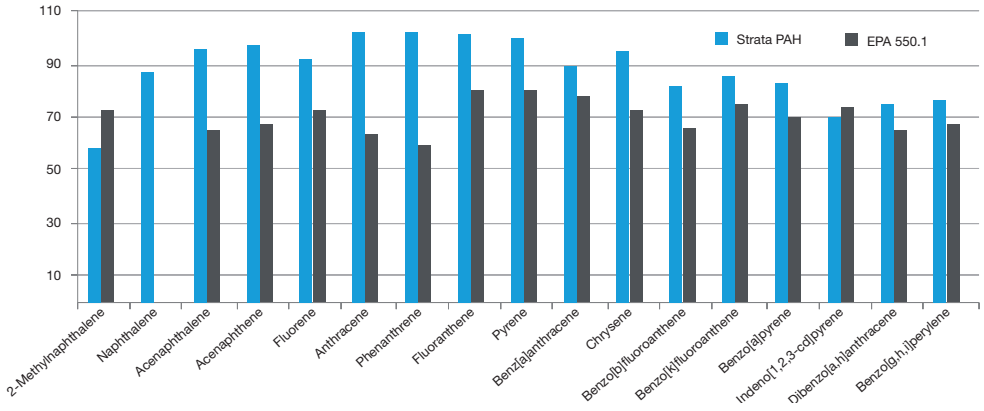
SPE Protocol

	Strata PAH, 1.5 g/6 mL
Part No.	8B-S130-7CH
Condition	20 mL Dichloromethane, 20 mL Methanol, 20 mL D.I. Water
Load	100 µL PAH standards (100 µg/mL in Acetonitrile) spiked into 100 mL Water/Acetonitrile (75:25)
Wash	5 mL Methanol/D.I. Water (50:50)
Dry	15 seconds under 10" Hg Vacuum
Elute	6 mL Dichloromethane

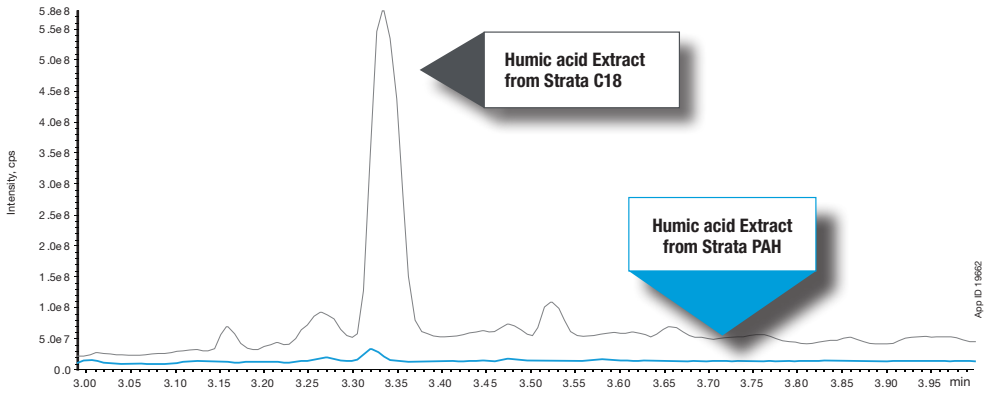
Pretreatment Protocol

1. Using 1 minute intervals with a microwave, render poultry fat pads ensuring the sample does not exceed 100 °C
2. Weigh 1 gram of rendered fat into a 10 mL volumetric flask and bring to volume with hexane containing internal standards 1 and 2
3. Vortex or shake volumetric flasks to ensure proper mixing

PAH % Recoveries from Tap Water



Effective Removal of Humic Acids



Column: Kinetex™ 2.6 µm C8
Dimensions: 50 x 2.1 mm
Part No.: 00B-4497-AN
Mobile Phase: A: 5 mM Ammonium acetate
B: Methanol

Gradient: Time (min)	**% B**
0	15
2	95
6.0	95
6.01	15

Flow Rate: 0.4 mL/min
Temperature: Ambient
Detection: MS @ 580.4 amu / 536.5 amu (ambient)
Backpressure: 210 bar
Sample: Humic Acids from Suwannee River

Ordering Information

Strata™-X PRO SPE

Format	Sorbent Mass	Part Number	Unit
Tube			
	10 mg	8B-S536-AAK	1 mL (100/box)
	30 mg	8B-S536-TAK	1 mL (100/box)
	30 mg	8B-S536-TBJ	3 mL (50/box)
	60 mg	8B-S536-UBJ	3 mL (50/box)
	200 mg	8B-S536-FBJ	3 mL (50/box)
	100 mg	8B-S536-ECH	6 mL (30/box)
	200 mg	8B-S536-FCH	6 mL (30/box)
	500 mg	8B-S536-HCH	6 mL (30/box)
Giga™ Tube			
	1 g/20 mL	8B-S536-JEG	20/pk

Strata™ XPro
A Rapid Solid Phase Extraction Solution

Format	Sorbent Mass	Part Number	Unit
96-Well Plate			
	10 mg/well	8E-S536-AGA	ea
	30 mg/well	8E-S536-TGA	ea
	60 mg/well	8E-S536-UGA	ea
96-Well Microelution Plate			
	2 mg/well	8M-S536-4GA	ea

Strata™-X

Format	Sorbent Mass	Part Number	Unit
Tube			
	30 mg	8B-S100-TAK**	1 mL (100/box)
	30 mg	8B-S100-TBJ	3 mL (50/box)
	60 mg	8B-S100-UBJ**	3 mL (50/box)
	100 mg	8B-S100-EBJ	3 mL (50/box)
	100 mg	8B-S100-ECH	6 mL (30/box)
	200 mg	8B-S100-FBJ	3 mL (50/box)
	200 mg	8B-S100-FCH	6 mL (30/box)
	500 mg	8B-S100-HBJ	3 mL (50/box)
	500 mg	8B-S100-HCH	6 mL (30/box)
Giga™ Tube			
	500 mg	8B-S100-HDG	12 mL (20/box)
	1 g	8B-S100-JDG	12 mL (20/box)
	1 g	8B-S100-JEG	20 mL (20/box)
	2 g	8B-S100-KEG	20 mL (20/box)
	5 g	8B-S100-LFF	60 mL (16/box)
Teflon® Tube			
	200 mg	8B-S100-FBJ-T	3 mL (50/box)
	200 mg	8B-S100-FDG-T	12 mL (20/box)
96-Well Plate			
	10 mg	8E-S100-AGB	2 Plates/Box
	30 mg	8E-S100-TGB	2 Plates/Box
	60 mg	8E-S100-UGB	2 Plates/Box
96-Well Microelution Plate			
	2 mg	8M-S100-4GA	ea

Strata™ X
Polymeric SPE

Strata-X

Strata-X Microelution Peptide Screening 96-Well Plates		
Part No.	**Description**	**Unit**
KS0-9528	Strata-X-CW 2 mg/well (6 rows) Strata-X-A 2 mg/well (6 rows)	ea

Strata-X Microelution Method Development 96-Well Plates		
Part No.	**Description**	**Unit**
KS0-9529	Strata-X-C 2 mg/well (3 rows) Strata-X-AW 2 mg/well (3 rows) Strata-X-CW 2 mg/well (3 rows) Strata-X-A 2 mg/well (3 rows)	ea

Strata-X-C

Format	Sorbent Mass	Part Number	Unit
Tube			
	30 mg	8B-S029-TAK**	1 mL (100/box)
	30 mg	8B-S029-TBJ	3 mL (50/box)
	60 mg	8B-S029-UBJ**	3 mL (50/box)
	100 mg	8B-S029-EBJ	3 mL (50/box)
	100 mg	8B-S029-ECH	6 mL (30/box)
	200 mg	8B-S029-FBJ	3 mL (50/box)
	200 mg	8B-S029-FCH	6 mL (30/box)
	500 mg	8B-S029-HBJ	3 mL (50/box)
	500 mg	8B-S029-HCH	6 mL (30/box)
Giga™ Tube			
	500 mg	8B-S029-HDG	12 mL (20/box)
	1 g	8B-S029-JDG	12 mL (20/box)
	1 g	8B-S029-JEG	20 mL (20/box)
	2 g	8B-S029-KEG	20 mL (20/box)
	5 g	8B-S029-LFF	60 mL (16/box)
96-Well Plate			
	10 mg	8E-S029-AGB	2 Plates/Box
	30 mg	8E-S029-TGB	2 Plates/Box
	60 mg	8E-S029-UGB	2 Plates/Box
96-Well Microelution Plate			
	2 mg	8M-S029-4GA	ea

Strata-XL

Format	Sorbent Mass	Part Number	Unit
Tube			
	30 mg	8B-S043-TAK	1 mL (100/box)
	60 mg	8B-S043-UBJ	3 mL (50/box)
	100 mg	8B-S043-EBJ	3 mL (50/box)
	200 mg	8B-S043-FBJ	3 mL (50/box)
	200 mg	8B-S043-FCH	6 mL (30/box)
	500 mg	8B-S043-HCH	6 mL (30/box)
Giga Tube			
	2 g	8B-S043-KDG	12 mL (20/box)
	2 g	8B-S043-KEG	20 mL (20/box)
	5 g	8B-S043-LEG	20 mL (20/box)
	5 g	8B-S043-LFF	60 mL (16/box)
	10 g	8B-S043-MFF	60 mL (16/box)
96-Well Plate			
	30 mg	8E-S043-TGB	2 Plates/Box

Strata-XL-C

Format	Sorbent Mass	Part Number	Unit
Tube			
	30 mg	8B-S044-TAK	1 mL (100/box)
	60 mg	8B-S044-UBJ	3 mL (50/box)
	100 mg	8B-S044-EBJ	3 mL (50/box)
	100 mg	8B-S044-ECH	6 mL (30/box)
	200 mg	8B-S044-FBJ	3 mL (50/box)
	200 mg	8B-S044-FCH**	6 mL (30/box)
	500 mg	8B-S044-HBJ	3 mL (50/box)
	500 mg	8B-S044-HCH	6 mL (30/box)
Giga Tube			
	2 g	8B-S044-KDG	12 mL (20/box)
	2 g	8B-S044-KEG	20 mL (20/box)
	5 g	8B-S044-LEG	20 mL (20/box)
	5 g	8B-S044-LFF	60 mL (16/box)
	10 g	8B-S044-MFF	60 mL (16/box)
96-Well Plate			
	30 mg	8E-S044-TGB	2 Plates/Box

Ordering Information

Strata™-X-CW

Format	Sorbent Mass	Part Number	Unit
Tube			
	30 mg	8B-S035-TAK**	1 mL (100/box)
	30 mg	8B-S035-TBJ	3 mL (50/box)
	60 mg	8B-S035-UBJ**	3 mL (50/box)
	100 mg	8B-S035-ECH	6 mL (30/box)
	200 mg	8B-S035-FBJ	3 mL (50/box)
	200 mg	8B-S035-FCH	6 mL (30/box)
	500 mg	8B-S035-HBJ	3 mL (50/box)
	500 mg	8B-S035-HCH	6 mL (30/box)
Giga™ Tube			
	1 g	8B-S035-JDG	12 mL (20/box)
	1 g	8B-S035-JEG	20 mL (20/box)
	2 g	8B-S035-KEG	20 mL (20/box)
	5 g	8B-S035-LFF	60 mL (16/box)
96-Well Plate			
	10 mg	8E-S035-AGB	2 Plates/Box
	30 mg	8E-S035-TGB	2 Plates/Box
	60 mg	8E-S035-UGB	2 Plates/Box
96-Well Microelution Plate			
	2 mg	8M-S035-4GA	ea

Strata-X-A

Format	Sorbent Mass	Part Number	Unit
Tube			
	30 mg	8B-S123-TAK**	1 mL (100/box)
	30 mg	8B-S123-TBJ	3 mL (50/box)
	60 mg	8B-S123-UBJ	3 mL (50/box)
	100 mg	8B-S123-EBJ	3 mL (50/box)
	100 mg	8B-S123-ECH	6 mL (30/box)
	200 mg	8B-S123-FBJ	3 mL (50/box)
	200 mg	8B-S123-FCH	6 mL (30/box)
	500 mg	8B-S123-HBJ	3 mL (50/box)
	500 mg	8B-S123-HCH	6 mL (30/box)
Giga™ Tube			
	500 mg	8B-S123-HDG	12 mL (20/box)
	1 g	8B-S123-JDG	12 mL (20/box)
	1 g	8B-S123-JEG	20 mL (20/box)
	2 g	8B-S123-KEG	20 mL (20/box)
	5 g	8B-S123-LFF	60 mL (16/box)
96-Well Plate			
	10 mg	8E-S123-AGB	2 Plates/Box
	30 mg	8E-S123-TGB	2 Plates/Box
	60 mg	8E-S123-UGB	2 Plates/Box
96-Well Microelution Plate			
	2 mg	8M-S123-4GA	ea

Strata-X-AW

Format	Sorbent Mass	Part Number	Unit
Tube			
	30 mg	8B-S038-TAK**	1 mL (100/box)
	30 mg	8B-S038-TBJ	3 mL (50/box)
	60 mg	8B-S038-UBJ	3 mL (50/box)
	100 mg	8B-S038-EBJ	3 mL (50/box)
	100 mg	8B-S038-ECH	6 mL (30/box)
	200 mg	8B-S038-FBJ	3 mL (50/box)
	200 mg	8B-S038-FCH	6 mL (30/box)
	500 mg	8B-S038-HBJ	3 mL (50/box)
	500 mg	8B-S038-HCH	6 mL (30/box)
Giga™ Tube			
	500 mg	8B-S038-HDG	12 mL (20/box)
	1 g	8B-S038-JDG	12 mL (20/box)
	1 g	8B-S038-JEG	20 mL (20/box)
	5 g	8B-S038-LFF	60 mL (16/box)
96-Well Plate			
	10 mg	8E-S038-AGB	2 Plates/Box
	30 mg	8E-S038-TGB	2 Plates/Box
	60 mg	8E-S038-UGB	2 Plates/Box
96-Well Microelution Plate			
	2 mg	8M-S038-4GA	ea

Strata™X
Polymeric SPE

Strata-XL-CW

Format	Sorbent Mass	Part Number	Unit
Tube			
	30 mg	8B-S052-TAK	1 mL (100/box)
	60 mg	8B-S052-UBJ	3 mL (50/box)
	100 mg	8B-S052-EBJ	3 mL (50/box)
	100 mg	8B-S052-ECH	6 mL (30/box)
	200 mg	8B-S052-FBJ	3 mL (50/box)
	200 mg	8B-S052-FCH	6 mL (30/box)
	500 mg	8B-S052-HBJ	3 mL (50/box)
	500 mg	8B-S052-HCH	6 mL (30/box)
Giga Tube			
	2 g	8B-S052-KEG	20 mL (20/box)
96-Well Plate			
	30 mg	8E-S052-TGB	2 Plates/Box

Strata-XL-A

Format	Sorbent Mass	Part Number	Unit
Tube			
	30 mg	8B-S053-TAK	1 mL (100/box)
	60 mg	8B-S053-UBJ	3 mL (50/box)
	100 mg	8B-S053-EBJ	3 mL (50/box)
	100 mg	8B-S053-ECH	6 mL (30/box)
	200 mg	8B-S053-FBJ	3 mL (50/box)
	200 mg	8B-S053-FCH	6 mL (30/box)
	500 mg	8B-S053-HCH	6 mL (30/box)
Giga Tube			
	2 g	8B-S053-KEG	20 mL (20/box)
	5 g	8B-S053-LFF	60 mL (16/box)
	10 g	8B-S053-MFF	60 mL (16/box)
96-Well Plate			
	30 mg	8E-S053-TGB	2 Plates/Box

Strata-XL-AW

Format	Sorbent Mass	Part Number	Unit
Tube			
	30 mg	8B-S051-TAK	1 mL (100/box)
	60 mg	8B-S051-UBJ	3 mL (50/box)
	100 mg	8B-S051-EBJ	3 mL (50/box)
	100 mg	8B-S051-ECH	6 mL (30/box)
	200 mg	8B-S051-FBJ	3 mL (50/box)
	200 mg	8B-S051-FCH	6 mL (30/box)
	500 mg	8B-S051-HCH	6 mL (30/box)
Giga Tube			
	2 g	8B-S051-KEG	20 mL (20/box)

Ordering Information

Strata™-X-Drug B

Format	Sorbent Mass	Part Number	Unit
Tube			
	10 mg	8B-S128-AAK	1 mL (100/box)
	30 mg	8B-S128-TAK	1 mL (100/box)
	30 mg	8B-S128-TBJ	3 mL (50/box)
	60 mg	8B-S128-UBJ	3 mL (50/box)
	60 mg	8B-S128-UCH	6 mL (30/box)
	60 mg	8B-S128-UCL	6 mL (200/bag)
Giga™ Tube			
	100 mg	8B-S128-EDG	12 mL (20/box)
96-Well Plate			
	10 mg	8E-S128-AGB	2 Plates/box
	30 mg	8E-S128-TGB	2 Plates/box
	60 mg	8E-S128-UGB	2 Plates/box

Strata-X-Drug B Plus

Format	Sorbent Mass	Part Number	Unit
96-Well Plate			
	10 mg	8E-S128-AGB-P	2 Plates/box
	30 mg	8E-S128-TGB-P	2 Plates/box

Strata™-X Polymeric SPE

Strata-X-Drug N

Format	Sorbent Mass	Part Number	Unit
Tube			
	30 mg	8B-S129-TAK	1 mL (100/box)
	30 mg	8B-S129-TBJ	3 mL (50/box)
	60 mg	8B-S129-UBJ	3 mL (50/box)
	60 mg	8B-S129-UCH	6 mL (30/box)
	60 mg	8B-S129-UCL	6 mL (200/bag)
	100 mg	8B-S129-ECH	6 mL (30/box)
96-Well Plate			
	10 mg	8E-S129-AGB	2 Plates/box
	30 mg	8E-S129-TGB	2 Plates/box

Strata™ Solid Phase Extraction

C18-E

Format	Sorbent Mass	Part Number	Unit
Tube			
	50 mg	8B-S001-DAK	1 mL (100/box)
	100 mg	8B-S001-EAK**	1 mL (100/box)
	100 mg	8B-S001-EBJ	3 mL (50/box)
	200 mg	8B-S001-FBJ**	3 mL (50/box)
	200 mg	8B-S001-FCH	6 mL (30/box)
	500 mg	8B-S001-HBJ	3 mL (50/box)
	500 mg	8B-S001-HCH	6 mL (30/box)
	1 g	8B-S001-JEG	20 mL (20/box)
Giga™ Tube			
	500 mg	8B-S001-HDG	12 mL (20/box)
	2 g	8B-S001-KDG	12 mL (20/box)
	5 g	8B-S001-LEG	20 mL (20/box)
	10 g	8B-S001-MFF	60 mL (16/box)
	20 g	8B-S001-VFF	60 mL (16/box)
	50 g	8B-S001-YSN	150 mL (8/box)
	70 g	8B-S001-ZSN	150 mL (8/box)
96-Well Plate			
	25 mg	8E-S001-CGB	2 Plates/Box
	50 mg	8E-S001-DGB	2 Plates/Box
	100 mg	8E-S001-EGB	2 Plates/Box

C8

Format	Sorbent Mass	Part Number	Unit
Tube			
	100 mg	8B-S005-EAK	1 mL (100/box)
	200 mg	8B-S005-FBJ	3 mL (50/box)
	500 mg	8B-S005-HBJ	3 mL (50/box)
	500 mg	8B-S005-HCH	6 mL (30/box)
	1 g	8B-S005-JCH	6 mL (30/box)
Giga™ Tube			
	2 g	8B-S005-KDG	12 mL (20/box)
	5 g	8B-S005-LEG	20 mL (20/box)
	10 g	8B-S005-MFF	60 mL (16/box)
96-Well Plate			
	25 mg	8E-S005-CGB	2 Plates/Box

C18-U

Format	Sorbent Mass	Part Number	Unit
Tube			
	100 mg	8B-S002-EAK	1 mL (100/box)
	200 mg	8B-S002-FBJ	3 mL (50/box)
	500 mg	8B-S002-HBJ	3 mL (50/box)
	500 mg	8B-S002-HCH	6 mL (30/box)
	1 g	8B-S002-JCH	6 mL (30/box)
96-Well Plate			
	50 mg	8E-S002-DGB	2 Plates/Box
	100 mg	8E-S002-EGB	2 Plates/Box

C18-T

Format	Sorbent Mass	Part Number	Unit
Tube			
	100 mg	8B-S004-EAK	1 mL (100/box)
	200 mg	8B-S004-FBJ	3 mL (50/box)
	500 mg	8B-S004-HBJ	3 mL (50/box)
	500 mg	8B-S004-HCH	6 mL (30/box)
	1 g	8B-S004-JCH	6 mL (30/box)
96-Well Plate			
	50 mg	8E-S004-DGB	2 Plates/Box

Phenyl

Format	Sorbent Mass	Part Number	Unit
Tube			
	100 mg	8B-S006-EAK	1 mL (100/box)
	200 mg	8B-S006-FBJ	3 mL (50/box)
	500 mg	8B-S006-HBJ	3 mL (50/box)
	500 mg	8B-S006-HCH	6 mL (30/box)
	1 g	8B-S006-JCH	6 mL (30/box)
96-Well Plate			
	25 mg	8E-S006-CGB	2 Plates/Box
	100 mg	8E-S006-EGB	2 Plates/Box

Ordering Information

Strata™ Solid Phase Extraction

Silica (Si-1)

Format	Sorbent Mass	Part Number	Unit
Tube			
	100 mg	8B-S012-EAK**	1 mL (100/box)
	200 mg	8B-S012-FBJ	3 mL (50/box)
	500 mg	8B-S012-HBJ**	3 mL (50/box)
	500 mg	8B-S012-HCH	6 mL (30/box)
	1 g	8B-S012-JCH**	6 mL (30/box)
Giga™ Tube			
	500 mg	8B-S012-HDG	12 mL (20/box)
	1 g	8B-S012-JDG	12 mL (20/box)
	2 g	8B-S012-KDG	12 mL (20/box)
	5 g	8B-S012-LEG	20 mL (20/box)
	10 g	8B-S012-MFF	60 mL (16/box)
	20 g	8B-S012-VFF	60 mL (16/box)
96-Well Plate			
	50 mg	8E-S012-DGB	2 Plates/Box
	100 mg	8E-S012-EGB	2 Plates/Box

NH_2/WAX

Format	Sorbent Mass	Part Number	Unit
Tube			
	100 mg	8B-S009-EAK	1 mL (100/box)
	200 mg	8B-S009-FBJ	3 mL (50/box)
	500 mg	8B-S009-HBJ	3 mL (50/box)
	500 mg	8B-S009-HCH	6 mL (30/box)
	1 g	8B-S009-JCH	6 mL (30/box)
Giga Tube			
	500 mg	8B-S009-HDG	12 mL (20/box)
	2 g	8B-S009-KDG	12 mL (20/box)
	5 g	8B-S009-LEG	20 mL (20/box)
	10 g	8B-S009-MFF	60 mL (16/box)
	20 g	8B-S009-VFF	60 mL (16/box)
96-Well Plate			
	25 mg	8E-S009-CGB	2 Plates/Box
	50 mg	8E-S009-DGB	2 Plates/Box
	100 mg	8E-S009-EGB	2 Plates/Box

Cyano (CN)

Format	Sorbent Mass	Part Number	Unit
Tube			
	100 mg	8B-S007-EAK	1 mL (100/box)
	200 mg	8B-S007-FBJ	3 mL (50/box)
	500 mg	8B-S007-HBJ	3 mL (50/box)
	500 mg	8B-S007-HCH	6 mL (30/box)
	1 g	8B-S007-JCH	6 mL (30/box)
Giga Tube			
	2 g	8B-S007-KDG	12 mL (20/box)
96-Well Plate			
	50 mg	8E-S007-DGB	2 Plates/Box

SAX (strong anion-exchange)

Format	Sorbent Mass	Part Number	Unit
Tube			
	100 mg	8B-S008-EAK	1 mL (100/box)
	100 mg	8B-S008-EBJ	3 mL (50/box)
	200 mg	8B-S008-FBJ	3 mL (50/box)
	500 mg	8B-S008-HBJ	3 mL (50/box)
	500 mg	8B-S008-HCH	6 mL (30/box)
	1 g	8B-S008-JCH	6 mL (30/box)
Giga™ Tube			
	500 mg	8B-S008-HDG	12 mL (20/box)
	2 g	8B-S008-KDG	12 mL (20/box)
	5 g	8B-S008-LEG	20 mL (20/box)
	20 g	8B-S008-VFF	60 mL (16/box)
96-Well Plate			
	25 mg	8E-S008-CGB	2 Plates/Box
	50 mg	8E-S008-DGB	2 Plates/Box
	100 mg	8E-S008-EGB	2 Plates/Box

WCX (weak cation-exchange)

Format	Sorbent Mass	Part Number	Unit
Tube			
	100 mg	8B-S027-EAK	1 mL (100/box)
	200 mg	8B-S027-FBJ	3 mL (50/box)
	500 mg	8B-S027-HBJ	3 mL (50/box)
	500 mg	8B-S027-HCH	6 mL (30/box)
	1 g	8B-S027-JCH	6 mL (30/box)
Giga Tube			
	2 g	8B-S027-KDG	12 mL (20/box)
	5 g	8B-S027-LEG	20 mL (20/box)
96-Well Plate			
	25 mg	8E-S027-CGB	2 Plates/Box
	50 mg	8E-S027-DGB	2 Plates/Box

SCX (strong cation-exchange)

Format	Sorbent Mass	Part Number	Unit
Tube			
	100 mg	8B-S010-EAK	1 mL (100/box)
	100 mg	8B-S010-EBJ	3 mL (50/box)
	200 mg	8B-S010-FBJ	3 mL (50/box)
	500 mg	8B-S010-HBJ	3 mL (50/box)
	500 mg	8B-S010-HCH	6 mL (30/box)
	1 g	8B-S010-JCH	6 mL (30/box)
Giga Tube			
	2 g	8B-S010-KDG	12 mL (20/box)
	5 g	8B-S010-LEG	20 mL (20/box)
	10 g	8B-S010-MFF	60 mL (16/box)
	20 g	8B-S010-VFF	60 mL (16/box)
96-Well Plate			
	25 mg	8E-S010-CGB	2 Plates/Box
	50 mg	8E-S010-DGB	2 Plates/Box
	100 mg	8E-S010-EGB	2 Plates/Box

Ordering Information

Strata™ Solid Phase Extraction

Screen-C

Format	Sorbent Mass	Part Number	Unit
Tube			
	100 mg	8B-S016-EAK**	1 mL (100/box)
	100 mg	8B-S016-EBJ	3 mL (50/box)
	150 mg	8B-S016-SBJ	3 mL (50/box)
	150 mg	8B-S016-SCH	6 mL (30/box)
	200 mg	8B-S016-FBJ	3 mL (50/box)
	200 mg	8B-S016-FCH	6 mL (30/box)
	300 mg	8B-S016-RBJ	3 mL (50/box)
	300 mg	8B-S016-RCH	6 mL (30/box)
	500 mg	8B-S016-HCH	6 mL (30/box)
96-Well Plate			
	50 mg	8E-S016-DGB	2 Plates/Box

ABW

Format	Sorbent Mass	Part Number	Unit
Tube			
	200 mg	8B-S030-FBJ	3 mL (50/box)
	1 g	8B-S030-JCH	6 mL (30/box)
Giga Tube			
	2 g	8B-S030-KDG	12 mL (20/box)
	5 g	8B-S030-LEG	20 mL (20/box)

Screen-A

	Sorbent Mass	Part Number	Unit
Tube			
	100 mg	8B-S019-EAK	1 mL (100/box)
	200 mg	8B-S019-FBJ	3 mL (50/box)
	200 mg	8B-S019-FCH	6 mL (30/box)
	500 mg	8B-S019-HCH	6 mL (30/box)

Screen-C GF

Format	Sorbent Mass	Part Number	Unit
Tube			
	500 mg	8B-S026-HBJ	3 mL (50/box)

Basic Screen Large Reservoir Cartridge (LRC)

Format	Sorbent Mass	Part Number	Unit
Tube			
Large Reservoir Cartridge	200 mg	8B-S327-FTH	10 mL (30/box)

Alumina-N (AL-N)

Format	Sorbent Mass	Part Number	Unit
Tube			
	500 mg	8B-S313-HBJ	3 mL (50/box)
	1 g	8B-S313-JCH	6 mL (30/box)
Giga™ Tube			
	2 g	8B-S313-KDG	12 mL (20/box)

Florisil® (FL)

Format	Sorbent Mass	Part Number	Unit
Tube			
	500 mg	8B-S013-HBJ	3 mL (50/box)
	500 mg	8B-S013-HCH	6 mL (30/box)
	1 g	8B-S013-JCH	6 mL (30/box)
	2.5 g	8B-S013-8CH	6 mL (30/box)
Giga Tube			
	2 g	8B-S013-KDG	12 mL (20/box)
	5 g	8B-S013-LEG	20 mL (20/box)
	10 g	8B-S013-MFF	60 mL (16/box)

Eco-Screen

Format	Sorbent Mass	Part Number	Unit
Tube			
	1 g	8B-S046-JBJ	3 mL (50/box)

Melamine

Format	Sorbent Mass	Part Number	Unit
Tube			
	100 mg	8B-S049-EBJ	3 mL (50/box)
	200 mg	8B-S049-FBJ	3 mL (50/box)

GCB (graphitized carbon black)

Format	Sorbent Mass	Part Number	Unit
Tube			
	200 mg	8B-S528-FCH	6 mL (30/box)
	500 mg	8B-S528-HCH	6 mL (30/box)

PFAS (WAX/GCB)

Format	Sorbent Mass	Part Number	Unit
Tube			
	200 mg / 50 mg	CS0-9207	6 mL (30/box)
	500 mg/ 50 mg	CS0-9208	6 mL (200/box)
	50 mg / 200 mg	CS0-9214	6 mL (300/box)

Activated Carbon

Format	Sorbent Mass	Part Number	Unit
Tube			
	400 mg	CS0-9210	Pass Through Cartridge (50/box)
	2 g	CS0-9209	6 mL (30/box)

Ordering Information

Strata™ Solid Phase Extraction

SDB-L (styrene-divinylbenzene)

Format	Sorbent Mass	Part Number	Unit
Tube			
	100 mg	8B-S014-EAK	1 mL (100/box)
	200 mg	8B-S014-FBJ	3 mL (50/box)
	200 mg	8B-S014-FCH	6 mL (30/box)
	500 mg	8B-S014-HBJ	3 mL (50/box)
	500 mg	8B-S014-HCH	6 mL (30/box)
	1 g	8B-S014-JCH	6 mL (30/box)
Giga™ Tube			
	10 g	8B-S014-MFF	60 mL (16/box)
96-Well Plate			
	50 mg	8E-S014-DGB	2 Plates/Box

EPH (Extractable Petroleum Hydrocarbons)

Format	Sorbent Mass	Part Number	Unit
Tube			
	500 mg	8B-S031-HBJ	3 mL (50/box)
Giga Tube			
	5 g	8B-S031-LEG	20 mL (20/box)
Teflon® Giga Tube			
	5 g	8B-S031-LEG-T	20 mL (20/box)

PAH (Polycyclic Aromatic Hydrocarbons)

Format	Sorbent Mass	Part Number	Unit
Tube			
	500 mg	8B-S130-HCH	6 mL (30/box)
	750 mg	8B-S130-WCH	6 mL (30/box)
	1.5 g	8B-S130-7CH	6 mL (30/box)

Sodium Sulfate

Format	Sorbent Mass	Part Number	Unit
Tube			
	1 g	8B-S124-JCH	6 mL (30/box)
Giga Tube			
	5 g	8B-S124-LEG	20 mL (20/box)

Round Well Collection Plates (polypropylene)

Part No.	Well Bottom	Well Volume	Unit	Suggested Sealing Mats
AH0-7279	Round	1 mL	50/pk	AH0-8631 AH0-8632
AH0-8636	Round	2 mL	50/pk	AH0-8633 AH0-8634

Square Well Collection Plates (polypropylene)

Part No.	Well Bottom	Well Volume	Unit	Suggested Sealing Mats
AH0-7192	Conical	350 µL	50/pk	AH0-8597 AH0-8598 AH0-8199 AH0-7195
AH0-7193	Conical	1 mL	50/pk	AH0-8597 AH0-8598 AH0-8199 AH0-7195
AH0-7194	Conical	2 mL	50/pk	AH0-8597 AH0-8598 AH0-8199 AH0-7195
AH0-8635	Round-Conical	2 mL	50/pk	AH0-8597 AH0-8598 AH0-8199 AH0-7195

Ordering Information

Presston 100 Manifold

96-Well Positive Pressure Manifold	
Part No.	**Description**
AH0-9334	Presston 100 Positive Pressure Manifold, 96-Well Plate
AH0-9342	Presston 100 Positive Pressure Manifold, 1 mL Tube Complete Assembly
AH0-9347	Presston 100 Positive Pressure Manifold, 3 mL Tube Complete Assembly
AH0-9343	Presston 100 Positive Pressure Manifold, 6 mL Tube Complete Assembly

The Presston 100 96-Well Positive Pressure Manifold can also process 1, 3, and 6 mL tubes using the following adapter kits.

Phenomenex warrants that for a period of 12 months following delivery, the Presston 100 Positive Pressure Manifold you have purchased will perform in accordance with the published specifications and will be free from defects in materials or workmanship. In the event that the Presston 100 Positive Pressure Manifold does not meet this warranty, Phenomenex will repair or replace defective parts.

Please visit **www.phenomenex.com/Presston** for complete warranty information.

Presston 100 Tube Adapter Kits

Tube Adapter Kits (for AH0-9334)	
Part No.	**Description**
AH0-9344	1 mL Tube Adapter Kit
AH0-9345	3 mL Tube Adapter Kit
AH0-9346	6 mL Tube Adapter Kit

Ordering Information

Kinetex™
Core-Shell Technology

Kinetex Columns

2.6 µm Minibore Columns (mm)					SecurityGuard™ ULTRA Cartridges‡	
Phases	30 x 2.1	50 x 2.1	75 x 2.1	100 x 2.1	150 x 2.1	3/pk
Biphenyl	00A-4622-AN	00B-4622-AN	—	00D-4622-AN	00F-4622-AN	AJ0-9209
XB-C18	00A-4496-AN	00B-4496-AN	00C-4496-AN	00D-4496-AN	00F-4496-AN	AJ0-8782
C8	00A-4497-AN	00B-4497-AN	00C-4497-AN	00D-4497-AN	00F-4497-AN	AJ0-8784

for 2.1 mm ID

2.6 µm Analytical Columns (mm)					SecurityGuard™ ULTRA Cartridges‡	
Phases	30 x 4.6	50 x 4.6	75 x 4.6	100 x 4.6	150 x 4.6	3/pk
C18	00A-4462-E0	00B-4462-E0	00C-4462-E0	00D-4462-E0	00F-4462-E0	AJ0-8788

for 4.6 mm ID

5 µm Minibore Columns (mm)			SecurityGuard™ ULTRA Cartridges‡
Phases	50 x 2.1	100 x 2.1	3/pk
C8	00B-4608-AN	00D-4608-AN	AJ0-8784

for 2.1 mm ID

5 µm Analytical Columns (mm)					SecurityGuard™ ULTRA Cartridges‡
Phases	50 x 4.6	100 x 4.6	150 x 4.6	250 x 4.6	3/pk
C8	00B-4608-E0	00D-4608-E0	00F-4608-E0	00G-4608-E0	AJ0-8770

for 4.6 mm ID

SecurityGuard ULTRA Cartridges required holder, Part No.: AJ0-9000.

Zebron™
GC Products

Zebron GC Columns

ZB-MultiResidue™ -1			
ID(mm)	df(µm)	Temp. Limits °C	Part No.
20-Meter			
0.18	0.18	-60 to 320/340	7FD-G016-08
30-Meter			
0.25	0.25	-60 to 320/340	7HG-G016-11
0.32	0.25	-60 to 320/340	7HM-G016-11
0.32	0.50	-60 to 320/340	7HM-G016-17
0.53	0.50	-60 to 320/340	7HK-G016-17

Tools and Resources

The Complete Guide

to Solid Phase Extraction (SPE)

A method development and application guide

www.phenomenex.com

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