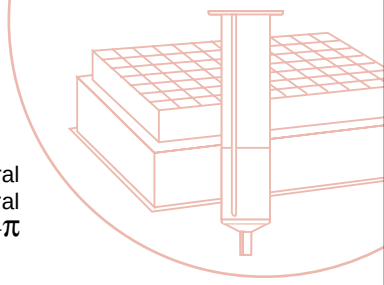


The strata™ X Method

strata-X is a revolutionary, patent-pending polymeric solid phase extraction (SPE) sorbent. This simple, general extraction method relies upon the unique polarity of the strata-X sorbent to retain a wide range of acidic, neutral and basic compounds from aqueous matrices by utilizing a combination of hydrophobic, hydrophilic and π–π retention mechanisms. It is designed to serve as a starting point and may be optimized for specific analytes.

Table 1. The physical and chemical characteristics of strata-X

Phase:	surface modified styrene-divinylbenzene polymer
Particle size:	33µm
Pore size:	85Å
Surface area:	800m²/g
pH stability:	1-14

Specimen preparation:

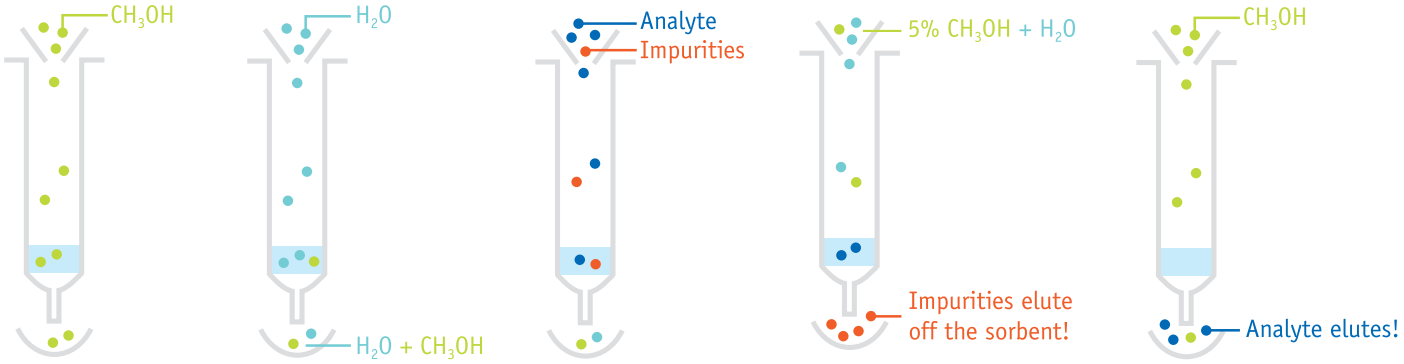
urine: dilute urine with an equal volume of 100mM phosphate buffer (pH = 6.0). Be aware that many compounds are excreted as glucuronide metabolites from urine and may need hydrolysis.

plasma/serum: dilute 1:1 with deionized (DI) water or 100mM phosphate buffer (pH = 6.0). Be aware that the target compound maybe protein bound and may require an additional protein disruption step prior to extraction.

other aqueous samples: adjust pH to 5.5-7.5.

The strata-X method for general screening:

The volumes shown are for 30mg sorbent mass.



Condition
with 1mL methanol

Equilibrate
with 1mL D.I. water

Load Sample

Wash Impurities
with 1mL 5% methanol in D.I. water and dry 30 sec at full vacuum

Elute Analyte!
with 1mL methanol

Optimize the strata-X method	Comments
Polar compounds: *Wash:* 10-20% acetonitrile (or methanol) in water *Elution:* methanol/acetonitrile/water/acid (60:30:10:0.1)	Optimizes the method for more aggressive clean-up of the interferences during the wash step and to elute the stubborn, strongly retained polar analytes.
Acidic compounds: *Wash:* 2% acetic acid in methanol/water (5:95) *Elution:* 2% ammonium hydroxide in methanol/water (50:50)	Ensures the pH of the solution in the wash step is kept low so that the acidic compounds remain neutralized, increasing their retention. This allows for aggressive clean-up of interferences. Base is added to the elution solvent facilitating the extraction of the analytes.
Basic compounds: *Wash:* 2% ammonium hydroxide in methanol/water (5:95) *Elution:* 2% acetic acid in methanol/water (50:50)	Ensures the pH of the solution in the wash step is kept high so that the basic compounds remain neutralized, increasing their retention. This allows for aggressive clean-up of interferences. The pH of the elution solvent is lowered by adding acid, facilitating the extraction of the analytes.

The strata™ X Method

Extraction Tips!

Preparing solutions
100mM phosphate buffer (pH 6)

Add 13.6g of monobasic potassium phosphate to an empty 1L volumetric flask. Add 900mL DI water to dissolve the solid. Adjust the pH to 6 with 1M potassium hydroxide while stirring. Bring the volume up to the mark with DI water.

Optimal Elution Flow Rate: Do not exceed 1-2mL/min!
A significant benefit of polymeric sorbents is that the larger surface area allows the use of smaller sorbent bed masses. It is crucial for optimal kinetics of analyte desorption that the flow rate does not exceed 1-2mL/min during the elution of the analyte. Fast flow rates can lead to low recoveries. In addition, it is recommended that the elution solvent be allowed to soak into the sorbent for 30 seconds prior to applying vacuum.

Optimize the solvent volumes
Table A: Sorbent Capacity and Solvent Volumes:

Sorbent Mass (mg)	Sorbent Capacity[1](mg)	Solvent Volume[2] (mL)
10	0.60 - 1.65	>0.2
30	2.0 - 5.0	>0.6
60	4.0 - 10.0	>1.2
100	6.0 - 16.0	>2.0
200	13.0 - 33	>4.0
500	33 - 75	>10.0

Note 1: The capacity of the sorbent is the total mass of solutes (target analytes + interferences) that a given sorbent mass can retain under a specific set of loading conditions. A range is specified, as the sorbent capacity will vary depending on the chemical nature of the analyte and the matrix.

Note 2: The elution volume will be specific to the chemical nature of the analyte being extracted, its concentration in the sample, the chemical nature of the solvent and the bed mass being used. While this table should serve as a guide, it is recommended that an elution study be conducted to ensure that a sufficient amount of the analyte is being extracted at the lowest elution volume possible.

Example Elution Profile Study for a 30mg/1mL tube

1. Set up several individual tubes for the test. The number of tubes tested will depend on the accuracy required. We recommend at least four increments of elution, and a minimum of three replicates of each increment for accuracy (12 tubes). More increments can be used if required.
2. Follow the strata-X method for conditioning, loading, and washing steps.
3. Elute with methanol at increasing increments (starting at ½ the volume from Table A). For a 30mg/1mL tube, elution increments may be: 300µL, 400µL, 500µL, 600µL, and 700µL.

Questions? Please contact your local Phenomenex Technical Consultant

strata-X is available in the following formats**.**

Tubes		**96-Well Plates**	
Order number	Description	Order number	Description
8B-S100-TAK	30mg/1mL	8E-S100-AGB	10mg/well
8B-S100-UBJ	60mg/3mL	8E-S100-TGB	30mg/well
8B-S100-ECH	100mg/6mL		
8B-S100-FCH	200mg/6mL		
8B-S100-HCH	500mg/6mL		
8B-S100-HDG	500mg/12mL		
8B-S100-JEG	1000mg/20mL		

This method is designed to start as a convenient starting point for further investigation. Phenomenex makes no guarantee regarding the accuracy or completeness of the method.