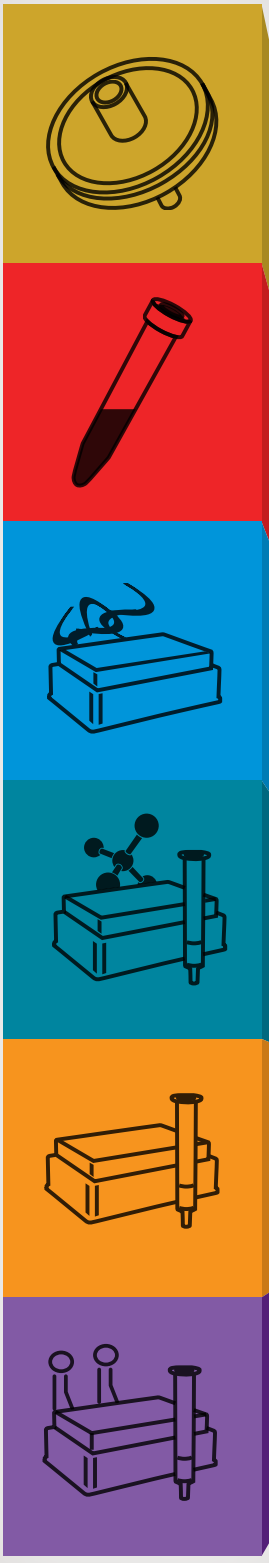


SAMPLE PREPARATION

MADE SIMPLE

Selection and Users Guide

Filtration

QuEChERS

Protein Precipitation

Solid Phase Extraction

Simplified Liquid Extraction

Phospholipid Removal / Protein Precipitation

phenomenex®

. . . breaking with tradition℠

www.phenomenex.com/SamplePrep

Choose Your Sample Preparation Solution

Sample preparation is crucial in achieving desired LC or GC analytical results. Sample matrix effects can result in an array of interferences which can lead to poor chromatography as well as instrumentation drawbacks, hindering your approach and goal for the analysis.

Filtration

A mechanical or physical operation which is used for the separation of solids from fluids by interposing a medium through which only the fluid can pass.

Protein Precipitation

Proteinaceous samples require a protein precipitation step to promote protein aggregation which allows their removal from the solution/sample.

Phospholipid Removal / Protein Precipitation

Biological samples require the removal of endogenous phospholipids and proteins as they are a primary source of ion suppression and resulting matrix effects.

QuEChERS

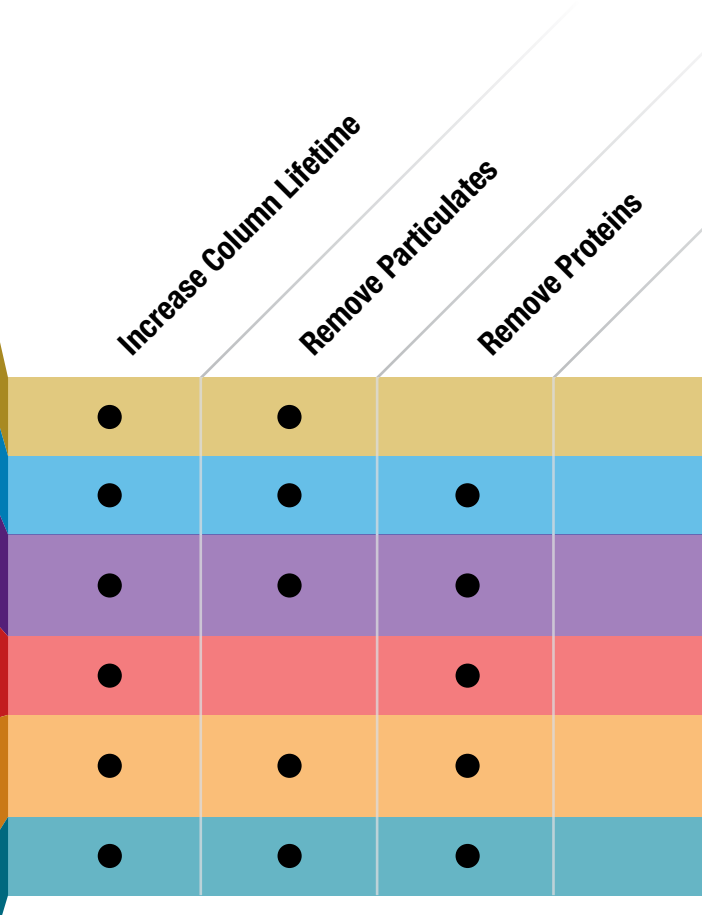
A streamlined approach that makes it easier and less expensive for analytical chemists to examine residues in food. The name is a portmanteau word formed from “Quick, Easy, Cheap, Effective, Rugged, and Safe”.

Simplified Liquid Extraction

Simplified Liquid Extraction (SLE) is a FASTER, EASIER, and MORE RELIABLE way to perform liquid-liquid extraction. Unwanted interferences can be removed such as proteins, salts and phospholipids.

Solid Phase Extraction

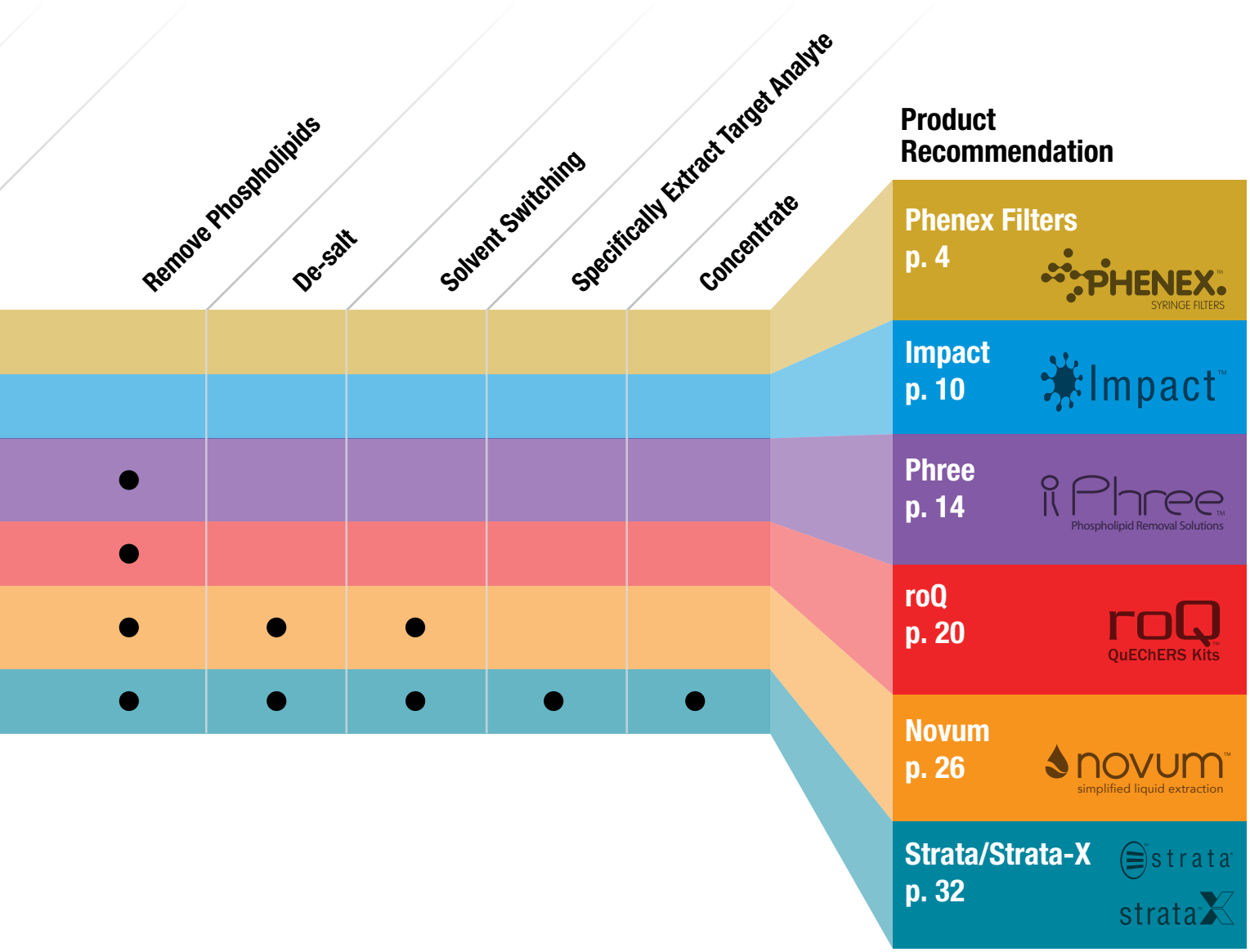
A separation process that is used to remove compounds from a mixture, using their physical and chemical properties; analytical laboratories use solid phase extraction to concentrate and purify samples for analysis from a wide variety of matrices including urine, blood, water, beverages, soil, and animal tissue.



guarantee

Our Promise

We guarantee that if Phenomenex products in this guide do not provide at least an equivalent separation as compared to other products of the same phase and dimensions, send in your comparative data within 45 days and keep the Phenomenex product for FREE!



Filtration

Filtering your sample eliminates contaminants prior to your column or system

Filtration can:

- Clean samples
- Extend column lifetime
- Decrease the incidence of high pressures (caused by contaminant and particulate build up at the head of the column)
- Save your system's rotor seals, valve stators, and several other moving components from unnecessary wear and damage that can result from un-dissolved sample particulates grinding away at the system components

www.phenomenex.com/Phenex

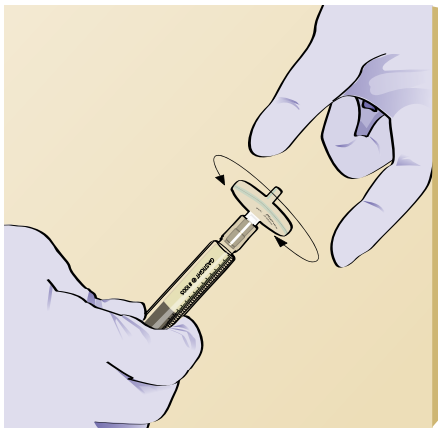
How to Use Syringe Filters

PHENEX™ SYRINGE FILTERS

Phenex Instructions

Loading

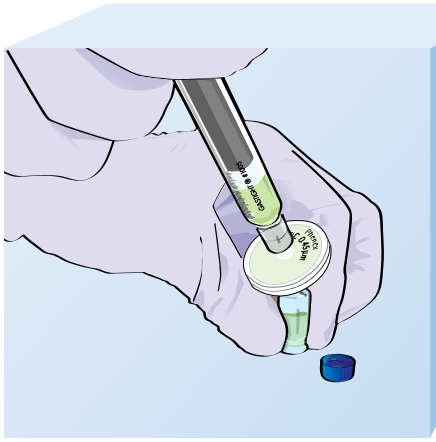
1. Fill the syringe with the liquid sample. Allow a small amount of air (approximately 10 % of the sample volume) to enter the syringe. The air is used as a purge to minimize fluid retention when expelling the sample from the syringe (Step 5 below).



Assembly

2. Select the correct syringe filter per this guide (Refer to page 9).

3. Twist the luer lock end of the filter securely onto the syringe. (Caution: Do not use syringes without a matching luer lock, otherwise the pressure applied may cause the filter to come off unexpectedly).



Filtration

4. To begin filtration, direct the syringe filter outlet tip into the collection vessel and apply gentle pressure to the syringe plunger. (Caution: Small syringes can generate excessive pressures).

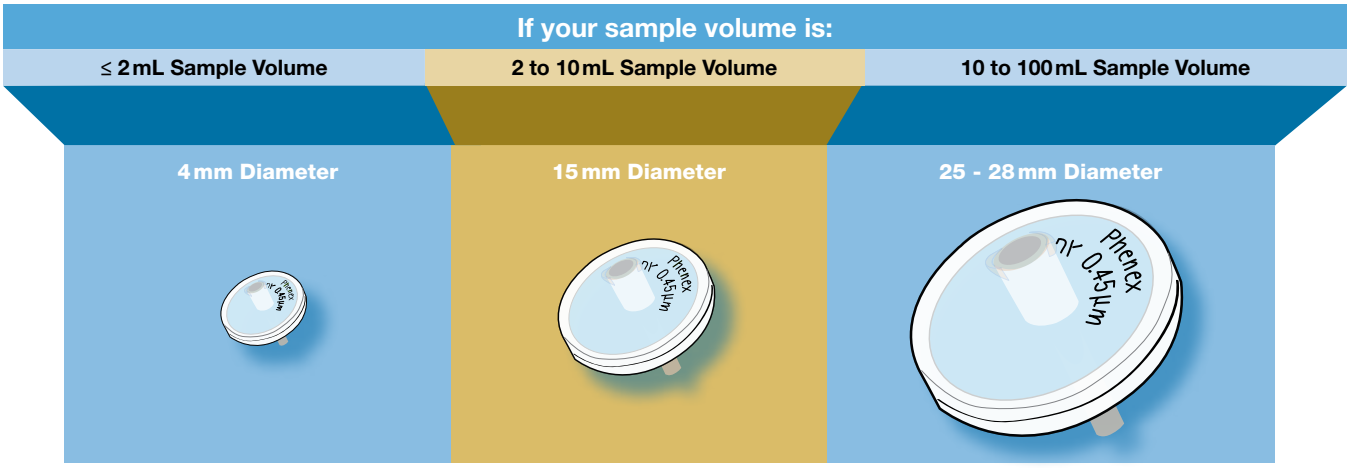
5. Push the liquid sample, as well as the remaining air, through the syringe filter to maximize sample recovery.

Which Filter Membrane Is Right for Me?

Phenex syringe filters are offered in a variety of chemically compatible membranes that are ideal for any application. Proper membrane and size selection are the keys to choosing the best product to maintain the integrity of your sample components as well as to protect your system from particulate contamination.

Select Your Filter in Three EASY Steps

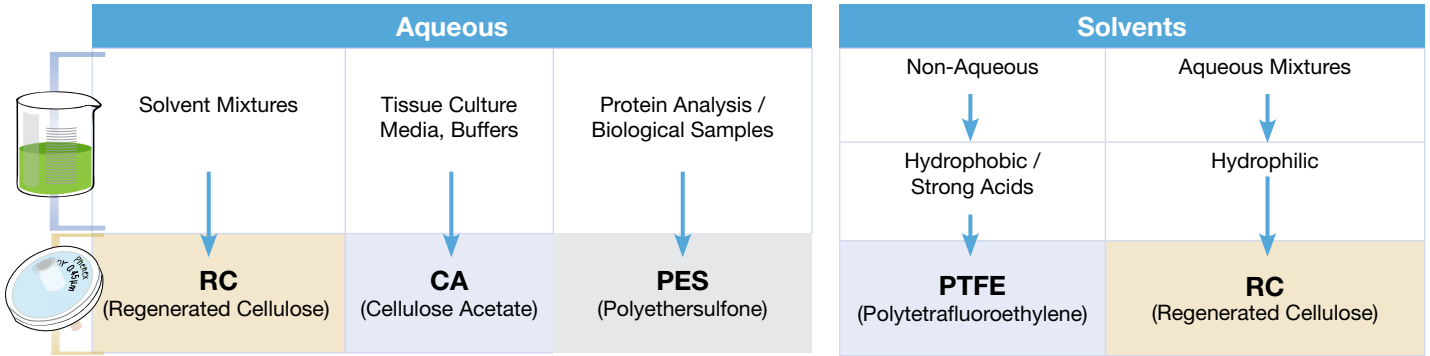
1 Select filter diameter based on sample volume



2 Select pore size based on the nature of your sample and chromatographic method

Sample Description	Recommended Filter Pore Size
General aqueous or mixed organic samples prior to LC analysis with columns packed with > 3 µm particles. General clarification of GC, SFC, CE, and GPC samples.	0.45 µm
Viscous samples or samples containing high levels of particulate matter.	
General aqueous or mixed organic samples prior to LC analysis with columns packed with ≤ 3 µm particles. Removal of fine particulate matter prior to GC, SFC, CE, and GPC samples.	0.20 µm
Gas samples prior to GC. Liquid samples prior to UHPLC or LC/MS. Other particulate-sensitive methods.	
Viscous samples such as serum, plasma or other biological matrices. Solutions with high particulate load such as some environmental, biofuels or food and beverage applications.	Glass Fiber Filter with 0.45 µm filter membrane

3 Select filter membrane according to the characteristics of your sample and filtering objective



PHENEX™ SYRINGE FILTERS

Two Choices for Most Applications

1 For Aqueous and Mixed Organic Solutions

Regenerated Cellulose (RC)

Hydrophilic Regenerated Cellulose filter membranes are compatible with a very broad range of aqueous and mixed-organic solutions, making them one of the most universal filter materials used prior to chromatography. Phenex-RC filters also exhibit fast-flow and ultra-low protein and non-specific binding characteristics. Due to the beneficial material characteristics, Phenex-RC membranes are broadly recommended as an excellent general purpose/high-performance sample filter for most applications.

2 For 100% Organic Solutions

Polytetrafluoroethylene (PTFE, Teflon®)

PTFE is an inherently hydrophobic membrane, excellent for filtration of organic-based, highly acidic or basic samples and solvents. Widely used in chromatography, it is especially well suited for the clarification of non-aqueous samples. Although this membrane is hydrophobic, it can be made hydrophilic by wetting the membrane with alcohol and then flushing with deionized water.

Or Consider

Additional Syringe Filter Membranes

Membrane Types	Recommended Uses
PES (Polyethersulfone)	Polyethersulfone membranes exhibit very fast-flow and ultra-low protein binding characteristics and are ideally suited for use in many life science clarification applications. Phenex-PES membranes typically offer better chemical resistance than cellulose acetate and are broadly recommended for filtering critical biological samples, tissue culture media, additives and buffers.
NY (Nylon)	Nylon has inherent hydrophilic characteristics and works well for filtration of many aqueous and mixed-organic samples. In combination with a glass pre-filter (Phenex-GF/NY), this membrane is excellent for the filtration of particle-laden samples, such as foods and beverages, environmental, biofuels, and dissolution samples. For applications that require low protein or non-specific binding characteristics, Phenomenex recommends Phenex-RC (Regenerated Cellulose) filters.
CA (Cellulose Acetate)	Cellulose Acetate (CA) membranes exhibit ultra-low protein binding and are broadly used in the filtration of biological samples. In combination with a glass pre-filter (Phenex-GF/CA), this membrane is excellent for filtration of tissue culture media, general biological sample filtration and clarification.
GF (Glass Fiber)	Glass Fiber (GF) filters are made of inert borosilicate glass and have a nominal 1.2 µm pore size. They are commonly used with highly viscous samples or samples containing high concentrations of particulate matter (e.g., food analysis, biological samples, soil samples, fermentation broth samples, removal of yeasts, molds, etc.). Glass Fiber filters can be used alone or in series with other Phenex filter membranes such as the 0.45 µm pore Phenex-RC filter to reduce clogging of the membrane and optimize flow.
PVDF (Polyvinylidene Fluoride)	Hydrophilic PVDF membrane provides high flow rates and throughput, low extractables, and broad chemical compatibility. This membrane binds less protein than nylon or PTFE membranes.

Syringe Filter Finder
Visit: **www.phenomenex.com/SyringeFilterFinder**

Recommendations Based on Your Industry

Environmental

Water, wastewater, soil and sludge, and pollution control samples are especially challenging. No matter the sample type, Phenex offers filtration products to meet your demanding requirements.

Pharmaceutical / Biotech

At every stage of the drug discovery process target compounds must be isolated, purified, and prepared prior to testing. Sample complexity in DMPK work can be even more challenging. Difficult samples such as serum, urine, and other physiological fluids are easily filtered and clarified using Phenex syringe filters.

Clinical / Toxicology

Removal of particulate matter to sub-micron levels is critical before any clinical sample is injected into an LC, GC or mass spectrometer. At every stage of toxicology, samples must be prepared prior to testing. In today's fast-paced environment, rapid and simple sample preparation is a must. Phenex is designed for higher flow rates and throughputs than those of competing products.

Food and Beverage

Food safety is more important than ever and decreasing detection limits are making analysis even more challenging. Accurate and reliable testing is critical to ensure food safety. Phenex filters are routinely used in preparation for analysis of pesticides, herbicides, fungicides, flavors, and fragrances. For samples with large amounts of particulate and/or large fibrous matter, use a glass fiber prefilter.

Application / Sample*	Recommended Filter**	First Alternative
LC and GC Sample Prep	RC	PTFE
Aggressive or Pure Organic Solvents	PTFE	RC
Protein Analysis / Biological Samples	PES	RC
High Particulate Loads	GF/NY	GF + RC
Environmental Methods	GF/NY	RC
Food and Beverage	GF/NY	RC
Clinical / Toxicology	RC	PES
Dissolution Testing	GF/NY	RC
Ion Chromatography	RC	PES
Trace Metals (ICP-MS, AAS)	RC	PES
Capillary Electrophoresis (CE)	RC	PES
Tissue Cultures, Media, Buffers	GF/CA	PES

* Removal of high particulate matter with a glass fiber prefilter is critical before any drug, tox, or dirty environmental sample is filtered to ensure the highest syringe filter membrane performance.

** For high load and particulate-laden samples you may consider placing a Glass Fiber (GF) prefilter, either integrated with the membrane as one unit (Phenex-GF/NY or -GF/CA) or in series with the membrane syringe filter of your choice.

Generally, 0.45 µm porosity filters are used to remove particulates from samples and mobile phase solutions. For sterile-filtration, a 0.20 µm porosity filter can be used.

Request a FREE Sample!
Visit: **www.phenomenex.com/freesample**

Ordering Information

PHENEX™ SYRINGE FILTERS

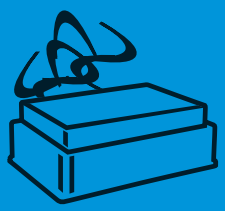
	4 mm Diameter for ≤ 2 mL sample volumes		15 mm Diameter for 2–10 mL sample volumes		25–28 mm Diameter for 10–100 mL sample volumes	
Membrane Type/Size	**Part No.**	**Unit**	**Part No.**	**Unit**	**Part No.**	**Unit**
0.20 µm						
Phenex-RC (Regenerated Cellulose)	AF0-3203-12	100/pk	AF0-2203-12	100/pk	AF0-8203-12 [5]	100/pk
	AF0-3203-52	500/pk	AF0-2203-52	500/pk	AF0-8203-52 [5]	500/pk
Phenex-PES [3] (Polyethersulfone)	—	—	—	—	AF0-8208-12 [7]	100/pk
	—	—	—	—	AF0-8208-52 [7]	500/pk
Phenex-PTFE [6] (Polytetrafluoroethylene)	AF0-3202-12	100/pk	AF0-2202-12	100/pk	AF0-1202-12	100/pk
	AF0-3202-52	500/pk	AF0-2202-52	500/pk	AF0-1202-52	500/pk
Phenex-NY (Nylon)	AF3-3207-12	100/pk	AF0-2207-12	100/pk	AF0-1207-12	100/pk
	AF3-3207-52	500/pk	AF0-2207-52	500/pk	AF0-1207-52	500/pk
Phenex-GF/NY [2] (Glass Fiber/Nylon)	An integrated syringe filter unit containing an inert borosilicate glass fiber prefilter and a Nylon (NY) membrane. Excellent for filtration of particle-laden samples, such as foods and beverages, environmental, biofuels, and dissolution samples. Use less hand pressure to filter even the most difficult samples. Outlet connection is luer lock.				AF0-1A47-12 [7]	100/pk
					AF0-1A47-52 [7]	500/pk
Phenex-PVDF (Polyvinylidene Fluoride)	—	—	AF6-5206-12	100/pk	AF6-6206-12	100/pk
	—	—	AF6-5206-52	500/pk	AF6-6206-52	500/pk
Phenex-GF/PVDF (Glass Fiber/Polyvinylidene Fluoride)	An integrated syringe filter unit containing an inert borosilicate glass fiber prefilter and a PVDF membrane. The hydrophilic PVDF membrane provides high flow rates and throughput, low extractables and broad chemical compatibility. This membrane binds less protein than nylon or PTFE membranes.				AF6-6C06-12	100/pk
					AF6-6C06-52	500/pk
Phenex-CA [4] (Cellulose Acetate)	—	—	—	—	AF0-8204-12 [7]	100/pk
	—	—	—	—	AF0-8204-52 [7]	500/pk
Phenex-GF/CA [2,3,4] (Glass Fiber/Cellulose Acetate)	**An integrated syringe filter unit containing an inert borosilicate glass fiber prefilter and a CA membrane. Excellent for filtration of tissue culture media, general biological sample filtration and clarification. Outlet connection is luer lock.**				AF0-8A09-12 [7]	100/pk
					AF0-8A09-52 [7]	500/pk
0.45 µm						
Phenex-RC (Regenerated Cellulose)	AF0-3103-12	100/pk	AF0-2103-12	100/pk	AF0-8103-12 [5]	100/pk
	AF0-3103-52	500/pk	AF0-2103-52	500/pk	AF0-8103-52 [5]	500/pk
Phenex-PES [3] (Polyethersulfone)	—	—	—	—	AF0-8108-12 [7]	100/pk
	—	—	—	—	AF0-8108-52 [7]	500/pk
Phenex-PTFE [6] (Polytetrafluoroethylene)	AF0-3102-12	100/pk	AF0-2102-12	100/pk	AF0-1102-12	100/pk
	AF0-3102-52	500/pk	AF0-2102-52	500/pk	AF0-1102-52	500/pk
Phenex-NY (Nylon)	AF3-3107-12	100/pk	AF0-2107-12	100/pk	AF0-1107-12	100/pk
	AF3-3107-52	500/pk	AF0-2107-52	500/pk	AF0-1107-52	500/pk
Phenex-GF/NY [2] (Glass Fiber/Nylon)	An integrated syringe filter unit containing an inert borosilicate glass fiber prefilter and a Nylon (NY) membrane. Excellent for filtration of particle-laden samples, such as foods and beverages, environmental, biofuels, and dissolution samples. Use less hand pressure to filter even the most difficult samples. Outlet connection is luer lock.				AF0-1B47-12 [7]	100/pk
					AF0-1B47-52 [7]	500/pk
Phenex-PVDF (Polyvinylidene Fluoride)	—	—	AF6-5106-12	100/pk	AF6-6106-12	100/pk
	—	—	AF6-5106-52	500/pk	AF6-6106-52	500/pk
Phenex-GF/PVDF (Glass Fiber/Polyvinylidene Fluoride)	An integrated syringe filter unit containing an inert borosilicate glass fiber prefilter and a PVDF membrane. The hydrophilic PVDF membrane provides high flow rates and throughput, low extractables and broad chemical compatibility. This membrane binds less protein than nylon or PTFE membranes.				AF6-6D06-12	100/pk
					AF6-6D06-52	500/pk
Phenex-GF/CA [2,3,4] (Glass Fiber/Cellulose Acetate)	**An integrated syringe filter unit containing an inert borosilicate glass fiber prefilter and a CA membrane. Excellent for filtration of tissue culture media, general biological sample filtration and clarification. Outlet connection is luer lock.**				AF0-8B09-12 [7]	100/pk
					AF0-8B09-52 [7]	500/pk
1.20 µm						
Phenex-GF [2,3] (Glass Fiber)	**Prefiltration of heavily contaminated or highly viscous samples. When used in-line preceding a membrane filter, clogging of the membrane filter is prevented and sample clean up is optimized. Outlet connection is luer lock.**				AF0-8515-12 [7]	100/pk
					AF0-8515-52 [7]	500/pk

1. Larger quantity purchases at significant savings are available.
2. Glass fiber filters are 28 mm diameter and made of borosilicate. They will remove 90 % of all particles > 1.2 µm.
3. Housing material is methacrylate butadiene styrene (MBS) polymerisate. Also known as Cyrolite®.
4. Cellulose acetate is surfactant-free.
5. 26 mm diameter.
6. Hydrophobic membrane. Can be made hydrophilic by pre-wetting with IPA.
7. 28 mm diameter.
8. Additional dimensions and membrane types are available, including sterile filters. Please contact your local Phenomenex technical consultant or distributor for availability or assistance.

Above syringe filters are non-sterile. Housing is made of medical-grade polypropylene (PP). Luer lock inlet/slip outlet connections unless otherwise indicated.

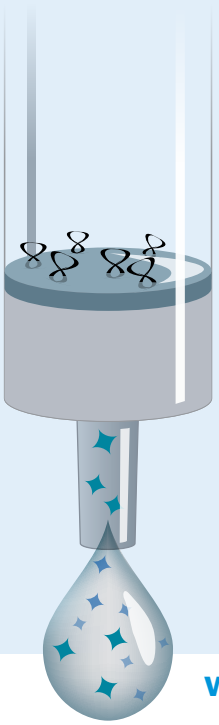
guarantee

If Phenex Syringe Filters do not perform as well or better than your current syringe filter product of similar membrane, diameter and pore size, return the product with comparative data within 45 days for a FULL REFUND.



Protein Precipitation

Protein precipitation is a quick and easy way to remove proteins from the sample using an organic solvent or a salt



- Typically used with plasma, whole blood, and other proteinaceous biological samples
- Proteins decrease HPLC/UHPLC column lifetime and can interfere with MS detector sensitivity

Protein precipitation is typically performed by adding 3 – 4 parts of Acetonitrile or other organic solvent to a sample. The organic solvent lowers the dielectric constant of the sample solution, increasing attraction between charged molecules which promotes protein aggregation. These aggregated proteins then crash out of solution and can be pulled to the bottom of a sample by centrifugal force.

www.phenomenex.com/Impact

Rapid Protein Precipitation Without the Complications

Impact™

Fast Analysis

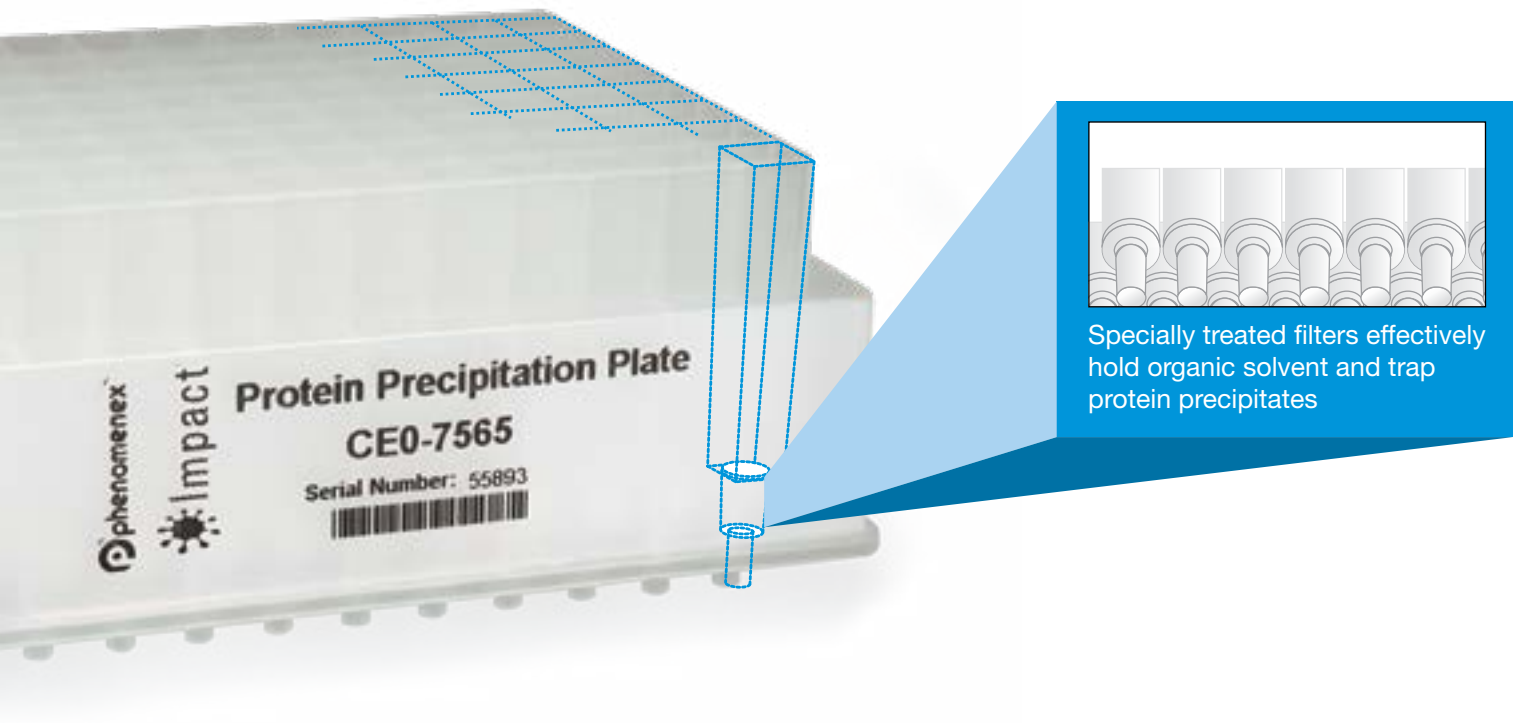
- Save time and increase efficiency by performing precipitation and filtration sequentially in the same plate
- Fast, easy to follow protocol; clean 96 samples in under 15 minutes
- Automatable process for higher productivity

Peace of Mind

- Filtering instead of pelleting precipitated protein ensures clean samples without additional transfer steps
- Avoid injecting protein onto your column resulting in longer column lifetime and improved chromatography

No More Filtrate Transfer Steps

- No manual or automated filtrate transfer steps required
- Reduce errors and risk of contamination



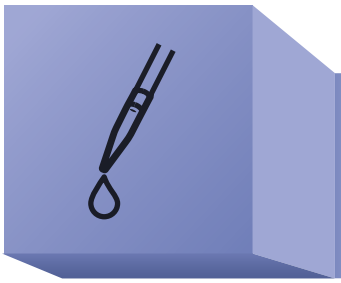
Impact protein precipitation plates with Solvent Shielding Technology™ offer a rapid and convenient way to remove proteins from plasma and tissue samples prior to analysis. The Solvent Shielding Technology design will withold organic solvents above the filter membranes for up to 25 minutes, allowing for direct in-well precipitation upon sample addition. The precipitate is then filtered out via vacuum, centrifuge or positive pressure resulting in a clean, protein depleted extract.

See How Impact Works
Visit: **www.phenomenex.com/impact**

One Simple Method!

Impact™

4 Quick Steps



STEP 01

Dispense*

Organic solvent into the wells of the Impact plate in a volume of 3 - 4x the volume of the intended plasma or tissue homogenate sample.

STEP 02

Add

Plasma or tissue homogenate directly and forcefully into the organic solvent, maintain a final ratio of 3:1 to 4:1 organic solvent:sample.

STEP 03

Vortex†

2 minutes at maximum possible speed, taking care not to allow solvent spillage. Sample can stand for up to 25 minutes.

STEP 04

Filter

Centrifuge

Place the Impact plate on top of a collection plate and centrifuge at 500 g for 5 minutes or until filtrate is collected.

Vacuum

Place the Impact plate onto a suitable 96-well sample manifold or robot. Ensure that a 96-well collection plate is positioned inside the manifold or under the Impact plate. Vacuum at 2 - 7 inch Hg for up to 5 minutes or until filtrate is collected.

Positive Pressure

Place the Impact plate on top of a collection plate and apply 2 - 5 psi using a positive pressure manifold.

* A 3:1 v/v ratio of organic solvent to biological sample will dilute your sample less. In contrast, a 4:1 v/v ratio of organic solvent to biological sample will ensure a more complete precipitation. A 4:1 v/v ratio is recommended when using methanol.

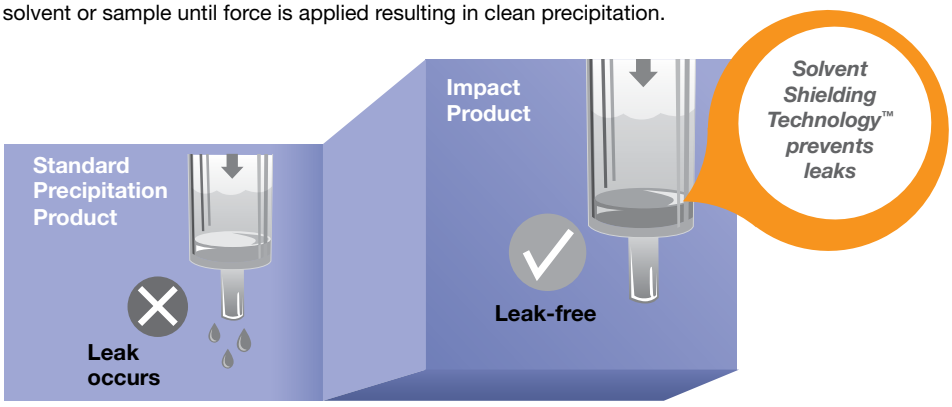
† When used with a liquid-handling instrument or automation, aspirate/dispense cycles may be used to promote in-tip mixing and precipitation. This will ensure complete precipitation and filtration. Vortexing is not necessary when in-tip precipitation is performed.

Designed to Eliminate the Problems of Conventional Filtration Products

Impact™

Leak-Free Protein Precipitation

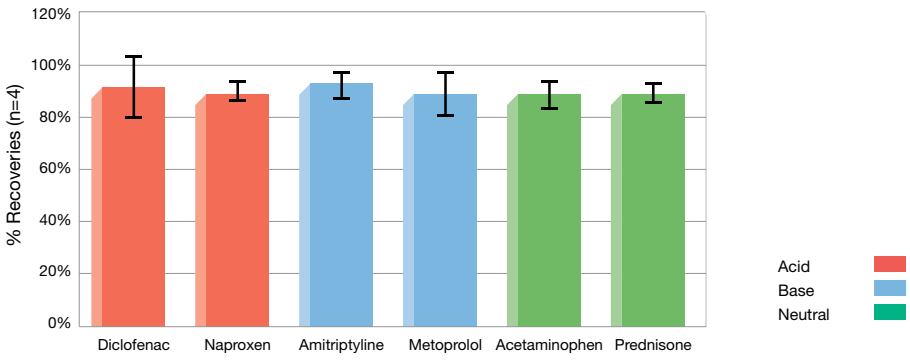
The oleophobic filters of the Impact products effectively hold organic solvent allowing the precipitation reaction to occur inside the plate/tube. Unlike conventional protein precipitation products, Impact will not leak solvent or sample until force is applied resulting in clean precipitation.



Can retain acetonitrile with no leaks for up to 25 minutes

High Recoveries of Acids, Bases, and Neutrals

Non-specific binding of analytes on the membrane surface leads to reduced analyte recovery. Impact has specially treated filters, which will not bind target analytes resulting in maximized recovery.

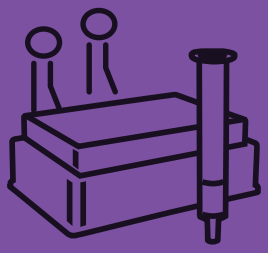


Ordering Information

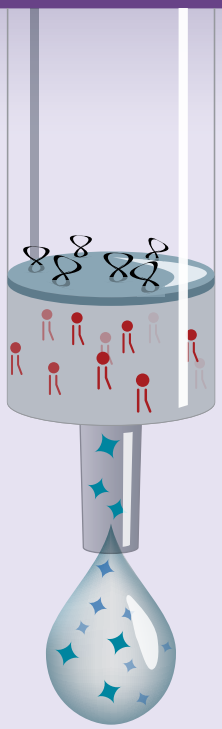
Part No.	Description	Unit
Impact Precipitation Products		
CE0-7565	Impact Protein Precipitation, Square Well, Filter Plate, 2 mL	2/pk
CE0-7566	Impact Protein Precipitation, Square Well, Long Drip, Filter Plate, 2 mL	2/pk
Impact Starter Kit for Protein Precipitation		
CE0-8201	Impact Protein Precipitation Plate (2 ea) Collection Plate 2 mL (2 ea) Sealing Mat, Santoprene™ (AH0-8199) (2 ea)	ea

guarantee

If Impact does not perform as well or better than your current protein precipitation plate with similar specifications, return the product with comparative data within 45 days for a FULL REFUND.



Phospholipid Removal



Endogenous phospholipids are a primary source of ion suppression and resulting matrix effects in bioanalytical LC/MS work. Presence of phospholipids can result in:

- irreproducible results
- quantitation issues
- loss in method sensitivity
- matrix to matrix bias

www.phenomenex.com/Phree

Removing Phospholipids Reduces Matrix Effects

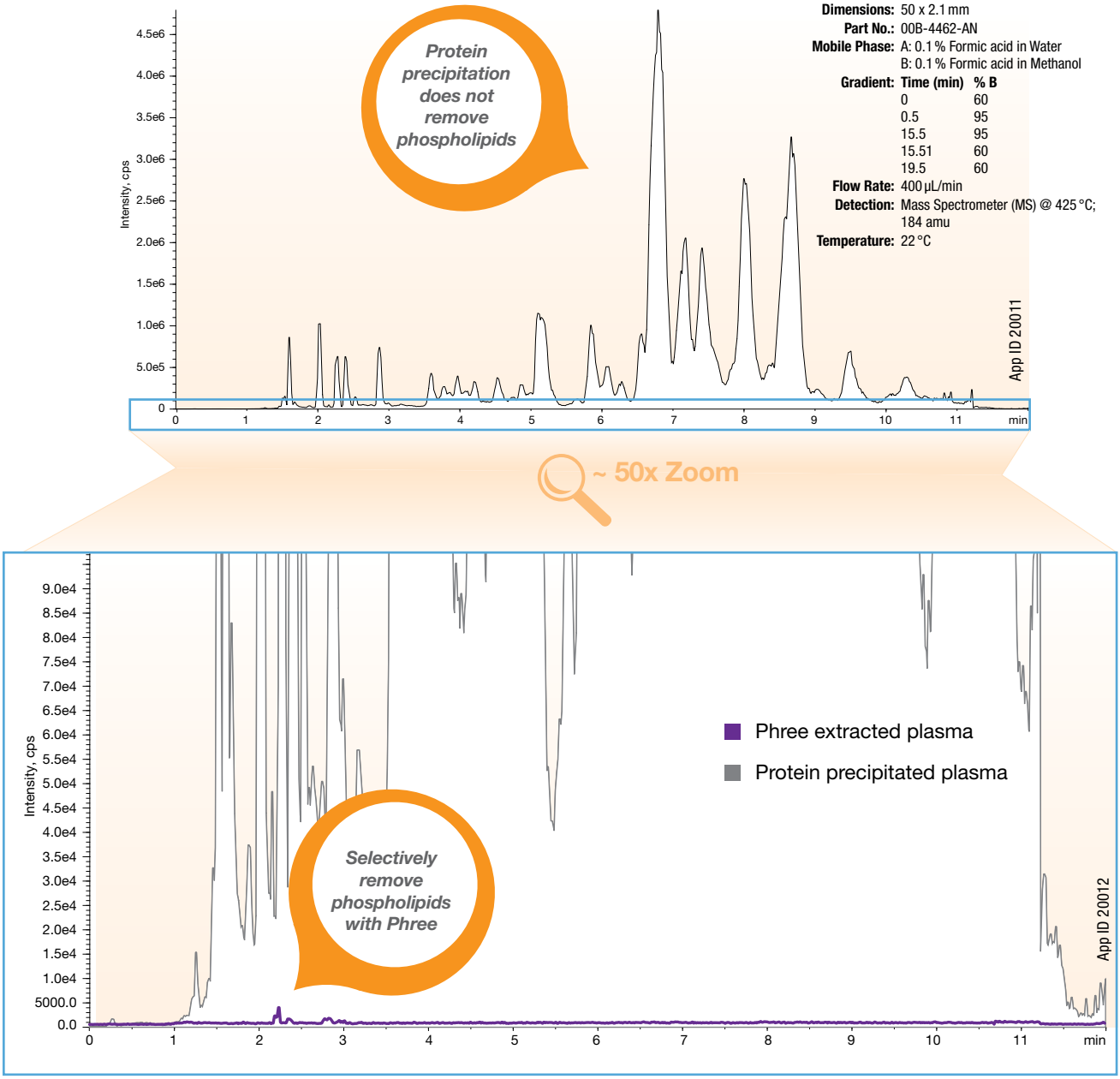
Total Phospholipid Profile

Protein Precipitation vs. Phree Phospholipid Removal Products

Plasma Cleanup: 100 µL plasma plus 300 µL acetonitrile with 1 % formic acid
Column: Kinetex® 2.6 µm C18 100Å
Dimensions: 50 x 2.1 mm
Part No.: 00B-4462-AN
Mobile Phase: A: 0.1 % Formic acid in Water
B: 0.1 % Formic acid in Methanol

Gradient:	Time (min)	% B
	0	60
	0.5	95
	15.5	95
	15.51	60
	19.5	60

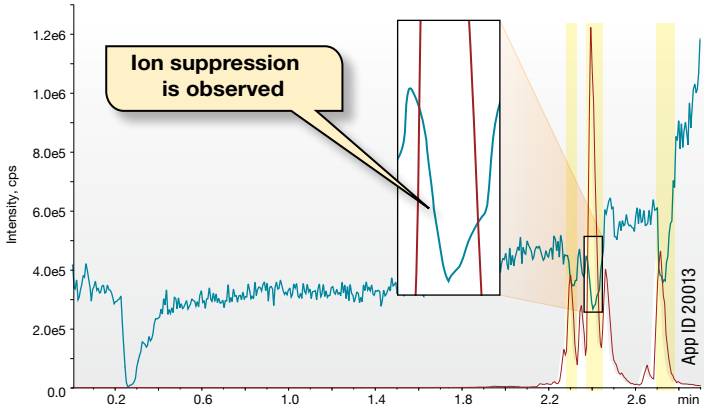
Flow Rate: 400 µL/min
Detection: Mass Spectrometer (MS) @ 425 °C; 184 amu
Temperature: 22 °C



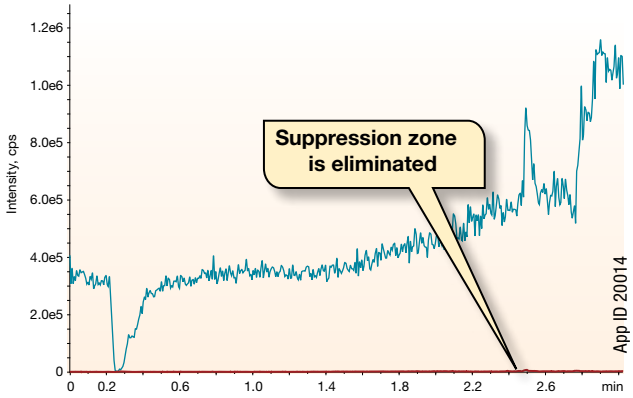
Reduce Ion Suppression

The presence of phospholipids in plasma samples produces zones of ion suppression that correlate exactly with the phospholipid elution profile when analyzed via mass spectrometer (MS).

Protein Precipitated Plasma



Phree Extracted Plasma



Suppression Zone

Phospholipids *m/z 184-184*

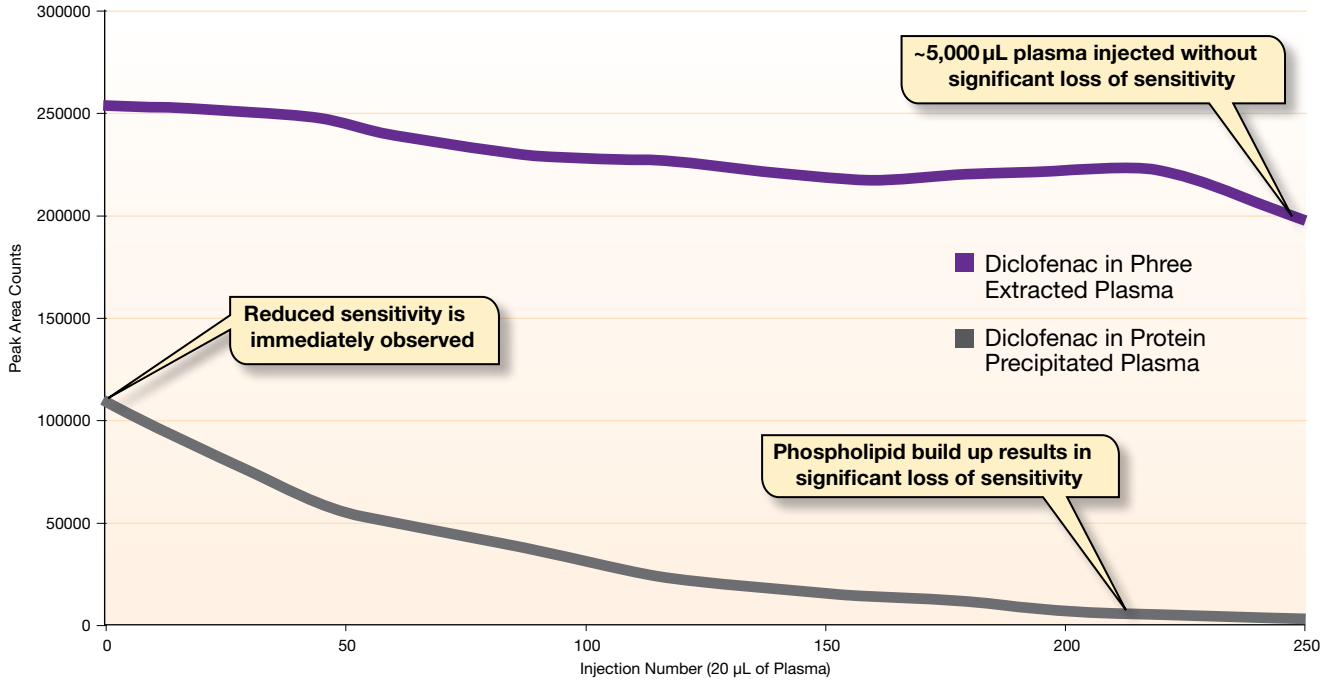
Amoxapine *m/z 314-271*

Amoxapine was infused post-column to establish an ion suppression/enhancement profile with both protein precipitated plasma (left) and Phree extracted plasma (right), showing that Phree can successfully reduce ion suppression.

Maximize Sensitivity and Column Lifetime

Phospholipids reduce the sensitivity of the MS signal and shorten column lifetime when they build up over time.

Column Sensitivity after 250 Injections

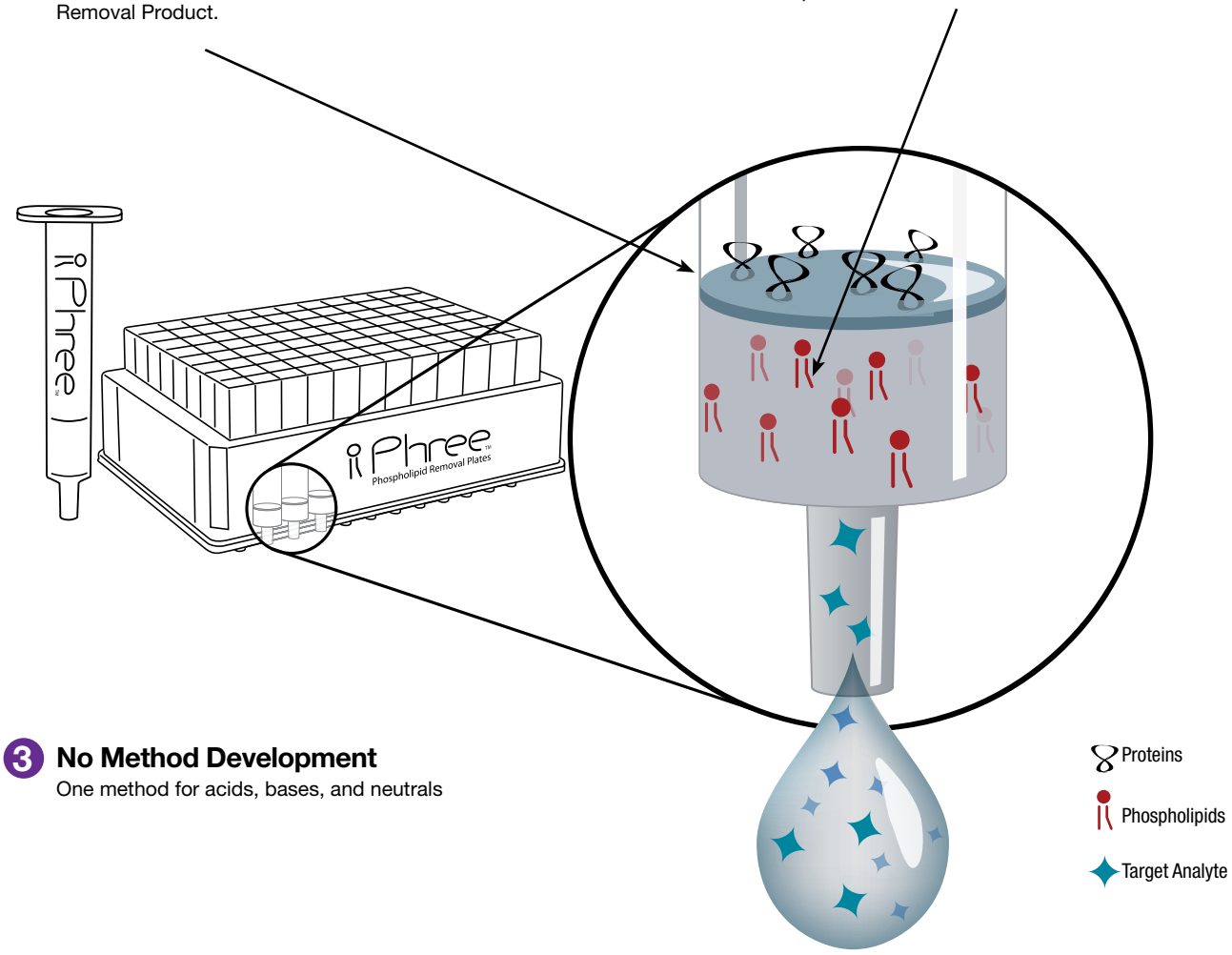


To assess the effect of phospholipid build up, repetitive 20 µL injections of diclofenac in protein precipitated plasma versus diclofenac in Phree extracted plasma were made.

How Phree Works

1 Remove Proteins
Solvent Shielding Technology™ prevents dripping of organic solvent, allowing for protein precipitation within the Phree Phospholipid Removal Product.

2 Eliminate Phospholipids
The Phree sorbent selectively removes phospholipids from precipitated plasma samples.



3 No Method Development
One method for acids, bases, and neutrals

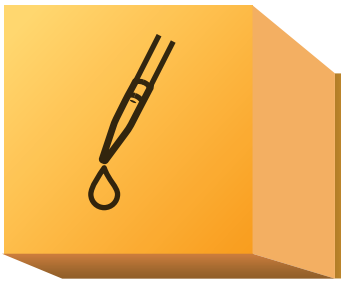
See How Phree Phospholipid Removal Plates Work
Visit: **www.phenomenex.com/Phree**

One Quick Method

Phree™ Phospholipid Removal Solutions

STEP 01

Dispense
Plasma into the Phree tube or 96-well plate.



STEP 02

Add
Organic solvent directly into the plasma sample.

STEP 03

Mix

STEP 04

Filter
Using a centrifuge, vacuum manifold, or positive pressure system.

Ordering Information

Phree Phospholipid Removal Products

Part No.	Description	Unit
8B-S133-TAK	Phree Phospholipid Removal Tabbed 1 mL Tubes	100/box
8E-S133-TGB	Phree Phospholipid Removal 96-Well Plates	2/box

Accessories

Part No.	Description	Unit
Collection Plates (deep well, polypropylene)		
AH0-7192	96-Well Collection Plate 350 µL/well	50/pk
AH0-7193	96-Well Collection Plate 1 mL/well	50/pk
AH0-7194	96-Well Collection Plate 2 mL/well	50/pk
AH0-8635	96-Well Collection Plate, 2 mL Square/Round-Conical	50/pk
AH0-8636	96-Well Collection Plate, 2 mL Round/Round, 8 mm	50/pk
AH0-7279	96-Well Collection Plate, 1 mL/well Round, 7 mm	50/pk
Sealing Mats		
AH0-8597	Sealing Mats, Pierceable, 96-Square Well, Silicone	50/pk
AH0-8598	Sealing Mats, Pre-Slit, 96-Square Well, Silicone	50/pk
AH0-8631	Sealing Mats, Pierceable, 96-Round Well 7 mm, Silicone	50/pk
AH0-8632	Sealing Mats, Pre-Slit, 96-Round Well 7 mm, Silicone	50/pk
AH0-8633	Sealing Mats, Pierceable, 96-Round Well 8 mm, Silicone	50/pk
AH0-8634	Sealing Mats, Pre-Slit, 96-Round Well 8 mm, Silicone	50/pk
AH0-7362	Sealing Tape Pad	10/pk
Vacuum Manifolds		
AH0-6023*	SPE 12-Position Vacuum Manifold Set, for tubes	ea
AH0-6024*	SPE 24-Position Vacuum Manifold Set, for tubes	ea
AH0-8950	96-Well Plate Manifold, Universal with Vacuum Gauge	ea

*Manifolds include: Vacuum-tight glass chamber, vacuum gauge assembly, polypropylene lid with gasket, male and female luers and yellow end plugs, stopcock valves, collection rack assemblies, polypropylene needles, lid support legs. Waste container included with 12-positive manifold.

guarantee

If Phree Phospholipid Removal products do not perform as well or better than your current phospholipid removal products, return the product with comparative data within 45 days for a FULL REFUND.

Sample Preparation Specialists are Ready to Assist You.

Contact your Sample Preparation Specialist
By email: **Support@Phenomenex.com**

QuEChERS

Quick-Easy-Cheap-Effective-Rugged-Safe

The QuEChERS technique radically simplifies multi-residue analysis in food and other complex samples, decreases complicated long extraction procedures, reduces use of hazardous solvents, and is easy to use

STEP 01

Extraction

Pesticides and analytes of interest must first be extracted from the food sample. This process relies on the combination of organic solvent and various salts to partition the analytes from food samples into an organic layer (typically acetonitrile).

STEP 02

Clean Up/Dispersive SPE (dSPE)

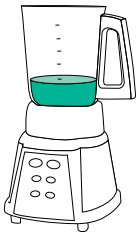
An aliquot of the organic layer from the extraction step is subjected to further clean up by dispersive SPE. This step selectively removes unwanted interferences such as lipids and pigments.

www.phenomenex.com/roQ

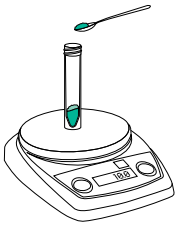
The QuEChERS Technique

roQ™ QuEChERS Kits

STEP 01 Extraction



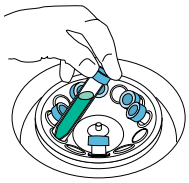
Blend
fruits or vegetables to be analyzed.



Weigh
blended sample.

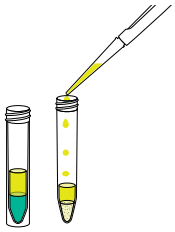
Add
salts and acetonitrile.

Shake
tube for 1 minute.

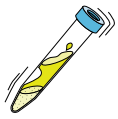


Centrifuge
tube for 5 minutes.

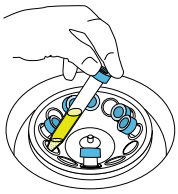
STEP 02 Clean Up/Dispersive SPE (dSPE)



Add
supernatant from extraction procedure into a roQ dSPE tube.



Shake
dSPE tube for 30 seconds.



Centrifuge
dSPE tube for 5 minutes*.

*After dSPE cleanup, supernatant is injected into LC or GC for analysis.

Salts and Sorbents used in roQ Kits

Extraction:

- Magnesium Sulfate ($MgSO_4$)
- Sodium Acetate (NaOAc)
- Sodium Chloride (NaCl)
- Sodium Citrate Tribasic Dihydrate (SCTD)
- Sodium Citrate Dibasic Sesquihydrate (SCDS)

Clean Up/dSPE:

- Magnesium Sulfate ($MgSO_4$)
- Primary/Secondary Amine (PSA)
- Endcapped C18 Sorbent (C18E)
- Graphitized Carbon Black (GCB)

See How QuEChERS Works
Visit: **www.phenomenex.com/roQ**

roQ QuEChERS Kits
Pick Up Where Others Fail

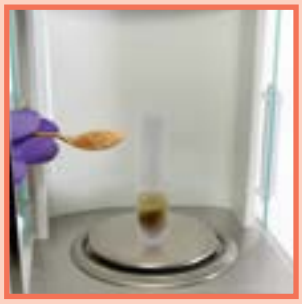
roQ™ QuEChERS Kits

Improved with you in mind, the unique design of the roQ QuEChERS kits eliminates common problems seen with current QuEChERS kits on the market.

Ease of Use

Built-in Removable Rack

Stand Alone Extraction Tubes

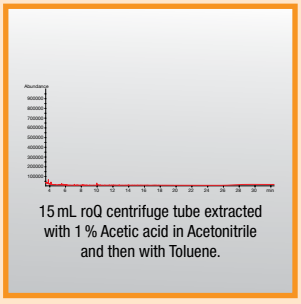


Easy Pour Salt Packets

Quality

Leak-Free Tubes

Low Leachate Tubes



15 mL roQ centrifuge tube extracted with 1 % Acetic acid in Acetonitrile and then with Toluene.

Quality Management System Certified

- Validates processes to be fully established, functional, and meet international standards
- MSDS and Certificate of Analysis (CoA) available for all kits
- roQ QuEChERS kits are guaranteed for quality

QUALITY MANAGEMENT SYSTEM
CERTIFIED BY DNV
ISO 9001:2008

Technical Support

Sample Preparation Support at Your Fingertips

- Dedicated sample preparation team available to assist your method development needs
- Expertise in sample preparation and solid phase extraction
- Access to up-to-date sample preparation applications

Free Method Development Services

- Let our specialists help you with new method development, method optimization, and validation, including FDA compliant and GMP compliant validation.

Choose Your QuEChERS Kit

roQ™ QuEChERS Kits

STEP 01 Extraction

AOAC	ORIGINAL	EN
AOAC 2007.01 Method 6.0 g $MgSO_4$, 1.5 g NaOAc **KS0-8911**	**Non-Buffered Method** 4.0 g $MgSO_4$, 1.0 g NaCl **KS0-8910** 6.0 g $MgSO_4$, 1.5 g NaCl **KS0-8912**	**EN 15662 Method** 4.0 g $MgSO_4$, 1.0 g NaCl, 1.0 g SCTD, 0.5 g SCDS **KS0-8909**

STEP 02 Clean Up/dSPE

	AOAC 2007.01		EN 15662	
	1 mL	8 mL	1 mL	6 mL
General 	150 mg $MgSO_4$ 50 mg PSA **KS0-8920**	1200 mg $MgSO_4$ 400 mg PSA **KS0-8928**	150 mg $MgSO_4$ 25 mg PSA **KS0-8916**	900 mg $MgSO_4$ 150 mg PSA **KS0-8924**
Fats and Waxes 	150 mg $MgSO_4$ 50 mg PSA 50 mg C18E **KS0-8918**	1200 mg $MgSO_4$ 400 mg PSA 400 mg C18E **KS0-8926**	150 mg $MgSO_4$ 25 mg PSA 25 mg C18E **KS0-8913**	900 mg $MgSO_4$ 150 mg PSA 150 mg C18E **KS0-8921**
Pigmented 	150 mg $MgSO_4$ 50 mg PSA 50 mg GCB **KS0-8919**	1200 mg $MgSO_4$ 400 mg PSA 400 mg GCB **KS0-8927**	150 mg $MgSO_4$ 25 mg PSA 2.5 mg GCB **KS0-8914**	900 mg $MgSO_4$ 150 mg PSA 15 mg GCB **KS0-8922**
Highly Pigmented 	–	–	150 mg $MgSO_4$ 25 mg PSA 7.5 mg GCB **KS0-8915**	900 mg $MgSO_4$ 150 mg PSA 45 mg GCB **KS0-8923**
Pigments and Fats 	150 mg $MgSO_4$ 50 mg PSA 50 mg GCB 50 mg C18E **KS0-8917**	1200 mg $MgSO_4$ 400 mg PSA 400 mg GCB 400 mg C18E **KS0-8925**	–	–

We're Here to Help!

Contact your Sample Preparation Specialist
By email: **Support@Phenomenex.com**

For Additional Food Resources Visit: **www.phenomenex.com/food**

Recommended roQ Extraction and dSPE Kits

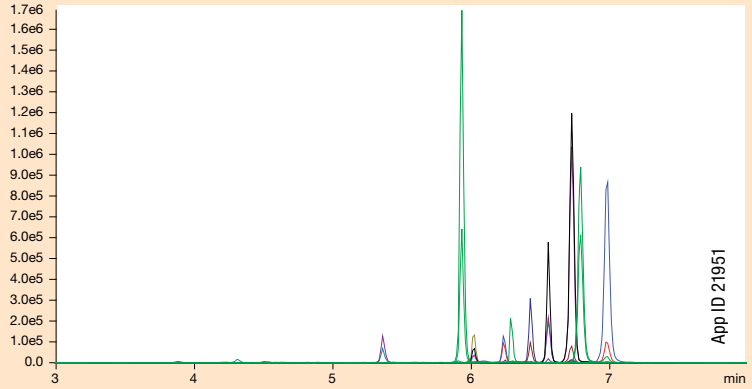
roQ™ QuEChERS Kits

Mycotoxins Screening—Grains

Extraction
EN 15662 Method
4.0 g $MgSO_4$, 1.0 g NaCl,
1.0 g SCTD, 0.5 g SCDS
KS0-8909

Clean up/dSPE
EN 15662 Method
15 mL dSPE Kits
900 mg $MgSO_4$, 150 mg PSA
KS0-8924

Analytical Column: Kinetex® Core-Shell 2.6 µm Biphenyl

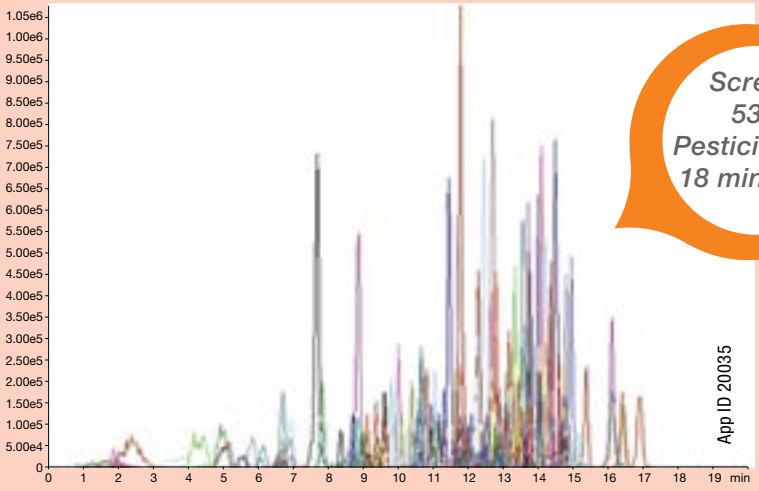


Pesticide Screening—Fruits and Vegetables

Extraction
EN 15662 Method
4.0 g $MgSO_4$, 1.0 g NaCl,
1.0 g SCTD, 0.5 g SCDS
KS0-8909

Clean up/dSPE
EN 15662 Method
15 mL dSPE Kits
900 mg $MgSO_4$, 150 mg PSA
KS0-8924

Analytical Column: Synergi™ 2.5 µm Fusion-RP



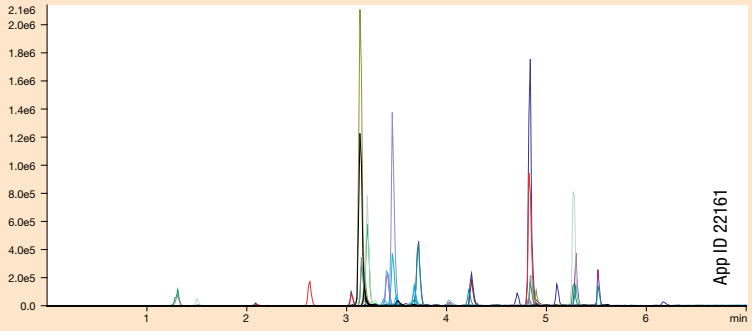
Screen 535 Pesticides in 18 minutes!

Antibiotics—Meats

Extraction
AOAC 2007.01 Method
6.0 g $MgSO_4$, 1.5 g NaOAc
KS0-8911

Clean up/dSPE
15 mL dSPE Kits
900 mg $MgSO_4$, 150 mg PSA,
150 mg C18E
KS0-8921

Analytical Column: Kinetex Core-Shell 2.6 µm Biphenyl



Ordering Information

roQ™ Extraction Kits

Extraction kits contain fifty easy-pour salt packets and fifty 50 mL stand-alone centrifuge tubes

Description	Unit	Part No.
AOAC 2007.01 Method Extraction Kits		
6.0 g $MgSO_4$, 1.5 g NaOAc	50/pk	KSO-8911*
EN 15662 Method Extraction Kits		
4.0 g $MgSO_4$, 1.0 g NaCl, 1.0 g SCTD, 0.5 g SCDS	50/pk	KSO-8909*
Original Non-buffered Method Extraction Kits		
4.0 g $MgSO_4$, 1.0 g NaCl	50/pk	KSO-8910
6.0 g $MgSO_4$, 1.5 g NaCl	50/pk	KSO-8912

*AOAC and EN Extraction Kits also available in traditional non-collared 50 mL centrifuge tubes, Part No.: KSO-8911-NC and KSO-8909-NC

roQ dSPE Kits

dSPE kits contain pre-weighed sorbents/salts inside 2 mL or 15 mL centrifuge tubes

Description	Unit	Part No.
2 mL dSPE Kits		
150 mg $MgSO_4$, 25 mg PSA, 25 mg C18E	100/pk	KSO-8913
150 mg $MgSO_4$, 25 mg PSA, 2.5 mg GCB	100/pk	KSO-8914
150 mg, $MgSO_4$, 25 mg PSA, 7.5 mg GCB	100/pk	KSO-8915
150 mg $MgSO_4$, 25 mg PSA	100/pk	KSO-8916
150 mg $MgSO_4$, 50 mg PSA, 50 mg C18E, 50 mg GCB	100/pk	KSO-8917
150 mg $MgSO_4$, 50 mg PSA, 50 mg C18E	100/pk	KSO-8918
150 mg $MgSO_4$, 50 mg PSA, 50 mg GCB	100/pk	KSO-8919
150 mg $MgSO_4$, 50 mg PSA	100/pk	KSO-8920
15 mL dSPE Kits		
900 mg $MgSO_4$, 150 mg PSA, 150 mg C18E	50/pk	KSO-8921
900 mg $MgSO_4$, 150 mg PSA, 15 mg GCB	50/pk	KSO-8922
900 mg $MgSO_4$, 150 mg PSA, 45 mg GCB	50/pk	KSO-8923
900 mg $MgSO_4$, 150 mg PSA	50/pk	KSO-8924
1200 mg $MgSO_4$, 400 mg PSA, 400 mg C18E, 400 mg GCB	50/pk	KSO-8925
1200 mg $MgSO_4$, 400 mg PSA, 400 mg C18E	50/pk	KSO-8926
1200 mg $MgSO_4$, 400 mg PSA, 400 mg GCB	50/pk	KSO-8927
1200 mg $MgSO_4$, 400 mg PSA	50/pk	KSO-8928

roQ Extraction Salt Packets

Salt packets only. Centrifuge tubes not included.

Description	Unit	Part No.
AOAC 2007.01 Method Extraction Packets		
6.0 g $MgSO_4$, 1.5 g NaOAc	50/pk	AH0-9043
EN 15662 Method Extraction Packets		
4.0 g $MgSO_4$, 1.0 g NaCl, 1.0 g SCTD, 0.5 g SCDS	50/pk	AH0-9041
Original Non-Buffered Method Extraction Packets		
4.0 g $MgSO_4$, 1.0 g NaCl	50/pk	AH0-9042
6.0 g $MgSO_4$, 1.5 g NaCl	50/pk	AH0-9044

Bulk roQ QuEChERS Sorbents

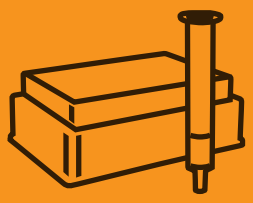
Phase	10 g	100 g
C18-E	—	04G-4348
GCB (Graphitized Carbon Black)	04D-4615	04G-4615
PSA	—	04G-4610

guarantee

If roQ QuEChERS Kits do not perform as well or better than your current QuEChERS product, return the product with comparative data within 45 days for a FULL REFUND.

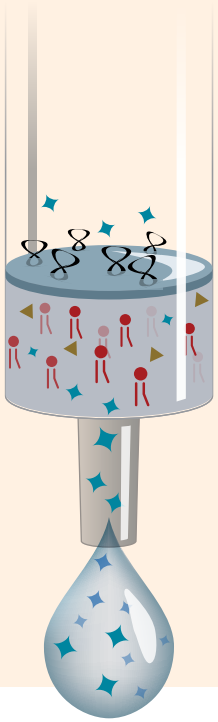
www.phenomenex.com/roQ

- Applications
- Technical Notes
- Tutorials and Webinars
- Tools
- And more



Simplified Liquid Extraction

Simplified Liquid Extraction (SLE) is a FASTER, EASIER, and MORE RELIABLE way to perform liquid-liquid extractions



- Eliminates interferences from your analysis
- Remove unwanted interferences such as proteins and phospholipids from biological samples without performing extensive method development
- Provides consistent, reliable results from lot-to-lot

www.phenomenex.com/Novum

A Simplified Way to Do Liquid-Liquid Extraction

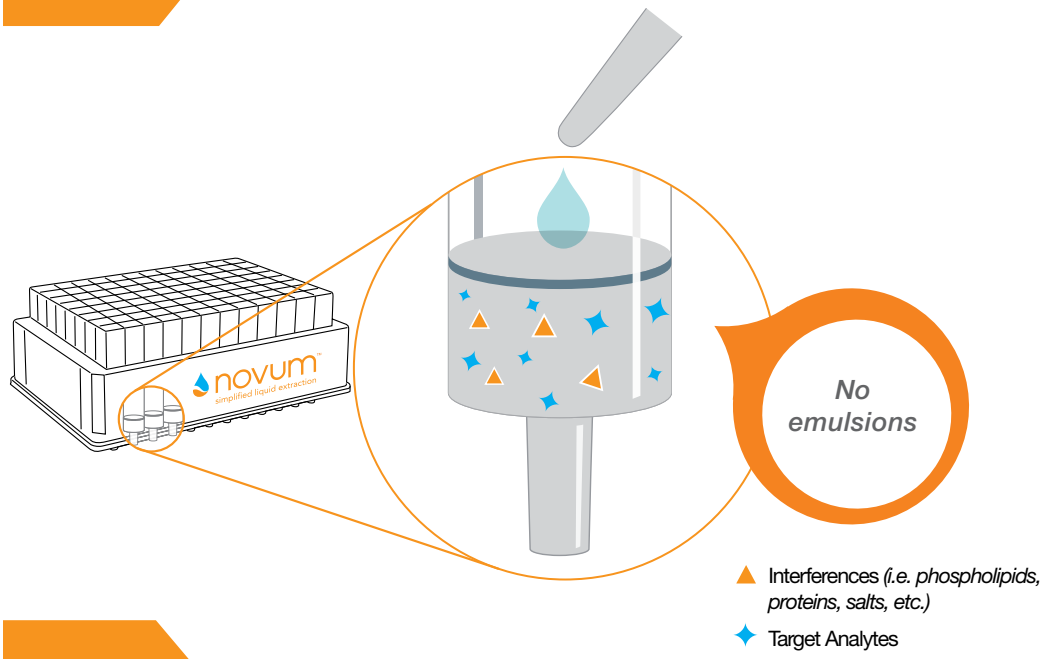
novum™ simplified liquid extraction

PATENT PENDING

An Easy, Automatable Procedure

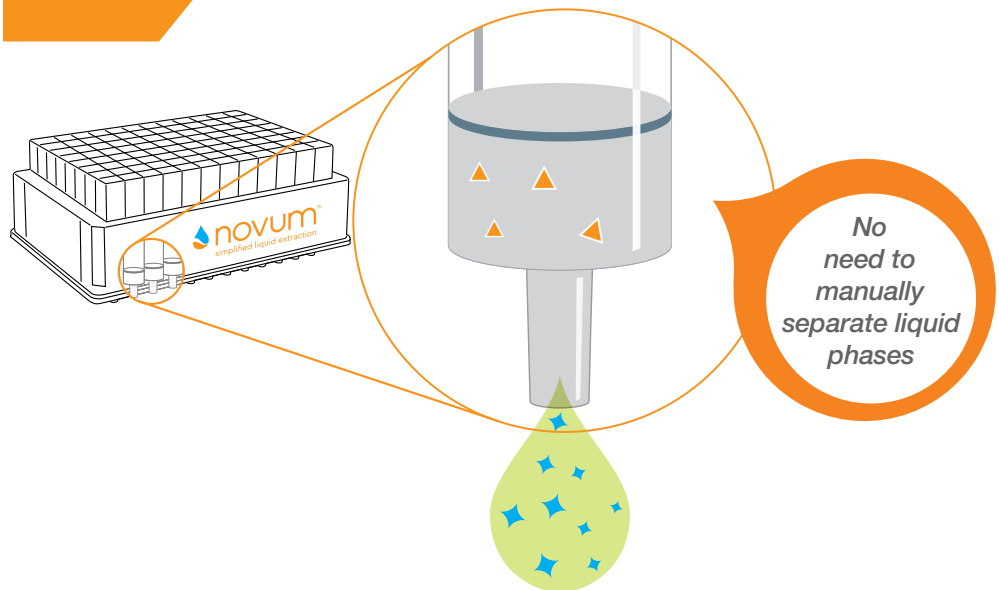
STEP 01

Load Your Sample in Aqueous Solvent



STEP 02

Collect Your Target Analytes in Water Immiscible Solvent



Increase Your Throughput

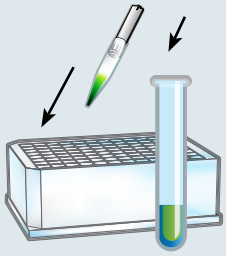
Novum SLE will instantly increase your throughput by eliminating time consuming steps and reducing the risk of analyte loss. If further time savings are necessary, Novum SLE can be easily automated for rapid, hands-free sample cleanup.

Slow and Laborious

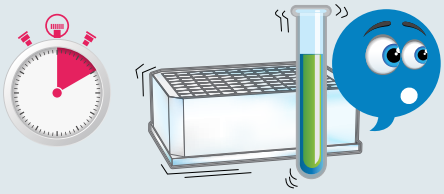
Traditional
Liquid-Liquid Extraction[1]

Estimated Time per Sample = **25 minutes**

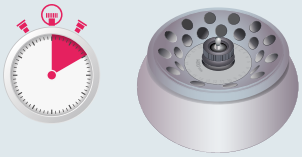
1. Dilute sample 1:1 with buffer or water and add extraction solvent



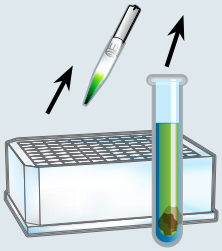
2. Mix for 10 minutes



3. Centrifuge for 10 minutes



4. Pour off or freeze supernatant

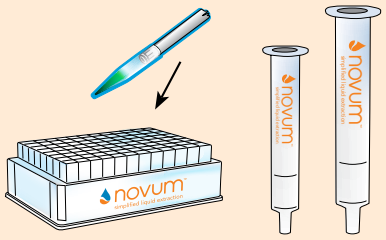


Fast and Easy

Novum Simplified
Liquid Extraction (SLE)

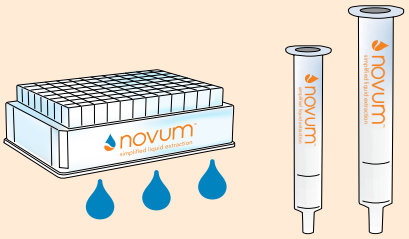
Estimated Time per Sample = **<15 minutes**

1. Dilute sample 1:1 with buffer or water and load onto Novum SLE sorbent using 2–15 seconds of vacuum



2. Wait 5 minutes

3. Apply elution solvent and allow to elute via gravity. Complete elution with 10 seconds of vacuum.



- Rapid, automatable method for high throughput cleanup
- Stop worrying about analyte loss due to emulsions

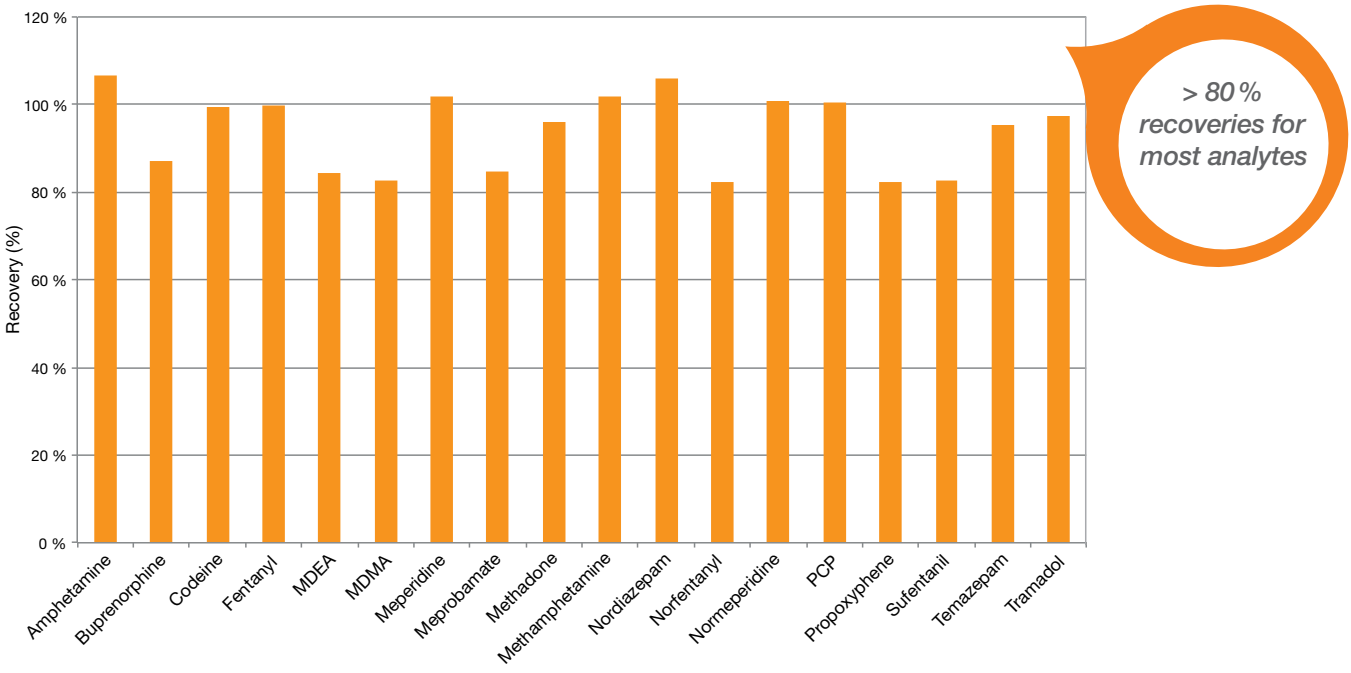
Visit **www.phenomenex.com/Novum** for buffer and elution solvent recommendations, technical notes, demonstration videos, and more!

1. Russell Grant, Matthew Crawford, Brian Rappold, and Stacy Dee. Errors in Bioanalysis Due to Phospholipids – Definitive Measurement, Mechanism, and Management. ASMS 2011.

Consistent, High Recoveries of Target Analytes

Avoid Inferior Results Due to Emulsions

Emulsions are associated with traditional liquid-liquid extraction and are the root cause of analyte loss and contamination. Novum™ SLE eliminates the formation of emulsions, maximizing your analyte recovery while reducing contamination.



Analyte	% RSD
Amphetamine	3
Buprenorphine	5
Codeine	10
Fentanyl	6
MDEA	4
MDMA	4
Meperidine	9
Meprobamate	7
Methadone	2
Methamphetamine	12
Nordiazepam	1
Norfentanyl	3
Normeperidine	4
PCP	2
Propoxyphene	9
Sufentanil	11
Temazepam	2
Tramadol	9

Extraction Method

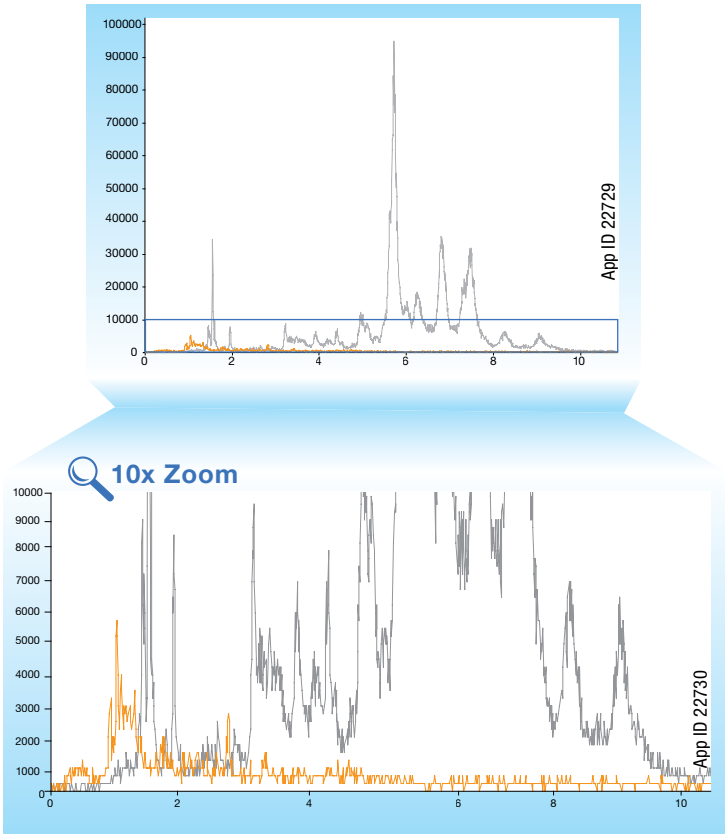
1. Load diluted urine (diluted 1:1 with 0.5 M Ammonium hydroxide) onto Novum MAX SLE 96-well plate, apply vacuum for 2-15 seconds
2. Allow sample to soak into Novum SLE sorbent for 5 minutes
3. Elute with ethyl acetate

Trust Your Results

Novum SLE simplifies the liquid-liquid extraction process and provides consistent recoveries from sample to sample. Never worry about analyte loss due to incomplete manual separation of liquid phases or the formation of emulsions.

Phospholipid Removal Reduces Ion Suppression

Phospholipids in Diluted Plasma vs. Novum SLE Extracted Plasma



Phospholipid profile monitored using *m/z 184-184*

1/100th dilution of precipitated plasma

Novum EtOAc extraction

Complete removal of 5 commonly monitored phospholipids

Phospholipid Concentration after Cleanup with Novum SLE

Extraction Solvent	Lyso 1	Lyso 2	PC 1	PC 2	PC 4
Ethyl Acetate (EtOAc)	0 %	0 %	0 %	0 %	0 %

Lyso 1: 1-Palmitoyl-2-OH-sn-glycero-phosphocholine (m/z 496-184)
Lyso 2: 1-Oleoyl-2-OH-sn-glycero-phosphocholine (m/z 522-184)
PC 1: 1-Palmitoyl-2-Oleoyl-sn-glycero-phosphocholine (m/z 761-184)
PC 2: 1-Stearoyl-2-Lindoleoyl-sn-glycero-phosphocholine (m/z 787-184)
PC 4: 1-Oleoyl-2-Lindoleoyl-sn-glycero-phosphocholine (m/z 784-184)

Ordering Information

Novum SLE 96-Well Plates

Novum Simplified Liquid Extraction (SLE) Well Plates		
Part No.	**Description**	**Unit**
8E-S138-FGA	Novum SLE MINI 96-Well Plate	1/pk
8E-S138-5GA	Novum SLE MAX 96-Well Plate	1/pk

Well Plate Accessories

Part No.	Description	Unit
Collection Plates (deep well, polypropylene)		
AH0-7192	96-Well Collection Plate, 350 µL/well	50/pk
AH0-7193	96-Well Collection Plate, 1 mL/well	50/pk
AH0-7194	96-Well Collection Plate, 2 mL/well	50/pk
AH0-8635	96-Well Collection Plate, 2 mL Square/Round-Conical	50/pk
AH0-8636	96-Well Collection Plate, 2 mL Round/Round, 8 mm	50/pk
AH0-7279	96-Well Collection Plate, 1 mL/well Round, 7 mm	50/pk
Sealing Mats		
AH0-8597	Sealing Mats, Pierceable, 96-Square Well, Silicone	50/pk
AH0-8598	Sealing Mats, Pre-Slit, 96-Square Well, Silicone	50/pk
AH0-8631	Sealing Mats, Pierceable, 96-Round Well 7 mm, Silicone	50/pk
AH0-8632	Sealing Mats, Pre-Slit, 96-Round Well 7 mm, Silicone	50/pk
AH0-8633	Sealing Mats, Pierceable, 96-Round Well 8 mm, Silicone	50/pk
AH0-8634	Sealing Mats, Pre-Slit, 96-Round Well 8 mm, Silicone	50/pk
AH0-7362	Sealing Tape Pad	10/pk
Vacuum Manifold		
AH0-8950	96-Well Plate Manifold, Universal with Vacuum Gauge	ea

Novum SLE Tubes

Novum Simplified Liquid Extraction (SLE) Tubes		
Part No.	**Description**	**Unit**
8B-S138-FAK	Novum SLE 1 cc tubes	100/pk
8B-S138-5BJ	Novum SLE 3 cc tubes	50/pk
8B-S138-JCH	Novum SLE 6 cc tubes	30/pk
8B-S138-KDG	Novum SLE 12 cc tubes	20/pk

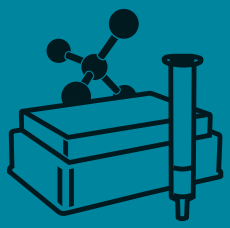
Tube Accessories

Vacuum Manfolds		
Part No.	**Description**	**Unit**
AH0-6023	12-Position Vacuum Manifold Set	ea
AH0-6024	24-Position Vacuum Manifold Set	ea

guarantee

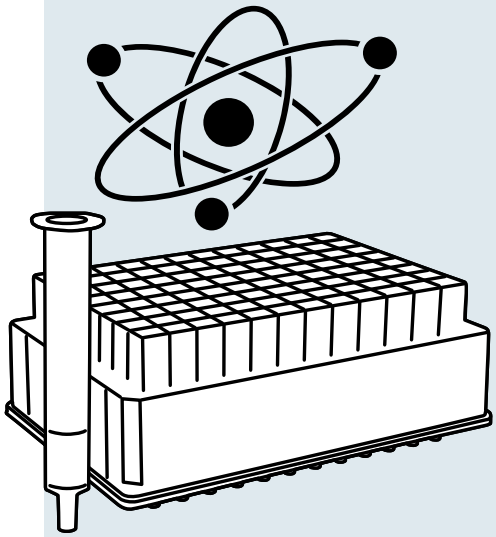
If Novum SLE products do not perform as well or better than your current SLE product, return the product with comparative data within 45 days for a FULL REFUND.

Watch "An Introduction to Simplified Liquid Extraction"
Visit: **www.phenomenex.com/SLE**



Solid Phase Extraction (SPE)

Solid Phase Extraction (SPE) is a very targeted form of sample preparation that allows you to isolate your analyte of interest while removing any interfering compounds that may be in your sample



- Targeted analyte extraction for clean extracts
- Concentration of samples for better chromatographic results
- Solvent switching for GC or LC compatibility
- Clean extracts lead to longer column lifetime and better chromatographic results

www.phenomenex.com/SPE

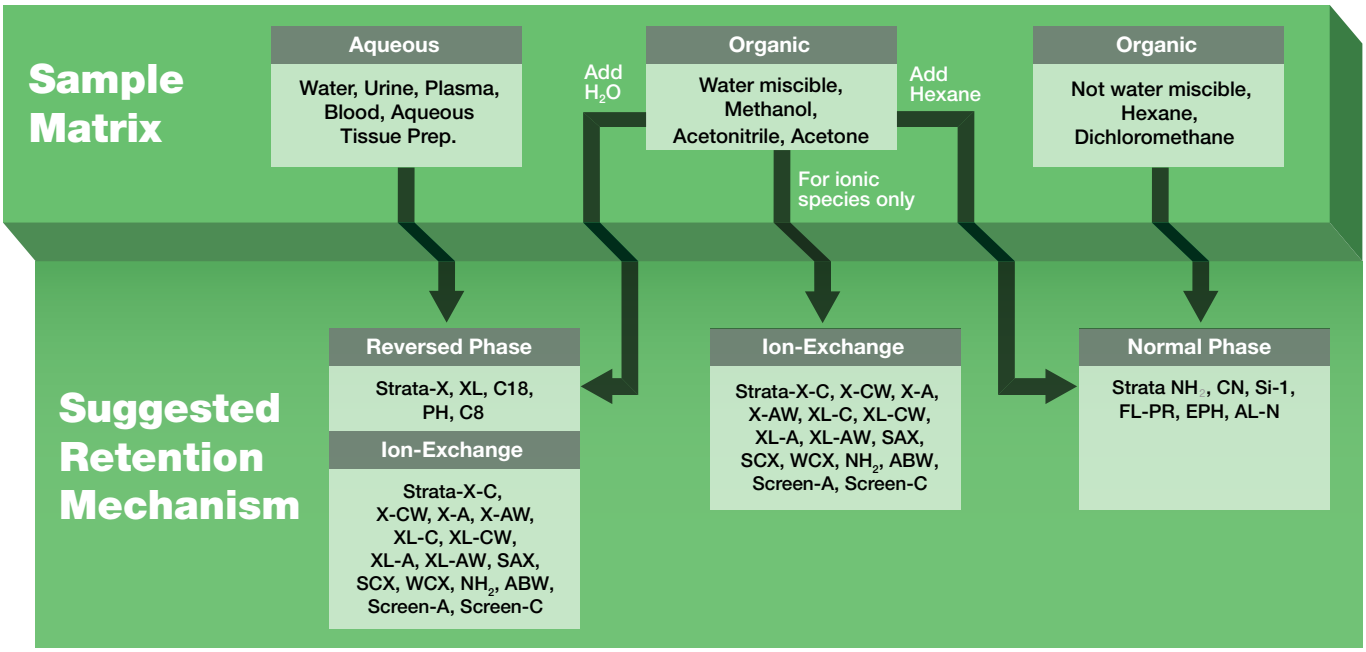
4 Steps to Solid Phase Extraction Method Development

STEP 01

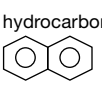
Selecting The Right Sorbent: Strata® Silica-Based and Strata™-X Polymer-Based Sorbents

Identify the Possible SPE Retention Mechanism

Reversed Phase (RP), Ion-Exchange (IEX) or Normal Phase (NP)
The sample solvent composition will guide you towards an appropriate SPE mechanism.



Once the general mechanism is identified, it will be necessary to identify the most specific Strata or Strata-X sorbent by matching the analyte functional groups to the sorbent functional group.

SPE Mechanism	Analyte Functional Group	Sorbent Functional Group	Strata-X Sorbent	Strata Sorbent
Reversed Phase	R hydrocarbon  aromatic	R hydrocarbon  aromatic	X, XL	C18-E, C18-U, C8 C18-T PH, SDBL
Normal Phase	R - OH hydroxyl R - NH_2 amino	CN polar OH polar		CN, NH_2 Si-1, CN, EPH
Ion-Exchange	NR_4^+ strong RNH_3^+ weak RSO_3^- 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

STEP 02

Sorbent Mass Selection and Suggested Loading Capacity

To select the proper sorbent mass, it is first necessary to determine the volume of sample needed to be extracted in order to meet method detection limits (not including buffer). Two tables are included below: polymer-based and silica-based. This is necessary because the large surface area of polymeric sorbents such as Strata™-X have a higher analyte capacity per gram than Strata® silica-based sorbents.

Suggested Loading Capacity

Table 1. Choose Between Polymer-Based SPE vs. Silica-Based SPE

	Polymer-Based SPE	Traditional Silica-Based SPE
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	•	
	See Table 3 on on page 36	See Table 4 on page 36

Table 2. 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 Target Analytes (< 10 kDa)	•	
Large Target Analytes (> 10 kDa)		•
Large Volume Samples		•
Viscous Samples		•

Continued

Table 3. Polymer-Based Sorbents Loading Capacites

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

OR

Table 4. Silica-Based Sorbents (Strata C18, C8, SCX, SAX, WCX, NH_2, etc.) Loading Capacites

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

Having Trouble Choosing the Appropriate Sorbent Mass and SPE Sorbent?

There is a Sample Preparation Specialist dedicated to your company. Contact your sample prep specialist today by email: **Support@Phenomenex.com**

STEP 03

Sample Pre-treatment Recommendations

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 (liquid)	
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).

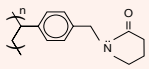
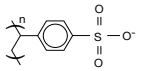
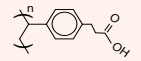
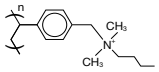
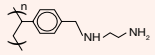
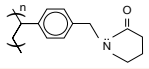
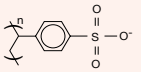
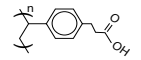
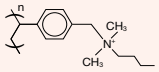
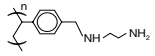
STEP 04

General Starting Methods

Strata™-X Polymer-Based SPE Sorbents Overview

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

Phenomenex Recommended Alternative Sorbents

Phenomenex Recommended Alternative	Functional Group	Mode	Analyte	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**

General Starting Methods

Strata-X / Strata-XL Reversed Phase

for Neutral Compounds

Condition
1 mL Methanol

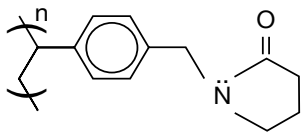
Equilibrate
1 mL Water

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

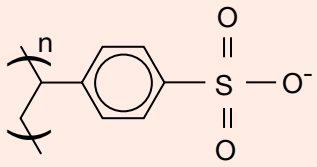
Load
Diluted Acidified Sample

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

Wash
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

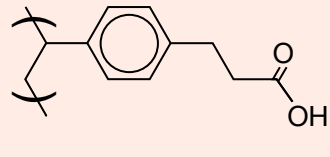
Wash
1 mL Water, pH 6-7

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

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

Elute Weak Bases
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

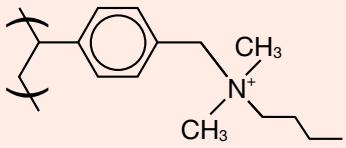
Load
Diluted Sample pH 6-7

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

Wash
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

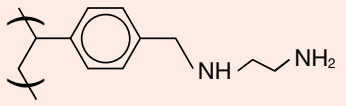
Wash
1 mL 25 mM Ammonium Acetate Buffered, pH 6-7

Wash
1 mL Methanol

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

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

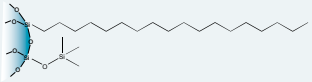
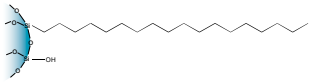
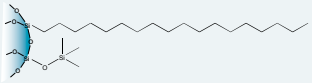
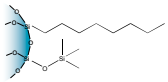
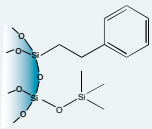
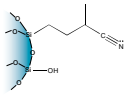
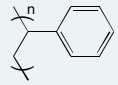
Weak Anion-Exchange: di-amino ligand



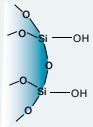
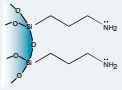
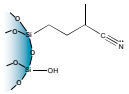
Strata® Silica-Based SPE Sorbents

- Extremely reproducible from batch-to-batch
- Formats for large and small volume samples

Reversed Phase Sorbents

Phase	Phase Benefits	Sorbent Chemistry	Recommended Method (see p. 46)
C18-E	Extraction of hydrophobic molecules		METHOD 1
C18-U	Enhanced cleanup of hydrophobic compounds that contain hydroxy or amine functional groups		METHOD 1
C18-T	Wide pore for the extraction of large hydrophobic molecules (up to 75 kDa)		METHOD 1
C8	Extraction of extremely hydrophobic compounds that are retained too tightly on C18-E		METHOD 1
Phenyl (PH)	Extraction of aromatic compounds		METHOD 1
CN	Extraction of polar compounds		METHOD 1
SDB-L	Extraction of non-polar and polar compounds; pH resistant sorbent		METHOD 1

Normal Phase Sorbents

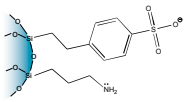
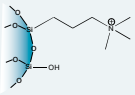
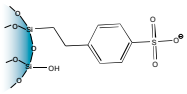
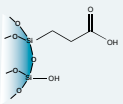
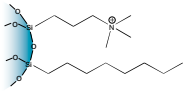
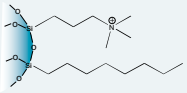
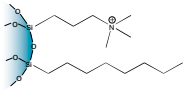
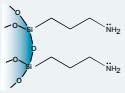
Phase	Phase Benefits	Sorbent Chemistry	Recommended Method (see p. 47)
Si-1 (Silica)	Extraction of polar compounds that are similar in structure		METHOD 6
FL-PR (Florisil®)	Extraction of pesticides	Florisil	METHOD 6
NH_2	Extraction of strong anions		METHOD 6
CN	Extraction of polar compounds		METHOD 6

Waters® Sep-Pak®	Agilent® SampliQ® Varian® Bond Elut®	Biotage® IST® ISOLUTE®	UCT®	Supelco® Discovery®
tC18	SampliQ C18EC Bond Elut C18	C18 (EC)	C18	DSC-18
	Bond Elut C18-OH	C18		
C18	Bond Elut C18-EWP			DSC-18Lt
C8	SampliQ C8 Octyl Bond Elut C8	C8(EC)	C8	DSC-8
	SampliQ Phenyl Bond Elut PH	PH	Phenyl	DSC-Ph
CN	SampliQ Cyano (CN) Bond Elut Cyano (CN-E)	CN	CN	DSC-CN
	SampliQ DVB Bond Elut ENV Bond Elut LMS	101	StyreScreen® DVB	DSC-PS/DVB

Waters® Sep-Pak®	Agilent® SampliQ® Varian® Bond Elut®	Biotage® IST® ISOLUTE®	UCT®	Supelco® Discovery®
Silica	SampliQ Silica Bond Elut SI	SI	Silica	DSC-Si
Florisil®	SampliQ Florisil® PR Bond Elut Florisil®	FL	Florisil® PR	ENVI-Florisil®
NH_2	SampliQ Amino (NH_2) Bond Elut Aminopropyl (NH_2)	NH_2	Amino Propyl	DSC-NH_2
CN	SampliQ Cyano (CN) Bond Elut Cyano (CN-E)	CN	CN	DSC-CN

Strata® Silica-Based SPE Sorbents (*cont'd*)

Ion-Exchange Sorbents

Phase	Phase Benefits	Sorbent Chemistry	Recommended Method (see pp. 46-47)
ABW	Fractionation of neutral compounds such as amides from acidic and basic analytes		Inquire
SAX	Extraction of weak anions		METHOD 5
SCX	Extraction of 1°, 2°, and 3° amines		METHOD 3
WCX	Extraction of quaternary amines		METHOD 3
Screen-C	Mixed-mode cation-exchange that also provides hydrophobic retention		METHOD 3
Screen-C GF	Large particle size, mixed-mode cation-exchange that also provides hydrophobic retention		METHOD 3
Screen-A	Mixed-mode anion-exchange that also provides hydrophobic retention		METHOD 5
NH_2	Extraction of strong anions		METHOD 4

Special Sorbents

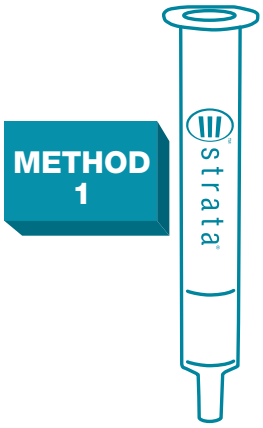
Phase	Phase Benefits	Sorbent Chemistry	Recommended Method (see p. 47)
Alumina-N (AL-N)	Extraction of polar compounds from food and environmental samples	Proprietary	METHOD 6
EPH (Extractable Petroleum Hydrocarbons)	Fractionation of aliphatic and aromatic hydrocarbons from environmental samples		METHOD 6

Waters® Sep-Pak®	Agilent® SampliQ® Varian® Bond Elut®	Biotage® IST® ISOLUTE®	UCT®	Supelco® Discovery®
	SampliQ Si-SAX Bond Elut SAX	SAX	Quaternary Amine	DSC-SAX
	SampliQ Si-SCX Bond Elut SCX	SCX-3	Benzene Sulfonic Acid	DSC-SCX
	Bond Elut CBA	CBA	Carboxylic Acid	DSC-WCX
	SampliQ C8/Si-SCX Mixed Mode Bond Elut Certify®	HCX	Clean Screen® DAU	
	Bond Elut Certify® I HF		Xtract® DAU	
	Bond Elut Certify® II	HAX	Clean Screen THC	
NH_2	SampliQ Amino (NH_2) Bond Elut Aminopropyl (NH_2)	NH_2	Amino Propyl	DSC-NH_2

Waters® Sep-Pak®	Agilent® SampliQ® Varian® Bond Elut®	Biotage® IST® ISOLUTE®	UCT®	Supelco® Discovery®

Strata®

Reversed Phase



Condition
1 mL Methanol

Equilibrate
1 mL DI Water

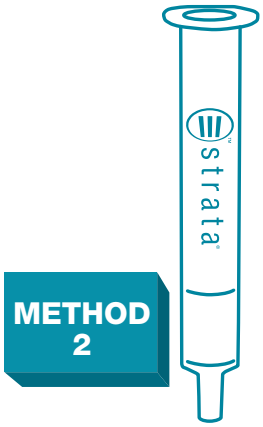
Load
Pretreated sample

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

Elute
1 mL Methanol

Strata WCX

Weak Cation - Exchange



Condition
1 mL Methanol

Equilibrate
1 mL DI Water, pH 6-7

Load
Pretreated sample, pH 6-7

Wash
1 mL Water, pH 6-7

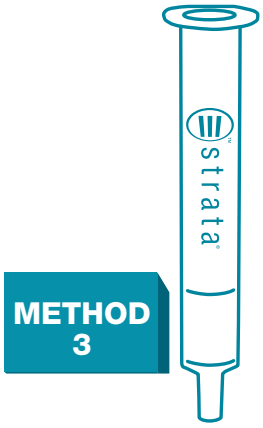
Wash
1 mL Methanol , dry under vacuum for 2-5 min

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



Condition
1 mL Methanol

Equilibrate
1 mL Acidified Water

Load
Pretreated sample (acidified)

Wash
1 mL 0.1N HCl in Water

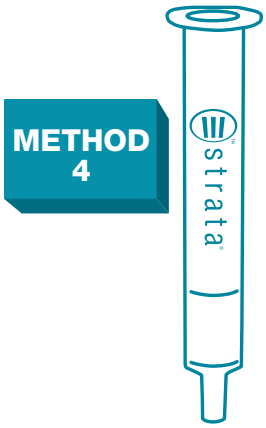
Wash
1 mL 0.1N HCl in Methanol, dry under vacuum for 2-5 min

Elute
1 mL 5 % NH_4OH in Methanol

*100 mg sorbent mass

Strata NH_2

(WAX) Weak Anion - Exchange



Condition
1 mL Methanol

Equilibrate
1 mL Water, pH 6-7

Load
Pretreated sample, pH 6-7

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

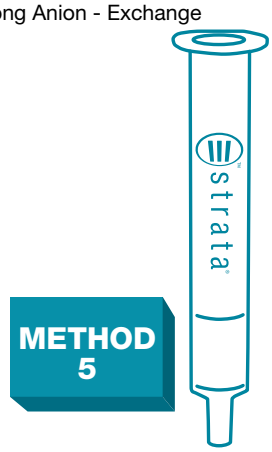
Wash
1 mL Methanol, dry under vacuum for 2-5 min

Elute Any Acid
1 mL 5 % NH_4OH in Methanol

Elute Weak Acids
1 mL 5 % Formic Acid in Methanol

Strata SAX

Strong Anion - Exchange



Condition
1 mL Methanol

Equilibrate
1 mL Water

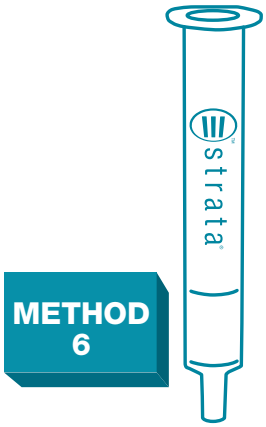
Load
Pretreated sample, pH 6-7

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

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

Elute
1 mL 5 % Formic Acid in Methanol

Strata Normal Phase Method



Analyte Properties
Moderate to high polarity compounds (neutralized/uncharged)

Sample/Matrix
Non-polar organic solvents or moderately polar organic solvents

Conditioning
1. Solvation – polar organic solvent
2. Equilibration – sample/matrix solvent (non-polar)

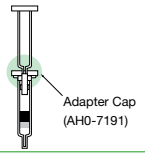
Wash
Non-polar organic solvents with a low concentration (1 to 5 %) of moderate to low polarity organic solvents

Elution
Non-polar organic solvents containing higher concentrations (5 to 50 %) of moderate to high polarity organic solvents

Tube Ordering Information

Process Samples Manually

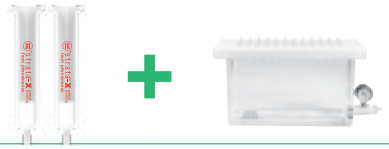
Syringe + Adapter Cap



OR

Process Multiple Samples at Once

Tubes + Vacuum Manifold



Strata® Silica-Based Sorbents

Tubes	1 mL (100/box)		3 mL (50/box)			6 mL (30/box)		
Phase	**50 mg**	**100 mg**	**100 mg**	**200 mg**	**500 mg**	**200 mg**	**500 mg**	**1 g**
C18-E	8B-S001-DAK	8B-S001-EAK	8B-S001-EBJ	8B-S001-FBJ	8B-S001-HBJ	8B-S001-FCH	8B-S001-HCH	8B-S001-JCH
C18-U	—	8B-S002-EAK	—	8B-S002-FBJ	8B-S002-HBJ	—	8B-S002-HCH	8B-S002-JCH
C18-T	—	8B-S004-EAK	—	8B-S004-FBJ	8B-S004-HBJ	—	8B-S004-HCH	8B-S004-JCH
C8	—	8B-S005-EAK	—	8B-S005-FBJ	8B-S005-HBJ	—	8B-S005-HCH	8B-S005-JCH
Phenyl	—	8B-S006-EAK	—	8B-S006-FBJ	8B-S006-HBJ	—	8B-S006-HCH	8B-S006-JCH
SCX	—	8B-S010-EAK	8B-S010-EBJ	8B-S010-FBJ	8B-S010-HBJ	—	8B-S010-HCH	8B-S010-JCH
WCX	—	8B-S027-EAK	—	8B-S027-FBJ	8B-S027-HBJ	—	8B-S027-HCH	8B-S027-JCH
SAX	—	8B-S008-EAK	8B-S008-EBJ	8B-S008-FBJ	8B-S008-HBJ	—	8B-S008-HCH	8B-S008-JCH
NH_2	—	8B-S009-EAK	—	8B-S009-FBJ	8B-S009-HBJ	—	8B-S009-HCH	8B-S009-JCH
CN	—	8B-S007-EAK	—	8B-S007-FBJ	8B-S007-HBJ	—	8B-S007-HCH	8B-S007-JCH
Si-1	—	8B-S012-EAK	—	8B-S012-FBJ	8B-S012-HBJ	—	8B-S012-HCH	8B-S012-JCH
Florisil®	—	—	—	—	8B-S013-HBJ	—	8B-S013-HCH	8B-S013-JCH
EPH	—	—	—	—	8B-S031-HBJ	—	—	—
AL-N	—	—	—	—	8B-S313-HBJ	—	—	8B-S313-JCH

Mixed-mode sorbents (for drugs of abuse)

Tubes	1 mL (100/box)		3 mL (50/box)			6 mL (30/box)		
Phase	**—**	**100 mg**	**100 mg**	**150 mg**	**200 mg**	**200 mg**	**500 mg**	**—**
Screen-C	—	8B-S016-EAK	8B-S016-EBJ	8B-S016-SBJ	8B-S016-FBJ	8B-S016-FCH	8B-S016-HCH	—
Screen-A	—	8B-S019-EAK	—	—	8B-S019-FBJ	8B-S019-FCH	8B-S019-HCH	—

Polymeric sorbents

Tubes	1 mL (100/box)		3 mL (50/box)			6 mL (30/box)		
Phase	**50 mg**	**100 mg**	**—**	**200 mg**	**500 mg**	**200 mg**	**500 mg**	**1 g**
SDB-L	8B-S014-DAK	8B-S014-EAK	—	8B-S014-FBJ	8B-S014-HBJ	8B-S014-FCH	8B-S014-HCH	8B-S014-JCH

Strata™-X Polymer-Based Sorbents

Tubes	1 mL (100/box)		3 mL (50/box)			6 mL (30/box)		
Phase	**30 mg**	**60 mg**	**60 mg**	**200 mg**	**500 mg**	**100 mg**	**200 mg**	**500 mg**
Strata-X	8B-S100-TAK	8B-S100-UAK	8B-S100-UBJ	8B-S100-FBJ	8B-S100-HBJ	8B-S100-ECH	8B-S100-FCH	8B-S100-HCH
Strata-X-C	8B-S029-TAK	—	8B-S029-UBJ	8B-S029-FBJ	8B-S029-HBJ	8B-S029-ECH	8B-S029-FCH	8B-S029-HCH
Strata-X-CW	8B-S035-TAK	—	8B-S035-UBJ	8B-S035-FBJ	8B-S035-HBJ	8B-S035-ECH	8B-S035-FCH	8B-S035-HCH
Strata-X-A	8B-S123-TAK	—	8B-S123-UBJ	8B-S123-FBJ	8B-S123-HBJ	8B-S123-ECH	8B-S123-FCH	8B-S123-HCH
Strata-X-AW	8B-S038-TAK	—	8B-S038-UBJ	8B-S038-FBJ	8B-S038-HBJ	8B-S038-ECH	8B-S038-FCH	8B-S038-HCH
Strata-XL	8B-S043-TAK	—	8B-S043-UBJ	8B-S043-FBJ	8B-S043-HBJ	8B-S043-ECH	8B-S043-FCH	8B-S043-HCH
Strata-XL-C	8B-S044-TAK	—	8B-S044-UBJ	8B-S044-FBJ	8B-S044-HBJ	8B-S044-ECH	8B-S044-FCH	8B-S044-HCH
Strata-XL-CW	8B-S052-TAK	—	8B-S052-UBJ	8B-S052-FBJ	8B-S052-HBJ	8B-S052-ECH	8B-S052-FCH	8B-S052-HCH
Strata-XL-A	8B-S053-TAK	—	8B-S053-UBJ	8B-S053-FBJ	8B-S053-HBJ	8B-S053-ECH	8B-S053-FCH	8B-S053-HCH
Strata-XL-AW	8B-S051-TAK	—	8B-S051-UBJ	8B-S051-FBJ	8B-S051-HBJ	8B-S051-ECH	8B-S051-FCH	8B-S051-HCH

Accessories For Tubes

Adapter Caps		
Part No.	**Description**	**Unit**
AH0-7191	Adapter Caps for 1, 3, and 6 mL SPE tubes, polyethylene, with Luer tip	15/pk

96-Well Plate Ordering Information

Process Samples with a Vacuum Manifold

96-Well Plate + 96-Well Plate Manifold

OR

Process Samples with a Robot

Robot

Strata-X Polymer-Based Sorbents

96-Well Plates (2/Box)			
Phase	10 mg	30 mg	60 mg
Strata-X-AW	8E-S038-AGB	8E-S038-TGB	8E-S038-UGB
Strata-X-A	8E-S123-AGB	8E-S123-TGB	8E-S123-UGB
Strata-X	8E-S100-AGB	8E-S100-TGB	8E-S100-UGB
Strata-X-C	8E-S029-AGB	8E-S029-TGB	8E-S029-UGB
Strata-X-CW	8E-S035-AGB	8E-S035-TGB	8E-S035-UGB
Strata-XL-AW	–	8E-S051-TGB	–
Strata-XL-A	–	8E-S053-TGB	–
Strata-XL	–	8E-S043-TGB	–
Strata-XL-C	–	8E-S044-TGB	–
Strata-XL-CW	–	8E-S052-TGB	–

Strata Silica-Based Sorbents

96-Well Plates (2/Box)			
Phase	25 mg	50 mg	100 mg
C18-E	8E-S001-CGB	8E-S001-DGB	8E-S001-EGB
C18-U	—	8E-S002-DGB	8E-S002-EGB
C18-T	8E-S004-CGB	8E-S004-DGB	—
C8	8E-S005-CGB	8E-S005-DGB	8E-S005-EGB
Phenyl	8E-S006-CGB	8E-S006-DGB	8E-S006-EGB
Silica	—	8E-S012-DGB	8E-S012-EGB
NH_2	8E-S009-CGB	8E-S009-DGB	8E-S009-EGB
SAX	8E-S008-CGB	8E-S008-DGB	8E-S008-EGB
SCX	8E-S010-CGB	8E-S010-DGB	8E-S010-EGB
WCX	8E-S027-CGB	8E-S027-DGB	8E-S027-EGB
Screen-C	—	8E-S016-DGB	8E-S016-EGB
Screen-A	8E-S019-CGB	—	—
SDB-L	—	8E-S014-DGB	—

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

Round Well Sealing Mats

Part No.	Description	Material	Unit
AH0-8631	Pierceable, 7 mm diameter	Silicone	50/pk
AH0-8632	Pre-Slit, 7 mm diameter	Silicone	50/pk
AH0-8633	Pierceable, 8 mm diameter	Silicone	50/pk
AH0-8634	Pre-Slit, 8 mm diameter	Silicone	50/pk
AH0-7362	Sealing Tap Pad	—	10/pk

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

Square Well Sealing Mats

Part No.	Description	Material	Unit
AH0-8597	Pierceable	Silicone	50/pk
AH0-8598	Pre-Slit	Silicone	50/pk
AH0-8199	Pierceable	Santoprene™	100/pk
AH0-7195	Pierceable	Ethylene Vinyl Acetate (EVA)	50/pk
AH0-7362	Sealing Tap Pad	—	10/pk

guarantee

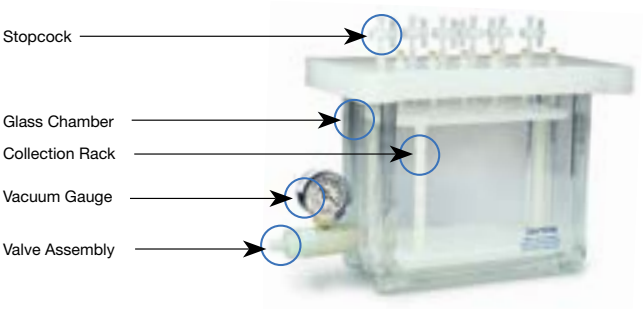
If Strata SPE products do not perform as well or better than your current SPE product of similar phase, mass and size, return the product with comparative data within 45 days for a FULL REFUND.

Sample Preparation Accessories

Instantly Increase Throughput Without Investing in Expensive Capital Equipment

SPE Tube Vacuum Manifold

- Process up to 12 or 24 samples at one time
- Process up to 10 large volume samples at one time
- Female Luer inlets fit all male Luer tipped SPE tubes and cartridges

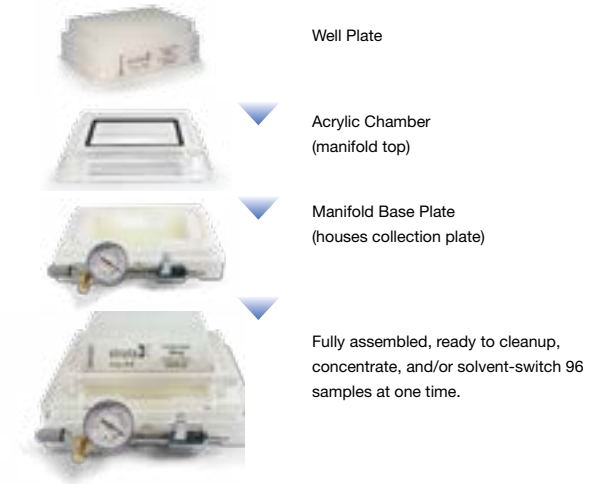


Ordering Information

Part No.	Description	Unit
24 - Position Vacuum Manifold*[3]		
AH0-6024	SPE 24-Position Vacuum Manifold Set, complete assembly	ea
24 – Position Vacuum Manifold Replacement Parts		
AH0-6026	SPE Glass Chamber	ea
AH0-6028	SPE Cover, Gasket and 24 Stopcocks	ea
AH0-6030	SPE Gaskets	2/pk
AH0-6038	SPE Collection Rack Assembly, including plates, legs and clips[3]	ea
AH0-6049	SPE Luer Stopcocks	24/pk
12 - Position Vacuum Manifold*[2]		
AH0-6023	SPE 12-Position Vacuum Manifold Set, complete assembly	ea
12 – Position Vacuum Manifold Replacement Parts		
AH0-6025	SPE 12-Position Glass Chamber	ea
AH0-6027	SPE Cover, Gasket and 12 Stopcocks	ea
AH0-6029	SPE Gaskets	2/pk
AH0-6037	SPE Collection Rack Assembly, including plates, legs and clips[2]	ea
AH0-6052	SPE 12-Position Vacuum Waste Container, polypropylene	10/pk
AH0-6049	SPE Luer Stopcocks	24/pk
10 - Position Tall-Boy™ Vacuum Manifold*[1]		
AH0-7502	SPE 10-Position Tall-Boy Vacuum Manifold, complete assembly	ea
10 - Position Tall-Boy™ Vacuum Manifold Replacement Parts		
AH0-7503	SPE 10-Position Tall-Boy Vacuum Manifold, Glass Chamber	ea
AH0-7504	SPE 10-Position Tall-Boy Vacuum Manifold, Cover, Gasket and 10 Stopcocks	ea
AH0-6049	SPE Luer Stopcocks	24/pk

96-Well Plate Vacuum Manifold

- Includes vacuum valve attachment and two collection plate spacer inserts
- Made of durable acrylic
- Designed to accommodate 96-well plates, collection plates, protein precipitation plates, and filtration plates



Ordering Information

Part No.	Description	Unit
96-Well Plate Manifold**		
AH0-8950	96-Well Plate Manifold, Universal w/vacuum gauge	ea
Replacement Parts		
Part No.	**Description**	**Unit**
AH0-7285	96-Well Plate Manifold Replacement Gasket, Flat (to fit between acrylic chamber and 96-well plate), black	ea
AH0-7198	96-Well Plate Manifold Replacement Gasket, Profile, (to fit between acrylic chamber and manifold base), white	ea
AH0-8637	Reservoir, Single Well, High Profile, 96 Bottom Troughs	25/pk

**Manifold, compatible with 2 mL Impact plate, Strata and Strata-X 96-well plate formats.

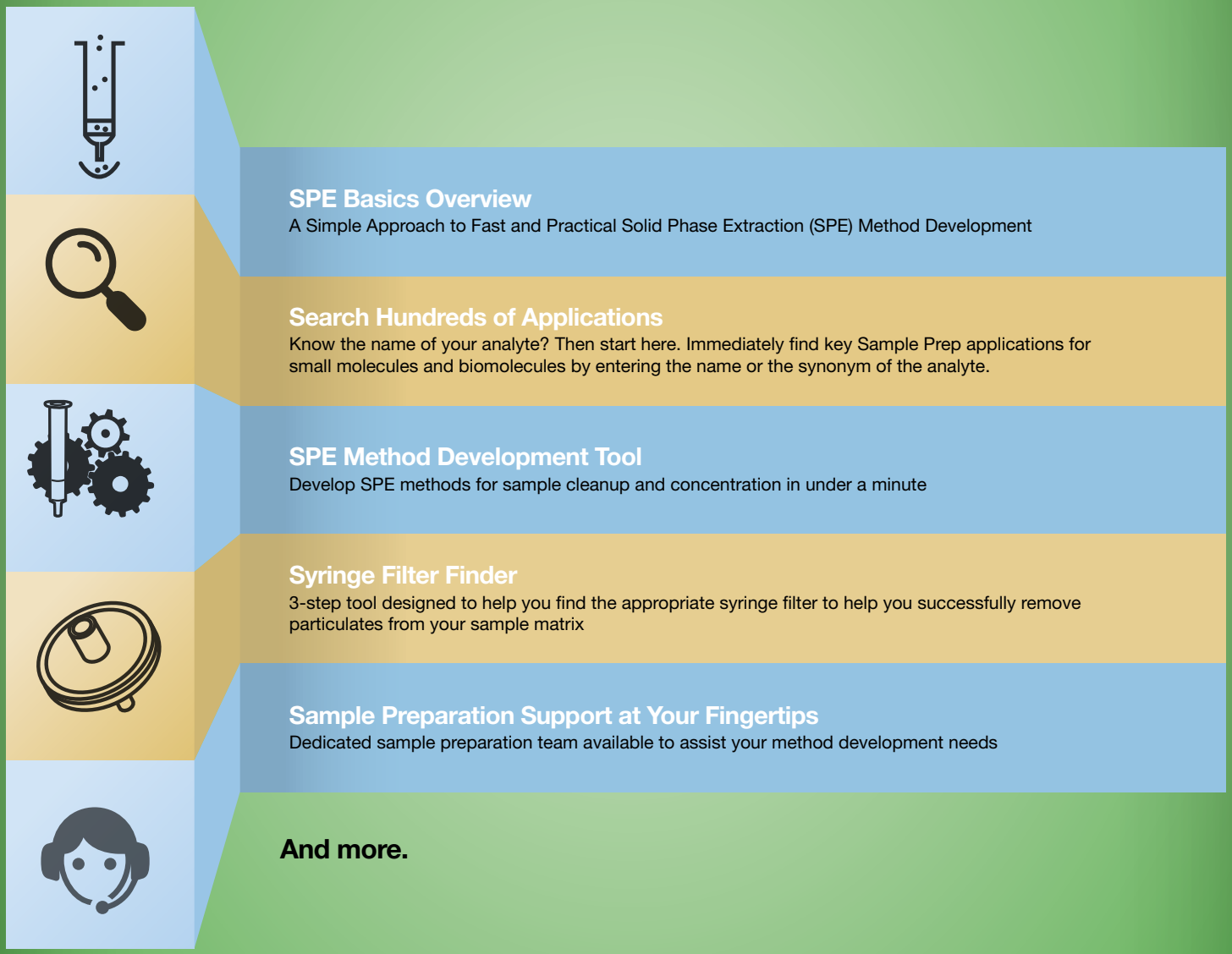
* Manifolds include: Vacuum-tight glass chamber, vacuum gauge assembly, polypropylene lid with gasket, male and female luers and yellow end plugs, stopcock valves, collection rack assemblies, polypropylene needles, lid support legs. Waste container included with 12-position manifold.

(1) The 10-position Tall Boy Vacuum Manifold Collection Rack includes 4 plates: one base plate, one dimple plate, one small plate and one large plate and three riser bar legs, along with 12 manifold clips to support the plates. The assembly also includes 10 polypropylene needles, 10 stopcocks and 4 black legs to support the lid when taken off the glass block.

(2) The 12-position Collection Rack Assembly consists of 3 support legs, base plate, dimple plate, small plate, medium plate, large plate, volumetric plate, and 12 retaining clips.

(3) The 24-position Collection Rack Assembly consists of 3 support legs, base plate, dimple plate, small plate, large plate, and 12 retaining clips.

Sample Preparation Tools and Resources to Serve You



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