S*PURE

PRODUCT CATALOGUE

Every part of our SPE manufacturing process is carefully monitored.

From silica production to final product, we perform over 30 tests, and provide a comprehensive quality assurance certificate that displays the 18 most meaningful results to the SPE user.*

*Applies to silica-based media.

Contents

How to Choose an SPE Product

1. Characterize the Sample

Factors such as the analyte's polarity relative to the matrix, the presence of charged functional groups, solubility, molecular weight, etc., determine how strong the analyte is retained by the packed bed.

2. Select a Retention Strategy

There are two basic methods for sample treatment:

a. Select the packing bed to retain the desired analyte. The contaminants are washed off and the desired analyte is then eluted for analysis.

b. Select the packing bed to retain the contaminants and the desired analyte passes directly through.

3. Select the Proper Packing Type

Select the proper packing type for the cleanest extract with the highest recovery.

a. Reversed-phase packings are hydrophobic, silica-based materials that retain moderately polar to non-polar compounds from a polar matrix while washing off polar interferences. Or you can retain non-polar contaminants while the polar compounds pass through unretained.

b. Normal-phase packings are hydrophilic, silica-based materials that retain polar compounds from a non-polar matrix while washing off non-polar interferences. Or you can retain polar contaminants while non-polar compounds pass through unretained.

c. Ion-exchange resins retain charged compounds or remove ionic interferences.

4. Optimize Conditions for Best Results

Select proper bed size and suitable conditioning, wash and elution solvents.

a. Poor sample recovery often occurs when the packed bed dimensions are not optimized. An excessive bed weight results in incomplete elution while an insufficient bed weight results in incomplete retention.

b. Consider the solvent strength relative to the packing material. The final conditioning solvent should be weak so it doesn't act as an eluting solvent. Buffers should be used to control ionization of potentially charged compounds.

c. Wash solvents should remove weakly retained interferences without being strong enough to elute the analyte.

d. Elution solvents should be strong enough to completely elute an analyte in a small volume (1–2mL).

Tech. tip

To calculate sorbent bed volume, use 150µL for every 100mg of sorbent.

Tech. tip

Retention capacity describes the total amount that an SPE sorbent will bind. This includes all compounds retained – analytes of interest as well as the contaminants.

Tech. tip

Minimum elution volume recommended in bed size chart above will offer best sensitivity, but more solvent may be required depending on application.

SPE Method Development

SPE method development typically contains four steps:

Step 1: Condition

The conditioning step is composed of two substeps; the first activates the sorbent ligands, the second equilibrates the sorbent bed.

Step 2: Load

In the load step, sample is applied to the SPE device. Matrix and flow rate are optimized to quantitatively retain target analytes.

Step 3: Wash

In the wash step, choose a solvent that elutes impurities but retains target analytes. Often the second conditioning solvent is a suitable wash solvent.

Step 4: Elute

The elution step ideally removes all target analytes with minimal solvent to maximize sensitivity. Sometimes this requires a combination of solvents to break both the primary and secondary interactions.

	General Method Development Procedures			
	Step 1 – Condition	**Step 2 – Load**	**Step 3 – Wash**	**Step 4 – Elute**
Reversed-Phase Extraction Procedure ***Mechanism:*** Bind moderately polar to non-polar compounds from a polar sample matrix	Methanol followed by water	Process sample at a flow rate of 1–5mL/min	Water or water: methanol (95:5)	Methanol or acetonitrile. May need to add strong acid or base to organic solvent to break secondary interactions.
Normal-Phase Extraction Procedure ***Mechanism:*** Bind polar compounds from a non-polar sample matrix	IPA followed by hexane	Process sample at a flow rate of 1–5mL/min	Hexane or hexane:IPA (98:2)	IPA, ethyl acetate, acetone, or hexane: IPA (50:50)
Ion-Exchange Extraction Procedure ***Mechanism:*** Bind charged (negative/anionic or positive/cationic) compounds	Methanol: water (50:50) followed by low ionic strength (0.1M) buffer	Apply slowly: less than or equal to 1mL/min ion exchange kinetics are slower than reversed- or normal-phase	Methanol: low ionic strength (0.1M) buffer (10:90)	High ionic strength (0.5M–1.0M) buffer or modify pH such that the analyte is uncharged. May need to add organic to break hydrophobic interactions.

Recommended Usage Guidelines*									
Bed Size:	**50mg**	**100mg**	**200mg**	**500mg**	**500mg**	**1000mg**	**2000mg**	**5000mg**	**10,000mg**
Sorbent Retention Capacity:	**2.5mg**	**5mg**	**10mg**	**25mg**	**25mg**	**50mg**	**100mg**	**250mg**	**500mg**
Condition Volume *(4-bed volumes)*	0.30mL	0.60mL	1.20mL	3.00mL	3.00mL	6.00mL	12.00mL	30.00mL	60.00mL
Wash Volume *(6-bed volumes)*	0.45mL	0.90mL	1.80mL	4.50mL	4.50mL	9.00mL	18.00mL	45.00mL	90.00mL
Minimum Elution Volume *(3-bed volumes)*	0.23mL	0.45mL	0.90mL	2.25mL	2.25mL	4.50mL	9.00mL	22.50mL	45.00mL

*Estimates only. Must optimize for each application.

Focus on Quality.

Pure Silica is the key to predictable analyte-sorbent interactions.

It is also the foundation for manufacturing bonded phases with highly reproducible recoveries.

Experts in Media Production

Using a consistent and pure silica base, and employing tightly controlled bonding techniques, insures predictable analyte-sorbent interactions. Both of these aspects also play equal importance in manufacturing a bonded phase with high and reproducible recoveries.

Highest Quality Control

Every part of our manufacturing process is carefully monitored. From silica production to final product, we perform multiple quality tests, and provide a comprehensive quality assurance certificate.

Flexible Manufacturing

At S*Pure we have the flexibility to work with our customers to provide Custom Size Cartridges/Bed Weight combinations to suit your need. Talk to us today regarding your special requirements.

Component Tests

GC/FID shows that **S*Pure™** tubes are constructed from a highly inert grade of polypropylene to prevent extractable contamination. Polyethylene frits are thoroughly washed in organic solvent which also eliminates extractables.

Manufacturing Components & Control Tests		
Parameter	**Value**	**Test**
Tube Purity	Pass	GC/FID Test
Prit Purity	Pass	GC/FID Test
Visual Inspection	Pass	Cognex Viaion System
Sorbent Weight	Pass	Mass Balance Scale
Flowrate	Pass	Pressure vs Air Flow Measurement

Manufacturing Control

S*Pure™ products are packed and assembled using custom-designed, precision equipment. Every manufacturing batch is guaranteed to have less than 2% bed weight variation and uniform flow rates. A sophisticated visual inspection system only accepts product that meets our high standards for bed consistency and frit integrity.

Quality Assurance Certificate

Base Material Properties

S*Pure base silicas are characterized multiple ways to ensure that the starting point for every batch of media is consistent. Parameters that can directly affect SPE results are shown for lot-to-lot comparison.

Sorbent Characterization

Tight specifications promise clean and reproducible sorbent performance. An HPLC chromatogram offers a detailed look at selectivity that is not possible with recovery tests alone. Turbidity measurements after sorbent bondng confirm that fines were not created during the manufacturing process.

Base Material Properties		
Parameter	**Value**	**Test**
Surface Area	525m²/gram	ASAP 2400 Analyzer
Pore Diameter	68Å	ASAP 2400 Analyzer
Pore Volume	0.9cm³/gram	ASAP 2400 Analyzer
Average Particle Size	53µ	Malvern Mastersizer-S

Sorbent Characterization		
Parameter	**Value**	**Test**
Phase Type	Octadecyl	HPLC Test
Endcapped	Yes	LECO CHN-900 Analyzer
Carbon Load	6.5%	LECO CHN-900 Analyzer
Ion Exchange Capacity	N/Ameq/mL	Titration
Fines	0.72NTU	Micro 100 Turbidometer
Sorbent Purity	Pass	GC/FID Test
Surface Coverage	2.00_mol/m²	Calculation Based on %C
pH	4.0	pH Meter

Test Probe	Relative	Retention alpha
Uracil		
Phenol	Tol/Ph	4.00
Diethyltoluamide	Tol/DET	1.30
Toluene		

S*Pure SPE Product Lines

Extract-Clean™ Columns

Format: SPE Columns

Sizes: 1.5, 4, 8, 15, 25, 75mL
(the entire tube volume)

Summary: In production for over 25 years, with proven consistency, this is our most comprehensive SPE product line. It includes 30 media types in over 10 different bed weights. And with a complete offering of reversed, normal, and specialty medias exhibiting unique retention properties, you are sure to find the packing that delivers a cleaner, more concentrated sample.

Maxi-Clean™ Cartridges

Format: SPE Cartridges

Sizes: 300, 600, 900mg
(media amount, not device volume)

Summary: The Maxi-Clean™ line is offered in many of the same media as the Extract-Clean™ line, but slightly paired down, with over 20 chemistries available. This lure hub cartridge device is not as prevalent in the SPE industry, and while manual processing is most common, this format offers a number of other interesting processing options, including multimedia extractions.

Bioselect® Columns

Format: SPE Columns

Sizes: 1, 3mL (volume above the packing)

Summary: Ideal for extraction, concentration and cleanup of biological samples. This 300Å silica-based media has the same properties as the industry-leading Vydac® TP HPLC packing. Offered in C18 and C4, use for a variety of protein and peptide applications.

SEClute™ Columns

Format: SPE Columns

Sizes: 1, 3, 6, 12, 20, 60mL (volume above the packing)

Summary: Our in-house capability to make everything from the silica particle to the finished good means we can deliver SEClute™ as the best value in SPE. With a concise offering of 11 sorbents in six bed weights, this high-quality SPE product line is a result of operational excellence that S*Pure is known for.

SPE Columns

- Open top tubes with male luer bottom
- Process multiple samples with vacuum manifold or automated SPE instruments
- Process individual samples manually with use of adapter and syringe

SPE Cartridges

- Female luer top and male luer bottom
- Process single cartridge by syringe or multiple cartridges by vacuum
- Stack for multi-step extractions

Device Options

Device Specifications		
Device	**Housing**	**Frit Material**
Extract-Clean™ Columns	Polypropylene	20µm Polyethylene
SEClute™ Columns	Polypropylene	20µm Polyethylene
Bioselect® Columns	Polypropylene	Glass Fiber Filter Paper with Polyethylene Mesh Support
Maxi-Clean™ Cartridges	Polypropylene	20µm Polyethylene

Reference chart	
Extract Clean	**SEClute™/Bioselect®**
1.5mL	1mL
4mL	3mL
8mL	6mL
15mL	12mL
25mL	20mL
75mL	60mL

Traditionally, differing nomenclature has been used to describe SPE column size. Sometimes columns are described in terms of full volume. Alternatively, the volume above the bed weight may also be used. The table above, right, is a cross-reference for your convenience.

S*Pure® SPE Sorbents

S*Pure® SPE Sorbents are packed into 2 device types: Columns and cartridges. *See chart for availability.*

Reversed-Phases (Non-Polar) Sorbent Specifications

Packing	Base	% Carbon	End-capped	Average Particle Size	Pore Size	Features	Benefits	Extract-Clean™	Maxi-Clean™
Prevail™ C18	Silica	11.0%	Yes	50µm	60Å	100% water wettable	Hydrophilic/hydrophobic retention. Phase remains active even when completely dry. Can omit preconditioning step.	•	•
Standard C18	Silica	6.0%	Yes	50µm	60Å	Low carbon load C18	General purpose phase.	•	•
High-Flow C18	Silica	8.0%	Yes	100µm	60Å	Large particle	Less flow resistance for faster flow rates of large volume sample.	•	
High-Capacity C18	Silica	17.0%	Yes	50µm	60Å	High carbon load	Maximum capacity phase.	•	•
Large Pore C18	Silica	14.0%	Yes	50µm	150Å	Larger than average pore size	Ideal for compounds >1500MW.	•	•
Octyl (C8)	Silica	4.5%	Yes	50µm	60Å	Less hydrophobic than C18	Less retention of highly hydrophobic compounds. Use when C18 is too retentive.	•	•
Ethyl (C2)	Silica	5.5%	Yes	50µm	60Å	Short chain functional group is less hydrophobic than C8	Less retention of highly hydrophobic compounds. Use when C8 is too retentive.	•	•
Phenyl (PH)	Silica	3.8%	Yes	50µm	60Å	Aromatic structure	Highly selective for aromatic compounds.	•	•

Normal-Phases (Polar) Sorbent Specifications

Packing	Base	% Carbon	End-capped	Average Particle Size	Pore Size	Features	Benefits	Extract-Clean™	Maxi-Clean™
Silica (SI)	Silica	—	—	50µm	60Å	Highly polar surface	Most common polar phase.	•	•
Aminopropyl (NH_2)	Silica	5.0%	No	50µm	60Å	Polar phase with slight anion exchange properties	Ideal for carbohydrates or generally with analyses containing hydroxyl functional groups.	•	•
Cyanopropyl (CN)	Silica	6.0%	Yes	50µm	60Å	Unique selectivity	Can be used in normal-phase or reversed-phase modes.	•	•
Diol (2OH)	Silica	4.0%	No	50µm	60Å	Polar surface with minor hydrophobic retention	Wets easily and offers more reproducibility.	•	•
Florisil® (FL)	Magnesium Silicate	—	—	75–150µm	60Å	Highly polar surface	Referenced in many EPA methods. Ideally suited for pesticides and metals.	•	•
Florisil® PR (FL-PR)	Magnesium Silicate	—	—	75–150µm	60Å	Specifically tested for chlorinated pesticides	Ensures most inert batches suitable for highly active compounds.	•	•
Alumina Acidic (AL-A)	Aluminum Oxide	—	—	130µm	100Å	Alumina washed with acid surface	Increase capacity for acidic compounds.	•	•
Alumina Basic (AL-B)	Aluminum Oxide	—	—	130µm	100Å	Alumina washed with base surface	Increase capacity for basic compounds.	•	•
Alumina Neutral (AL-N)	Aluminum Oxide	—	—	130µm	100Å	Alumina washed with neutral surface	Interacts with highly aromatic compounds and neutral hydroxyls.	•	•

Specialty Packings Specifications

Packing	Base	% Carbon	End-capped	Average Particle Size	Pore Size	Features	Benefits	Extract-Clean™	Maxi-Clean™
DVB	100% DVB	—	—	40µm	—	100% DVB	Greater capacity than C18 for general SPE. Also free vinyl surface groups make a suitable solid-phase synthesis support.	•	
Carbograph	Graphitized Carbon	—	—	38–125µm	—	Graphitized Carbon	Retains polar organics in aqueous matrices. Ideally suited for acid, base-neutral extraction of pesticides and herbicides.	•	
Drug-Clean SB-C	Silica	—	—	50µm	60Å	Silica-based mixed mode C8/cation exchange	Ideal for drugs of abuse.	•	
Drug-Clean SB-A	Silica	—	—	50µm	60Å	Silica-based mixed mode C8/anion exchange	Ideal for drugs of abuse.	•	
Drug-Clean PB	Polymer	—	—	30µm	—	Polymer-based mixed mode C8/cation exchange	pH stable with no conditioning required. Extract acidic, neutral and basic drugs of abuse from single column.	•	

General Ion-Exchange Sorbent Specifications

Packing	Base	Counter Ion	Size Particle	Group Functional	Capacity Exchange	Retains	Applications	Extract-Clean™	Maxi-Clean™
SCX	Styrene-DVB	Hydrogen	50µm	Benzene Sulfonic Acid	2.0meq/mL	Cations, (+) charged compounds	Remove/concentrate basic compounds.	•	•
SAX	Styrene-DVB	Acetate	50µm	Tetramethyl Ammonium	1.0meq/mL	Anions, (–) charged compounds	Remove/concentrate acidic compounds.	•	•

Ion Chromatography Sorbent Specifications

Packing	Base	Counter Ion	Size Particle	Limit Molecular Exclusion	Capacity Exchange	Retains	Applications	Extract-Clean™	Maxi-Clean™
IC-OH	Styrene-DVB	Hydroxide	50µm	1000 Daltons	1.0meq/mL	Anions	Exchanges anions for hydroxide. May be used to remove or concentrate anions from sample and to increase pH of acidic samples. Removes cations that form insoluble hydroxide salts.	•	•
IC-H	Styrene-DVB	Hydronium	50µm	1000 Daltons	2.0meq/mL	Cations	Exchanges cations for H+. May be used to remove or concentrate cations from sample and to reduce pH of basic samples.	•	•
IC-Ag	Styrene-DVB	Silver	50µm	1000 Daltons	2.0meq/mL	Chloride Iodide Bromide	Removes excess halides through formation of Ag-halide salts.	•	•
IC-Ba	Styrene-DVB	Barium	50µm	1000 Daltons	2.0meq/mL	Sulfate	Removes excess sulfate through formation of BaSO.	•	•
IC-Na	Styrene-DVB	Sodium	50µm	1000 Daltons	2.0meq/mL	Cations	Exchanges cations for Na+. May be used to remove or retain cations from sample without changing the pH of the sample.	•	•
IC-Chelate	Styrene-DVB	Sodium	50µm	1000 Daltons	0.4meq/mL	Polyvalent metal ions	Exchanges transition metals and divalent cations for Na+. May be used to remove or retain divalent cations and transition metals from sample.	•	•
IC-RP	Polystyrene	—	550µm	—		Hydrophobic components	Removes surfactants, organic acids, and other organic substances. Inorganic ions pass through.	•	•

S*Pure® Extract-Clean™

Reversed-Phase Sorbents

Extract-Clean™ Columns

- Available: Prevail™ C18, Standard C18, High-Flow C18, High-Capacity C18, Octyl (C8), Ethyl (C2), Phenyl (PH)
- General purpose SPE column with the most comprehensive sorbent offering

Reversed-Phases (Non-Polar) Sorbent Specifications

Functional Group	Base	% Carbon	End-capped	Average Particle Size	Pore Size	Features	Benefits
Prevail™ C18	Silica	11.0%	Yes	50µm	60Å	100% water wettable	Hydrophilic/hydrophobic retention. Phase remains active even when completely dry. Can omit preconditioning step.
Standard C18	Silica	6.0%	Yes	50µm	60Å	Low carbon load C18	General purpose phase.
High-Flow C18	Silica	8.0%	Yes	100µm	60Å	Large particle	Less flow resistance for faster flow rates of large volume sample.
High-Capacity C18	Silica	17.0%	Yes	50µm	60Å	High carbon load	Maximum capacity phase.
Large Pore C18	Silica	14.0%	Yes	50µm	150Å	Larger than average pore size	Ideal for compounds >1500MW.
Octyl (C8)	Silica	4.5%	Yes	50µm	60Å	Less hydrophobic than C18	Less retention of highly hydrophobic compounds. Use when C18 is too retentive.
Ethyl (C2)	Silica	5.5%	Yes	50µm	60Å	Short chain functional group is less hydrophobic than C8	Less retention of highly hydrophobic compounds. Use when C8 is too retentive.
Phenyl (PH)	Silica	3.8%	Yes	50µm	60Å	Aromatic structure	Highly selective for aromatic compounds.

S*Pure® Reversed-Phase Extract-Clean™ Columns

Bed Weight	Column Size	Qty.	Part No.
Prevail™ C18			
100mg	1.5mL	100	**5123197**
500mg	4.0mL	50	**5123209**
500mg	8.0mL	30	**5123210**
1000mg	8.0mL	30	**5123212**
Standard C18			
50mg	1.5mL	100	**5122281**
100mg	1.5mL	100	**5122282**
100mg	4.0mL	50	**5176433**
200mg	4.0mL	50	**5122283**
500mg	4.0mL	50	**5122284**
500mg	8.0mL	30	**5122285**
1000mg	8.0mL	30	**5122286**
2000mg	8.0mL	30	5122287
2000mg	15mL	30	5122288
5000mg	25mL	20	5122487
1000mg	75mL	16	5178149
10,000mg	75mL	16	5122507
High-Flow C18			
500mg	4.0mL	50	5122462
1000mg	8.0mL	30	5122463

S*Pure® Reversed-Phase Extract-Clean™ Columns

Bed Weight	Column Size	Qty.	Part No.
High-Capacity C18			
100mg	1.5mL	100	5122521
200mg	4.0mL	50	5122522
500mg	4.0mL	50	5122523
500mg	8.0mL	30	5122524
1000mg	8.0mL	30	5122525
2000mg	15mL	30	5122526
5000mg	25mL	20	5122527
10,000mg	75mL	16	5148443
Octyl (C8)			
100mg	1.5mL	100	5122290
200mg	4.0mL	50	5122291
500mg	4.0mL	50	5122292
500mg	8.0mL	30	5122293
Ethyl (C2)			
500mg	4.0mL	50	5122314
1000mg	8.0mL	30	5178150
Phenyl (PH)			
500mg	4.0mL	50	5122505

Normal-Phase Sorbents

Extract-Clean™ Columns

- Available: Silica (SI), Aminopropyl (NH2), Cyanopropyl (CN), Diol (2OH), Florisil® (FL), Florisil®-PR (FL-PR), Alumina Acidic (AL-A), Alumina Acidic (AL-B), Alumina Neutral (AL-N)
- General purpose SPE column with the most comprehensive sorbent offering

Reversed-Phases (Non-Polar) Sorbent Specifications

Functional Group	Base	% Carbon	End-capped	Average Particle Size	Pore Size	Features	Benefits
Silica (SI)	Silica	—	—	50µm	60Å	Highly polar surface	Most common polar phase.
Aminopropyl (NH2)	Silica	5.0%	No	50µm	60Å	Polar phase with slight anion exchange properties	Ideal for carbohydrates or generally with analyses containing hydroxyl functional groups.
Cyanopropyl (CN)	Silica	6.0%	Yes	50µm	60Å	Unique selectivity	Can be used in normal-phase or reversed-phase modes.
Diol (2OH)	Silica	4.0%	No	50µm	60Å	Polar surface with minor hydrophobic	
Florisil® (FL)	Magnesium Silicate	—	—	75–150µm	60Å	Highly polar surface	Referenced in many EPA methods. Ideally suited for pesticides and metals.
Florisil®-PR (FL-PR)	Magnesium Silicate	—	—	75–150µm	60Å	Specifically tested for chlorinated	Ensures most inert batches suitable for highly active compounds.
Alumina Acidic (AL-A)	Aluminum Oxide	—	—	130µm	100Å	Alumina washed with acid surface	Increase capacity for acidic compounds.
Alumina Basic (AL-B)	Aluminum Oxide	—	—	130µm	100Å	Alumina washed with base surface	Increase capacity for basic compounds.
Alumina Neutral (AL-N)	Aluminum Oxide	—	—	130µm	100Å	Alumina washed with neutral surface	Interacts with highly aromatic compounds and neutral hydroxyls.

S*Pure® Normal-Phase Extract-Clean™ Columns

Bed Weight	Column Size	Qty.	Part No.
Silica (SI)			
50mg	1.5mL	100	**5122327**
100mg	1.5mL	100	**5122326**
200mg	4.0mL	50	**5122330**
500mg	4.0mL	50	**5122334**
500mg	8.0mL	30	**5122331**
1000mg	8.0mL	30	**5122328**
2000mg	8.0mL	30	**5122332**
2000mg	15mL	30	**5122342**
5000mg	25mL	20	**5122500**
10,000mg	25mL	20	**5122509**
10,000mg	75mL	16	**5122510**
20,000mg	75mL	16	**5122511**
Aminopropyl (NH2)			
100mg	1.5mL	100	**5122434**
200mg	4.0mL	50	**5122436**
500mg	4.0mL	50	**5122442**
500mg	8.0mL	30	**5122445**
1000mg	8.0mL	30	**5122443**
Cyanopropyl (CN)			
200mg	4.0mL	50	**5122347**
500mg	4.0mL	50	**5122352**
500mg	8.0mL	30	**5122359**
Diol (2OH)			
100mg	1.5mL	100	**5122321**
200mg	4.0mL	50	**5122324**
500mg	4.0mL	50	**5122325**
Florisil® (FL)			
100mg	1.5mL	100	**5122278**
200mg	4.0mL	50	**5122316**
500mg	4.0mL	50	**5122279**

S*Pure® Normal-Phase Extract-Clean™ Columns

Bed Weight	Column Size	Qty.	Part No.
Florisil® (FL) (cont.)			
1000mg	8.0mL	30	**5122317**
2000mg	15mL	30	**5122319**
5000mg	25mL	20	**5122488**
10,000mg	75mL	16	**5122508**
Florisil®-PR (FL-PR)			
1000mg	8.0mL	30	**5122514**
Alumina Acidic (AL-A)			
500mg	4.0mL	50	**5122492**
Alumina Neutral (AL-N)			
100mg	1.5mL	100	**5122493**
500mg	4.0mL	50	**5122494**
1000mg	8.0mL	30	**5122497**
2000mg	15.0mL	30	**5122495**
10000mg	75.0mL	16	**5122496**

S*Pure® Extract-Clean™

Ion-Exchange Sorbents

Extract-Clean™ Columns

- Available: SCX, SAX, IC-OH, IC-H, IC-Ag, IC-Ba, IC-Na, IC-Chelate, IC-RP
- General purpose SPE column with the most comprehensive sorbent offering

Ion-Exchange Sorbent Specifications

Packing	Base	Counter Ion	Particle Size	Functional Group	Exchange Capacity	Retains	Applications
SCX	Styrene-DVB	Hydrogen	50µm	Benzene Sulfonic Acid	2.0meq/mL	Cations, (+) charged compounds	Remove/concentrate basic compounds
SAX	Styrene-DVB	Acetate	50µm	Tetramethyl Ammonium	1.0meq/mL	Anions, (–) charged compounds	Remove/concentrate basic compounds

Ion Chromatography Sorbent Specifications

Packing	Base	Counter Ion	Particle Size	Molecular Exclusion Limit	Exchange Capacity	Retains	Applications
IC-OH	Styrene-DVB	Hydroxide	50µm	1000 Daltons	1.0meq/mL	Anions	Exchanges anions for hydroxide. May be used to remove or concentrate anions from sample and to increase pH of acidic samples. Removes cations that form insoluble hydroxide salts.
IC-H	Styrene-DVB	Hydronium	50µm	1000 Daltons	2.0meq/mL	Cations	Exchanges cations for H+. May be used to remove or concentrate cations from sample and to reduce pH of basic samples.
IC-Ag	Styrene-DVB	Silver	50µm	1000 Daltons	2.0meq/mL	Chloride Iodide Bromide	Removes excess halides through formation of Ag-halide salts.
IC-Ba	Styrene-DVB	Barium	50µm	1000 Daltons	2.0meq/mL	Sulfate	Removes excess sulfate through formation of BaSO.
IC-Na	Styrene-DVB	Sodium	50µm	1000 Daltons	2.0meq/mL	Cations	Exchanges cations for Na+. May be used to remove or retain cations from sample without changing the pH of the sample.
IC-Chelate	Styrene-DVB	Sodium	50µm	1000 Daltons	0.4meq/mL	Polyvalent metal ions	Exchanges transition metals and divalent cations for Na+. May be used to remove or retain divalent cations and transition metals from sample.
IC-RP	Polystyrene	—	550µm	—	—	Hydrophobic components	Removes surfactants, organic acids, and other organic substances. Inorganic ions pass through.

General Ion-Exchange Extract-Clean™ Columns

Bed Weight	Column Size	Qty.	Part No.
SCX			
100mg	1.5mL	100	**5122370**
200mg	4.0mL	50	**5122372**
500mg	4.0mL	50	**5122380**
1000mg	8.0mL	30	**5122379**
SAX			
100mg	1.5mL	100	**5122356**
200mg	4.0mL	50	**5122357**
500mg	4.0mL	50	**5122366**
1000mg	8.0mL	30	**5122374**

Ion Chromatography Extract-Clean™ Columns

Packing	Bed Weight	Column Size	Qty.	Part No.
IC-OH	0.5mL	4.0mL	50	**5122909**
IC-OH	1.5mL	4.0mL	30	**5122033**
IC-H	0.5mL	4.0mL	50	**5122910**
IC-H	1.5mL	4.0mL	30	**5122034**
IC-Ag	0.5mL	4.0mL	50	**5121733**
IC-Ag	1.5mL	4.0mL	30	**5122035**
IC-Ba	0.5mL	4.0mL	50	**5122911**
IC-Ba	1.5mL	4.0mL	30	**5122036**
IC-Na	0.5mL	4.0mL	50	**5122912**
IC-Na	1.5mL	4.0mL	30	**5122037**
IC-Chelate	0.5mL	4.0mL	50	**5122803**
IC-Chelate	1.5mL	4.0mL	30	**5122038**
IC-RP	0.5mL	4.0mL	50	**5122898**
IC-RP	1.5mL	4.0mL	30	**5122032**

Specialty Sorbents

Extract-Clean™ Columns

- Available: DVB, Carbograph, Filter, Phase Separator, Drying
- General purpose SPE column with the most comprehensive sorbent offering

Specialty Packings Specifications							
Packing	**Base**	**% Carbon**	**End-capped**	**Average Particle Size**	**Pore Size**	**Features**	**Benefits**
DVB	100% DVB	—	—	40µm	—	100% DVB	Greater capacity than C18 for general SPE. Also free vinyl surface groups make a suitable solid-phase synthesis support.
Carbograph	Graphitized Carbon	—	—	38– 125µm	—	Graphitized carbon	Retains polar organics in aqueous matrices. Ideally suited for acid, base-neutral extraction of pesticides and herbicides.

DVB Extract-Clean™ Columns

- Greater sample capacity than C18
- 100% divinylbenzene reduces swelling
- 40µm average particle size

DVB Extract-Clean™ Columns			
Bed Weight	**Column Size**	**Qty.**	**Part No.**
25mg	1.5mL	100	**5122476**
50mg	1.5mL	100	**5122480**
100mg	1.5mL	100	**5122481**
150mg	4.0mL	50	**5178158**
200mg	4.0mL	50	**5178159**
500mg	4.0mL	50	**5122485**

Carbograph Extract-Clean™ Columns

- Graphitized carbon retains polar organics in aqueous matrices
- Acid, base-neutral extraction of pesticides and herbicides
- 100m^2/g surface area

Carbograph Extract-Clean™ Columns			
Bed Weight	**Column Size**	**Qty.**	**Part No.**
150mg	4.0mL	50	**5122423**
300mg	8.0mL	30	**5122418**
500mg	8.0mL	30	**5122424**
1000mg	15mL	20	**5122422**

Phase Separator Extract-Clean™ Columns

Use for fast and simple separation of organic and aqueous mixed samples. The column contains a 20µm polyethylene frit and a hydrophobic silicone membrane that allows the hydrophobic phase to pass through, while the aqueous phase is retained in the upper chamber.

Phase Separator Extract-Clean™ Columns		
Column Size	**Qty.**	**Part No.**
4.0mL	100	**8604520**
8.0mL	100	**8604521**
25mL	100	**8604522**

Filter Columns

Filter columns are Extract-Clean™ reservoirs with two frits at the outlet end. They remove particulate matter down to 20µm from samples. Syringe adapters will connect filter columns to the tops of Extract-Clean™ columns.

Extract-Clean™ Filter Columns		
Description	**Qty.**	**Part No.**
1.5mL Filter Columns	100	**5122439**
4.0mL Filter Columns	50	**5122440**
8.0mL Filter Columns	50	**5122441**
75.0mL Filter Columns	50	**5122433**

Drying Tubes

Packed with anhydrous sodium sulfate, use these to remove residual water from SPE extracts. They are suitable for pesticide analysis.

Drying Tubes		
Description	**Qty.**	**Part No.**
Extract-Clean™ Column, 3g	100	**5122466**
Maxi Clean, 3g	100	**5122465**

S*Pure® Extract-Clean™ Columns

Drug Clean

Drug-Clean PB Mixed-Mode SPE Columns

- Polymer based
- Extract acidic, basic, and neutral compounds from one column
- Stable from pH 1 to 14
- No conditioning steps required
- Faster flow rates than silica-based materials

Drug-Clean PB has a C18/SCX cation function on a highly cross-linked styrene divinylbenzene base. The high sorbent capacity greatly reduces the amount of packing required for separation.

Each box of columns includes extraction methods for amphetamines, opiates, cocaine/benzoylecgonine, phencyclidine, and carboxy-THC.

Drug-Clean PB Specifications

Functional Group: C18/Cation Function
Base: 30µm Styrene/DVB Polymer
Retention Mechanism: Mixed-mode, reversed-phase, and ion-exchange

Drug-Clean PB SPE Columns			
Bed Weight	**Column Size**	**Qty.**	**Part No.**
30mg	1.5mL	100	**5122515**
30mg	4.0mL	50	**5122516**
50mg	8.0mL	50	**5122517**

Why is a 'True Copolymer' better than a mixed bed?

By definition, a mixed-mode packing contains two different functional groups on the same sorbent.

To minimize costs, two individual packings are sometimes blended together physically and packed in a tube. This gives the effect of a mixed-mode but in fact is a mixed-bed packing with batch-to-batch reproducibility dependent on the blending skills of the manufacturer.

A true mixed-mode has the functional groups polymerized on the same silica base. This copolymer treatment assures a more predictable packing performance which means more reproducible results from tube to tube, batch to batch.

Drug-Clean SB Mixed-Mode SPE Columns

- Silica based
- Efficient – higher recoveries with minimal impurities compared to single mode extractions
- Multi-functional – extract acidic, neutral, and basic compounds with a single SPE bed
- Reproducible – true copolymer is cleaner and more accurate than mixed beds

Drug-Clean C is a C8/SCX cation function. Retain neutral or amine containing compounds while carboxylate groups pass through. Drug-Clean A is a C8/SAX anion function. Retain neutral or carboxylate compounds while amine group retention is minimized.

Each box of columns includes extraction methods for the most popular NIDA drugs of abuse.

Drug-Clean SB Specifications

Functional Group: C8/Ion-Exchange
Base: 50µm irregular silica, 60Å
Retention Mechanism: Mixed-mode, reversed-phase, and ion-exchange

Drug-Clean SB SPE Columns			
Bed Weight	**Column Size**	**Qty.**	**Part No.**
Drug-Clean C (Mixed-Mode Cation) Columns			
100mg	1.5mL	100/pk	**5122302**
200mg	4.0mL	50/pk	**8604527**
500mg	4.0mL	50/pk	**5122303**
500mg	8.0mL	30/pk	**5122304**
Drug-Clean A (Mixed-Mode Anion) Columns			
100mg	1.5mL	100/pk	**5122305**
200mg	4.0mL	50/pk	**5122306**

S*Pure® Maxi-Clean™ Cartridges

Reversed-Phase Cartridges

- Same bed dimensions as 4mL SPE columns for method cross-over
- Process a single cartridge by syringe or multiple cartridges by vacuum
- Stack different cartridges for multi-step extractions
- Use top and bottom caps for easy transport of field samples

Normal-Phases (Polar) Sorbent Specifications

Packing	Base	% Carbon	End-capped	Average Particle Size	Pore Size	Features	Benefits
Prevail™ C18	Silica	11.0%	Yes	50µm	60Å	100% water wettable	Hydrophilic/hydrophobic retention. Phase remains active even when completely dry. Can omit preconditioning step.
Standard C18	Silica	6.0%	Yes	50µm	60Å	Low carbon load C18	General purpose phase.
High-Capacity C18	Silica	17.0%	Yes	50µm	60Å	High carbon load	Maximum capacity phase.
Large Pore C18	Silica	14.0%	Yes	50µm	150Å	Larger than average pore size	Ideal for compounds >1500MW.
Octyl (C8)	Silica	4.5%	Yes	50µm	60Å	Less hydrophobic than C18	Less retention of highly hydrophobic compounds. Use when C18 is too retentive.
Ethyl (C2)	Silica	5.5%	Yes	50µm	100Å	Short chain functional group is less hydrophobic than C8	Less retention of highly hydrophobic compounds. Use when C8 is too retentive.

Maxi-Clean™ Reversed-Phase Cartridges

Packing	Bed Weight	Qty.	Part No.
Prevail™ C18	300mg	50	**5123213**
	500mg	50	**5123214**
	900mg	50	**5123216**
Standard C18	300mg	50	**5122335**
	300mg	100	**5122336**
	500mg	50	**5122337**
	600mg	50	**5122340**
	600mg	100	**5122341**
	900mg	50	**5122344**
	900mg	100	**5122345**
High-Capacity C18	300mg	50	**5122346**
Large Pore C18	300mg	100	**5122482**
	600mg	100	**5122483**
	900mg	100	**5122484**
Octyl (C8)	300mg	50	**5122350**
	300mg	100	**5122351**
	600mg	50	**5122354**
	900mg	50	**5122360**
	900mg	100	**5122362**
Ethyl (C2)	300mg	50	**5122399**

Maxi-Clean™ Drying Cartridges

Packing	Bed Weight	Qty.	Part No.
Sodium Sulfate	3g	100	**5122465**

What is a Maxi-Clean™ cartridge?

A Maxi-Clean™ cartridge is an alternative format for SPE. It uses the same high-quality packing materials as the Extract-Clean™ columns but has a polypropylene housing with both a female luer inlet and a male luer outlet tip.

This allows use of positive pressure from a syringe or negative pressure from a vacuum manifold. 20µm polyethylene frits are placed at each end of the sorbent bed.

The packing material is packed and compressed to improve or optimize flow characteristics.

S*Pure® Maxi-Clean™ Cartridges

Normal-Phase Cartridges

- Same bed dimensions as 4mL SPE columns for method cross-over
- Process a single cartridge by syringe or multiple cartridges by vacuum
- Stack different cartridges for multi-step extractions
- Use top and bottom caps for easy transport of field samples

Normal-Phases (Polar) Sorbent Specifications

Packing	Base	% Carbon	End-capped	Average Particle Size	Pore Size	Features	Benefits
Silica (SI)	Silica	—	—	50µm	60Å	Highly polar surface	Most common polar phase.
Aminopropyl (NH2)	Silica	5.0%	No	50µm	60Å	Polar phase with slight anion exchange properties	Ideal for carbohydrates or generally with analyses containing hydroxyl functional groups
Cyanopropyl (CN)	Silica	6.0%	Yes	50µm	60Å	Unique selectivity	Can be used in normal-phase or reversed-phase modes.
Florisil® (FL)	Magnesium Silicate	—	—	75– 150µm	60Å	Highly polar surface	Referenced in many EPA methods. Ideally suited for pesticides and metals.
Florisil®-PR (FL-PR)	Magnesium Silicate	—	—	75– 150µm	60Å	Specifically tested for chlorinated pesticides	Ensures most inert batches suitable for highly active compounds.
Alumina Acidic (AL-A)	Aluminum Oxide	—	—	130µm	100Å	Alumina washed with acid surface	Increase capacity for acidic compounds.

Maxi-Clean™ Normal-Phase Cartridges

Packing	Bed Weight	Qty.	Part No.
Silica (SI)	300mg	50	**5122365**
	300mg	100	**5122367**
	600mg	50	**5122371**
	600mg	100	**5122373**
	900mg	50	**5122377**
	900mg	100	**5122378**
Aminopropyl (NH2)	300mg	50	**5122388**
	300mg	100	**5122389**
	900mg	100	**5122390**
Cyanopropyl (CN)	300mg	50	**5178150**
Florisil® (FL)	300mg	50	**5122393**
	300mg	100	**5122392**
	900mg	50	**5122394**
	900mg	100	**5122396**
Florisil®-PR (FL-PR)	300mg	50	**5122403**
	300mg	100	**5122405**
	900mg	50	**5122407**
	900mg	100	**5122404**
Alumina Neutral (AL-N)	300mg	25	**5122413**
	1800mg	25	**5122416**

S*Pure® Maxi-Clean™ Cartridges

Ion-Exchange Cartridges

- Eliminate matrix interferences before ion analysis
- Seven chemistries solve a variety of specific problems

The most difficult part of many IC applications is eliminating interfering components from the sample matrix. These interferences may co-elute or mask peaks of interest, overload the column, or shorten the column life by binding irreversibly to the column packing.

The S*Pure® unique ion-exchange SPE cartridge eliminates many of these interferences. Each metal-free polypropylene cartridge contains 0.5mL or 1.5mL of purified polystyrene resin, contained by 20µm polyethylene frits. The resin is functionalized to retain specific types of components from the sample.

Ion-Exchange Sorbent Specifications

Packing	Base	Counter Ion	Particle Size	Functional Group	Exchange Capacity	Retains	Applications
SCX	Styrene-DVB	Hydrogen	50µm	Benzene Sulfonic Acid	2.0meq/mL	Cations, (+) charged compounds	Remove/concentrate basic compounds.
SAX	Styrene-DVB	Acetate	50µm	Tetramethyl Ammonium	1.0meq/mL	Anions, (–) charged compounds	Remove/concentrate basic compounds.

Ion Chromatography Sorbent Specifications

Packing	Base	Counter Ion	Particle Size	Molecular Exclusion Limit	Exchange Capacity	Retains	Applications
IC-OH	Styrene-DVB	Hydroxide	50µm	1000 Daltons	1.0meq/mL	Anions	Exchanges anions for hydroxide. May be used to remove or concentrate anions from sample and to increase pH of acidic samples. Removes cations that form insoluble hydroxide salts.
IC-H	Styrene-DVB	Hydronium	50µm	1000 Daltons	2.0meq/mL	Cations	Exchanges cations for H+. May be used to remove or concentrate cations from sample and to reduce pH of basic samples.
IC-Ag	Styrene-DVB	Silver	50µm	1000 Daltons	2.0meq/mL	Chloride Iodide Bromide	Removes excess halides through formation of Ag-halide salts.
IC-Ba	Styrene-DVB	Barium	50µm	1000 Daltons	2.0meq/mL	Sulfate	Removes excess sulfate through formation of BaSO.
IC-Na	Styrene-DVB	Sodium	50µm	1000 Daltons	2.0meq/mL	Cations	Exchanges cations for Na+. May be used to remove or retain cations from sample without changing the pH of the sample.
IC-Chelate	Styrene-DVB	Sodium	50µm	1000 Daltons	0.4meq/mL	Polyvalent metal ions	Exchanges transition metals and divalent cations for Na+. May be used to remove or retain divalent cations and transition metals from sample.
IC-RP	Polystyrene	—	550µm	—	—	Hydrophobic components	Removes surfactants, organic acids, and other organic substances. Inorganic ions pass through.

General Ion-Exchange Maxi-Clean™ Cartridges

Packing	Bed Weight	Qty.	Part No.
SCX	300mg	50	**5178148**
	600mg	50	**5122468**
	600mg	100	**5122469**
SAX	600mg	50	**5122471**
	600mg	100	**5122472**
	900mg	25	**5178135**

Ion Chromatography Maxi-Clean™ Cartridges

Packing	Bed Weight	Qty.	Part No.	Packing	Bed Weight	Qty.	Part No.
IC-OH	0.5mL	50	**5122573**	**IC-Ba**	1.5mL	25	**5122572**
IC-OH	1.5mL	25	**5122567**	**IC-Na**	0.5mL	50	**5122580**
IC-H	0.5mL	50	**5122575**	**IC-Na**	1.5mL	25	**5122574**
IC-H	1.5mL	25	**5122568**	**IC-Chelate**	0.5mL	50	**5122565**
IC-Ag	0.5mL	50	**5122577**	**IC-Chelate**	1.5mL	25	**5122576**
IC-Ag	1.5mL	25	**5122569**	**IC-RP**	0.5mL	50	**5122571**
IC-Ba	0.5mL	50	**5122579**	**IC-RP**	1.5mL	25	**5122566**

S*Pure® SEClute™ Columns ALL NEW

Simple Choices

SEClute™ SPE products have a concise offering of sorbents suitable for a variety of applications. Whether pharmaceutical or petrochemical, these products deliver the selectivity and high recovery you expect. Use this guide to help you choose the appropriate sorbent, bed size, and solvent volumes to ensure you have a cleaner, more concentrated sample at the end of your SPE process.

Reversed Phase Sorbents

Sorbent	Support	Carbon (%)	Endcapping	Surface Area (m^2/g)	Particle Size (µm)	Pore Size (Å)	Feature	Benefit	Application type
C18-Max	Silica	17.1	Yes	518	50	60	Polymerically bonded 17% carbon load	Highest binding capacity, best for complex samples or structurally diverse analytes	Drugs and their metabolites in serum and plasma, pesticides
C18-Aq	Silica	12.5	Yes	518	50	60	Hydrophilic endcapping	Water-wettable C18 ideal for aqueous samples. Phase remains active even when completely dry.	Desalting proteins, pharmaceuticals, hormones, pesticides, organics in water
C18-Low	Silica	6.5	Yes	518	50	60	Least hydrophobic C18 phase	C18 phase that easily releases very hydrophobic compounds.	Surfactants, oils, antibiotics
C18-Fast	Silica	7.0	Yes	518	100	60	Large 100µm particle	Process large volume (>500mL) or viscous samples with fast flow rates.	Aniline, pesticides, haloethers, phthalate esters, EPA 3620, 3610
TMS	Silica	5.6	No	518	50	60	Low carbon load trimethyl silane phase	Least hydrophobic reversed phase elutes non-polar compounds easily. Short carbon chain has little steric hindrance to uniformly cover silica surface.	Oils, dyes, surfactants

Normal Phase Sorbents

Sorbent	Support	Carbon (%)	Endcapping	Surface Area (m^2/g)	Particle Size (µm)	Pore Size (Å)	Feature	Benefit	Application type
Silica	Silica	N/A	N/A	518	50	60	Most polar phase	Able to differentiate between structurally similar compounds.	Aflatoxins, pesticides,steroids, structural isomers
Amino	Silica	4.3	No	518	50	60	Duel retention	Retains polar compounds, or can act as a weak anion exchanger. Easily releases strong acids when SAX binds too strongly.	Carbohydrates, dyes, lipids, mycotoxins, strong acids
Diol	Silica	N/A	No	518	50	60	Reproducible polar bonded phase	Very polar phase that has the same benefits as silica, but wets easily and offers more reproducibility.	Alkaloids, lipids, oils, structural isomers

S*Pure® SEClute™ Columns

Tech. tip

To calculate sorbent bed volume, use 150µL for every 100mg of sorbent.

Tech. tip

Retention capacity describes the total amount that an SPE sorbent will bind. This includes all compounds retained – analytes of interest as well as the contaminants.

Tech. tip

Minimum elution volume recommended in bed size chart above will offer best sensitivity, but more solvent may be required depending on application.

Ion Exchange Sorbents							
Sorbent	**Support**	**Exchange Capacity (meq/g)**	**Counter Ion**	**Particle Size (µm)**	**Feature**	**Benefit**	**Application type**
Anion-X	8% cross-linked styrene-divinylbenzene	1.5	Acetate form	50	Tetramethyl ammonium functional group on polymer base material	pH range from 1–14, with excellent exchange capacity.	Anionic compounds: organic acids, fatty acids
Cation-X	8% cross-linked styrene-divinylbenzene	2.4	Hydrogen form	50	Benzene sulfonic acid functional group on polymer base material	pH range from 1–14, with excellent exchange capacity.	Cationic compounds: amines, amino acids

Recommended Usage Guidelines*									
Bed Size:	**50mg**	**100mg**	**200mg**	**500mg**	**500mg**	**1000mg**	**2000mg**	**5000mg**	**10000mg**
Sorbent Retention Capacity	2.5mg	5mg	10mg	25mg	25mg	50mg	100mg	250mg	500mg
Condition Volume *4 bed volume*	0.30mL	0.60mL	1.20mL	3.00mL	3.00mL	6.00mL	12.00mL	30.00mL	60.00mL
Wash Volume *6 bed volumes*	0.45mL	0.90mL	1.80mL	4.50mL	4.50mL	9.00mL	18.00mL	45.00mL	90.00mL
Min. Elution Volume *3 bed volumes*	0.23mL	0.45mL	0.90mL	2.25mL	2.25mL	4.50mL	9.00mL	22.50mL	45.00mL

S*Pure SEClute™ Columns

Cross Reference Chart						
Try SEClute™ Sorbent	**If you use:**	**JT Baker** Bakerbond™	**Phenomenex** Strata™	**Supelco** Discovery™ Supelclean™	**Varian** Bond Elut®	**Waters** Sep-Pak®
C18-Max		Octadecyl	C18-E	DSC-18	C18	tC18
C18-Aq		Octadecyl lightload	C18-U	DSC-18Lt	C18OH	C18
C18-Low		N/A	N/A	LC-18	N/A	N/A
C18-Fast		N/A	N/A	N/A	N/A	N/A
TMS		N/A	N/A	N/A	C1	C2
Silica		Silica Gel	Si-1	DSC-Si or LC-Si	LC-Si	Silica
Amino		Amino	NH2	LC-NH2	NH2	NH2
Diol		N/A	N/A	DSC-Diol or LC-Diol	2OH	Diol
Anion-X		Quaternary Amine	SAX	DSC-SAX or LC-SAX	SAX	N/A
Cation-X		Aromatic Sulfonic Acid	SCX	DSC-SCX or LC-SCX	SCX	N/A

S*Pure SEClute™ Reverse & Normal-Phase Sorbents

S*Pure SEClute™ Reverse Phase Sorbents			
Sorbent	**Bed Size/Tube Volume**	**Qty.**	**Part No.**
C18-Max	100mg/1mL	100pk	**5138765**
	100mg/3mL	100pk	**5178108**
	200mg/3mL	50pk	**5141686**
	500mg/3mL	50pk	**5138766**
	500mg/6mL	30pk	**5138767**
	1000mg/6mL	30pk	**5138768**
C18-Aq	50mg/1mL	100pk	**5141486**
	100mg/1mL	100pk	**5138774**
	500mg/3mL	50pk	**5138775**
	1000mg/6mL	30pk	**5138776**
	2000mg/12mL	30pk	**5141482**
	5000mg/20mL	20pk	**5141523**
C18-Low	100mg/1mL	100pk	**5138760**
	200mg/3mL	50pk	**5138761**
	500mg/3mL	50pk	**5138762**
	500mg/6mL	30pk	**5138763**
	1000mg/6mL	30pk	**5138764**
C18-Fast	500mg/3mL	50pk	**5138758**
	1000mg/6mL	30pk	**5138759**
	5000mg/20mL	20pk	**5141527**
TMS	100mg/1mL	100pk	**5138785**
	500mg/3mL	50pk	**5138786**

S*Pure SEClute™ Normal Phase Sorbents			
Silica	100mg/1mL	100pk	**5138777**
	200mg/3mL	50pk	**5138778**
	500mg/3mL	50pk	**5138779**
	5000mg/20mL	20pk	**5138780**
	500mg/6mL	30pk	**5138781**
	1000mg/6mL	30pk	**5138782**
	2000mg/12mL	30pk	**5138783**
	10000mg/60mL	16pk	**5138784**
Amino	100mg/1mL	100pk	**5178136**
	500mg/3mL	50pk	**5138752**
	1000mg/6mL	30pk	**5138753**
Diol	100mg/1mL	100pk	**5138771**
	200mg/3mL	50pk	**5138772**
	500mg/3mL	50pk	**5138773**
	500mg/6mL	30pk	**5176437**

S*Pure SEClute™ Ion Exchange Sorbents			
Anion-X	100mg/1mL	100pk	**5138754**
	150mg/6mL	30pk	**5178107**
	200mg/3mL	50pk	**5178155**
	500mg/3mL	50pk	**5138755**
	1000mg/6mL	30pk	**5141487**
Cation-X	100mg/1mL	100pk	**5138769**
	500mg/3mL	50pk	**5138770**
	1000mg/6mL	30pk	**5141488**

S*Pure SEClute™

HLB & Mixed Mode Polymeric SPE Columns

For the Clean-Up, Concentration and Recovery of Chromatography Samples

S*Pure is proud to announce our latest additional to the SEClute™ SPE Family. Our HLB & Mixed Mode Polymeric SPE are water wettable and not affected by drying out. They offer high surface area and pH stability for reproducible recoveries for a wide range of analyses.

We use extractable free medical grade polypropylene tubes, our devices are subjected to over 20 performance criteria and guaranteed to have less than 2% bed weight variation.

With over 30 years of SPE Industry experience, comprehensive technical support and ISO 9001-2008 certification, S*Pure has the in-house capability to manufacture a finished product of the highest standards. No compromise on quality and simply the best value in SPE.

SEClute™ Polymeric SPE Specifications					
Sorbent	**Support**	**Surface Area (m^2/g)**	**Particle Size (µm)**	**Pore Size (Å)**	**Features and benefits**
SEClute™ HLB	Polymeric	800	40	70	Uncharged Hydrophilic and Lipophilic Sorbent – suited to a wide range of analytes (polar, apolar, acidic, basic)
SEClute™ P-SAX	Polymeric	600	40	60	Strong Anion Exchange sorbent interacting with analytes via a mixed mode mechanism, ion exchange with strong basic functional groups and reverse phase. Particularly suited for the extraction of weak acids
SEClute™ P-SCX	Polymeric	600	40	60	Strong Cation Exchange sorbent interacting with analytes via a mixed mode mechanism, ion exchange with strong acid functional groups and reverse phase. Particularly suited for the extraction of weak bases.
SEClute™ P-WAX	Polymeric	650	40	60	Weak Anion Exchange sorbent interacting with analytes via a mixed mode mechanism, ion exchange with weak basic functional groups and reverse phase. Particularly suited for the extraction of strong acids
SEClute™ P-WCX	Polymeric	850	40	70	Weak Cation Exchange sorbent interacting with analytes via a mixed mode mechanism, ion exchange with weak acid functional groups and reverse phase. Particularly suited for the extraction of strong bases.

Take the fuss out of Method Development with one of our two Method Development Kits offering our HLB and 4 Mixed mode variants in one of two sizes.

SEClute™ SPE Development Kits	
Each Kit includes 10 cartridges of each of 5 Chemistries, HLB, P-SAX, P-SCX, P-WAX and P-WCX	
SEClute™ HLB 10mg 1ml/10pk ea	5176426
SEClute™ P-SAX 10mg 1ml/10pk ea	
SEClute™ P-SCX 10mg 1ml/10pk ea	
SEClute™ P-WAX 10mg 1ml/10pk ea	
SEClute™ P-WCX 10mg 1ml/10pk ea	
SEClute™ HLB 30mg 1ml/10pk ea	5176427
SEClute™ P-SAX 30mg 1ml/10pk ea	
SEClute™ P-SCX 30mg 1ml/10pk ea	
SEClute™ P-WAX 30mg 1ml/10pk ea	
SEClute™ P-WCX 30mg 1ml/10pk ea	

SEClute™ HLB

Sorbent	Bed Weight	Column Volume	Qty.	Part No.
SEClute™ HLB	10mg	1mL	100pk	**5176367**
SEClute™ HLB	10mg	1mL	50pk	**5176392**
SEClute™ HLB	30mg	1mL	100pk	**5176368**
SEClute™ HLB	30mg	1mL	50pk	**5176393**
SEClute™ HLB	30mg	3mL	100pk	**5176369**
SEClute™ HLB	30mg	3mL	50pk	**5176394**
SEClute™ HLB	60mg	3mL	100pk	**5176370**
SEClute™ HLB	60mg	3mL	50pk	**5176395**
SEClute™ HLB	100mg	3mL	100pk	**5176371**
SEClute™ HLB	100mg	3mL	50pk	**5176396**

SEClute™ P-SCX

Sorbent	Bed Weight	Column Volume	Qty.	Part No.
SEClute™ P-SCX	10mg	1mL	100pk	**5176382**
SEClute™ P-SCX	10mg	1mL	50pk	**5176407**
SEClute™ P-SCX	30mg	1mL	100pk	**5176383**
SEClute™ P-SCX	30mg	1mL	50pk	**5176408**
SEClute™ P-SCX	30mg	3mL	100pk	**5176384**
SEClute™ P-SCX	30mg	3mL	50pk	**5176409**
SEClute™ P-SCX	60mg	3mL	100pk	**5176385**
SEClute™ P-SCX	60mg	3mL	50pk	**5176410**
SEClute™ P-SCX	100mg	3mL	100pk	**5176386**
SEClute™ P-SCX	100mg	3mL	50pk	**5176411**

SEClute™ P-WCX

Sorbent	Bed Weight	Column Volume	Qty.	Part No.
SEClute™ P-WCX	10mg	1mL	100pk	**5176387**
SEClute™ P-WCX	10mg	1mL	50pk	**5176412**
SEClute™ P-WCX	30mg	1mL	100pk	**5176388**
SEClute™ P-WCX	30mg	1mL	50pk	**5176413**
SEClute™ P-WCX	30mg	3mL	100pk	**5176389**
SEClute™ P-WCX	30mg	3mL	50pk	**5176414**
SEClute™ P-WCX	60mg	3mL	100pk	**5176390**
SEClute™ P-WCX	60mg	3mL	50pk	**5176415**
SEClute™ P-WCX	100mg	3mL	100pk	**5176391**
SEClute™ P-WCX	100mg	3mL	50pk	**5176416**

SEClute™ P-SAX

Sorbent	Bed Weight	Column Volume	Qty.	Part No.
SEClute™ P-SAX	10mg	1mL	100pk	**5176377**
SEClute™ P-SAX	10mg	1mL	50pk	**5176402**
SEClute™ P-SAX	30mg	1mL	100pk	**5176378**
SEClute™ P-SAX	30mg	1mL	50pk	**5176403**
SEClute™ P-SAX	30mg	3mL	100pk	**5176379**
SEClute™ P-SAX	30mg	3mL	50pk	**5176404**
SEClute™ P-SAX	60mg	3mL	100pk	**5176380**
SEClute™ P-SAX	60mg	3mL	50pk	**5176405**
SEClute™ P-SAX	100mg	3mL	100pk	**5176381**
SEClute™ P-SAX	100mg	3mL	50pk	**5176406**

SEClute™ P-WAX

Sorbent	Bed Weight	Column Volume	Qty.	Part No.
SEClute™ P-WAX	10mg	1mL	100pk	**5176372**
SEClute™ P-WAX	10mg	1mL	50pk	**5176397**
SEClute™ P-WAX	30mg	1mL	100pk	**5176373**
SEClute™ P-WAX	30mg	1mL	50pk	**5176398**
SEClute™ P-WAX	30mg	3mL	100pk	**5176374**
SEClute™ P-WAX	30mg	3mL	50pk	**5176399**
SEClute™ P-WAX	60mg	3mL	100pk	**5176375**
SEClute™ P-WAX	60mg	3mL	50pk	**5176400**
SEClute™ P-WAX	100mg	3mL	100pk	**5176376**
SEClute™ P-WAX	100mg	3mL	50pk	**5176401**

Vydac BioSelect ®SPE Columns

For Extraction, Concentration and Clean-up of Biological Samples

Built using the same high quality media as that of the Vydac HPLC range of columns, the **Vydac BioSelect® SPE columns** offer similar selectivity and recovery; rendering it an obvious choice in sample pre-treatment prior to HPLC purification and analysis of biomolecules. Patents referencing the use of Vydac chromatography columns during the biotechnology revolution places the Vydac BioSelect chemistries among the most trusted name in biomolecules.

Applications

- Desalting of polypeptide solutions
- Concentration of proteins and peptides
- Removal of HF and cleavage products from cleavage solutions
- Removal of lipids and strongly bound proteins
- Improvement of HPLC resolution by prior removal of early and late eluting by-products or reagents
- Preparation of environment and food samples

Protein Extraction of Ribonuclease and Myoglobin

Procedure using Vydac® SPE:

A 3ml SPE cartridge was conditioned with 1ml of Acetonitrile followed by 1ml of 5% Acetonitrile/0.1% Triftuoroacetic Acid. Ribonuclease and myglobin (100mg each) were then loaded in 30% Acetonitrile/0.1% Triftuoroacetic Acid.

The cartridge was washed with 1ml of 5% Acetonitrile/ 0.1% Trifluoroacetic Acid to remove weakly bound compounds, then 1ml of 30% Acetonitriel/0.1% Triftuoroacetic Acid followed by 1ml of 60% Acetonitriel/0.1% Triftuoroacetic Acid. HPlC analysis of the 5% Acetonitrile wash (A) revealed only a small amount of ribonuclease.

Most of the ribonuclease eluted in the 30% Acetonitrile wash (B). The myoglobin eluted almost entirely in the 60% Acetonitrile wash (C).

Vydac BioSelect ® SPE Columns				
Phase	**Pore Size(A)**	**Surface Area (m'/g)**	**Carbon Load (%)**	**End-capped**
C18	300	100 m'/g	8%	Yes
C4	300	100 m^2/g	3%	Yes

Vydac BioSelect ® SPE Columns – Ordering Information				
Phase	**Capacity**	**Column Size**	**Pk**	**Part No.**
C4, 13µm	50mg	1ml	50	5103901
	100mg	3ml	50	5103902
C18, 13µm	50mg	1ml	50	5103967
	100mg	3ml	50	5103968
50mg cartridge has 0.5-0.75mg polypeptide capacity				
100mg cartridge has 1-1.5mg polypeptide capacity				

Protocol for Sample Desalting by SPE prior to analysis

The SPE step is important for LC-MS analysis. It is not necessary for LC-UV.

Reagents and Apparatus
All reagents are prepared immediately prior to use.
1% trifluoroacetic acid: Add 100 µL of TFA to 10 ml of water and vortex mix. 0.1 % trifluoroacetic acid: Add 1000 µL of 1% TFA to 10ml of water and vortex mix.

For a 1 ml C18 SPE cartridge (5103967), here is a recommendation for use:

1. Condition cartridge with 1.0 ml of acetonitrile.
2. Rinse with 0.5 ml of water containing 0.1 % TFA. Repeat with another 0.5 ml.
3. Load with 0.2 ml peptide sample containing 0.1 % to 0.2 % TFA for binding.
4. Wash with 0.5 ml of water containing 0.1 % TFA to remove weakly bound components.
5. Elute peptide with 0.2 ml of 75:25 (or up 90:10 acetonitrile:water) containing no TFA.
6. Evaporate off solvent to approximately 10 µL with a stream of nitrogen (or use a vacuum centrifuge with heating no higher than 30 degrees C).
7. Add 190 µL of 5:95 Acetonitrile:Water containing 0.2 % formic acid, 0.01% TFA.
8. Vortex mix and store samples in refrigerator.

Note: To encourage proper fluid flow through the SPE tube, apply positive pressure to the top of tube. This may be accomplished by attaching a 1000 µL pipet tip to a nitrogen gas line; then place the pipet tip over the top opening of the SPE tube.

Solid Phase Extraction Accessories

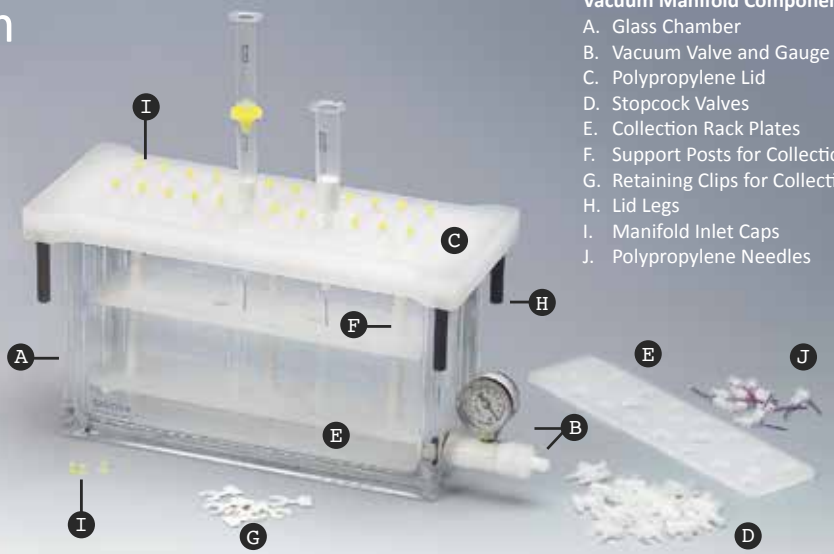
SPE Tube Vacuum Manifolds

- 12- and 24-Port Manifold
- Glass chamber for visual monitoring
- accepts standard male luer devices

Vacuum manifolds process multiple samples simultaneously, saving time and effort.

Manifold systems come complete with the components listed below.

Stainless steel or PTFE needles are available separately.



Vacuum Manifold Components

A. Glass Chamber
B. Vacuum Valve and Gauge
C. Polypropylene Lid
D. Stopcock Valves
E. Collection Rack Plates
F. Support Posts for Collection Racks
G. Retaining Clips for Collection Racks
H. Lid Legs
I. Manifold Inlet Caps
J. Polypropylene Needles

12-Port Manifold and Accessories		
Description	**Qty.**	**Part No.**
12-Port Vacuum Manifold**	ea	**5122428**
Replacement Parts		
Lid, Gaskets, and 12 Stopcocks	ea	**8604550**
Vacuum Gauge, Valve, and Glass Chamber	ea	**8604554**
Collection Rack, 12-Port Size*	ea	**8604557**
Gaskets, 12-Port Size	2	**2106735**
One-Way Stopcocks	12	**2106753**
Waste Container	2	**5125466**

* 12-Port Collection Rack includes 3 support posts, bottom plate, 13- and 16mm plates, autosampler vial plate, volumetric plate, and 12 retaining clips.
** Includes waste container.

24-Port Manifold and Accessories		
Description	**Qty.**	**Part No.**
24-Port Vacuum Manifold*	ea	**5122426**
Replacement Parts		
Lid, Gaskets, and 24 Stopcocks	ea	**8604549**
Vacuum Gauge, Valve, and Glass Chamber	ea	**8604540**
Collection Rack, 24-Port Size†	ea	**8604542**
Gaskets, 16- and 24-Port Size	2	**2106735**
One-Way Stopcocks	24	**2106747**
Waste Container	2	**5126000**

†16- and 24-Port Collection Racks include 3 support posts, bottom plate, dimple plate, 13- and 16mm plates, and 12 retaining clips.

12-Port Manifold

- For up to 12 samples
- Also includes one waste container

24-Port Manifold

- Process up to 24 samples

Manifold Accessories

Replacement Parts for All Size Manifolds
Manifolds come complete with all necessary gauges and accessories. Individual replacement parts may be sold separately.

Replacement Parts for All Size Manifolds		
Description	**Qty.**	**Part No.**
Vacuum Gauge and Valve	ea	**2106750**
Retaining Clips for Collections Racks	12	**8604562**
Female Luer Inlet	2	**5125480**
Female Luer Inlet	24/pk	**5125484**
Male Luer Outlet	2	**5125482**
Male Luer Outlet	24/pk	**5125485**
Caps for Lid Inlets	50	**2106738**
Lid Legs, Black	4	**2107146**
Collection Rack Posts	3	**8605754**

Manifold Needles

PTFE needles are disposable, fit many different manifold types, and eliminate cross contamination by extending into the collection tube. They also provide a complete PTFE fluid path for samples to virtually eliminate extractables. Stainless steel and polypropylene needles are also available.

Replacement Parts for All Size Manifolds		
Description	**Qty.**	**Part No.**
PTFE Needles	100	**2107148**
PTFE Needles	500	**2107149**
Stainless Steel Needles	12	**2106751**
Stainless Steel Needles	24	**2106736**
Polypropylene Needles	12	**2106752**
Polypropylene Needles	24	**2106737**

Adapters and Caps

- Inlet caps fit SPE devices as indicated
- Outlet caps fit any column or cartridge with a male luer tip

Syringe Adapters fit the tops of SPE columns allowing attachment of any male luer device. This lets you process an Extract-Clean™ column with a syringe or add an empty reservoir to increase sample volume capacity.

Caps		
Description	**Qty.**	**Part No.**
Inlet Caps for Maxi-Clean™ Cartridges	50	**5125472**
Inlet Caps for 1.5mL	50	**5125499**
Inlet Caps for 4.0mL	50	**5125500**
Inlet Caps for 8.0mL	50	**5125501**
Inlet Caps for 15.0mL	50	**5125504**
Inlet Caps for 25.0mL	50	**5125503**
Inlet Caps for 75.0mL	50	**5125554**
Outlet Caps for Male Luers	50	**5125502**

Syringe Adapters		
Description	**Qty.**	**Part No.**
Syringe Adapters for 1.5, 4 and 8mL Columns	15	**5125469**
Syringe Adapters for 75mL Columns	5	**5125471**

Bulk Reservoirs and Frits

Select empty reservoirs and loose frits to pack your own custom SPE columns.

Bulk Reservoirs and Frits		
Description	**Qty.**	**Part No.**
Extract-Clean™ Empty Reservoirs, Polypropylene		
1.5mL	100	**5122381**
4.0mL	100	**5122419**
8.0mL	100	**5122425**
15.0mL	100	**5122427**
25.0mL	100	**5122429**
75.0mL	50	**3119413**
Polyethylene Frits for Extract-Clean™ Reservoirs		
For 1.5mL Reservoir	100	**3119414**
For 4.0mL or EV Reservoir	100	**3119415**
For 8mL Reservoir	100	**3119416**
For 15mL Reservoir	100	**3119417**
For 25mL Reservoir	100	**3119418**
For 75mL Reservoir	100	**3119419**

Bulk SPE Packings

The same high-quality material we use to manufacture our Extract-Clean™ and Maxi-Clean™ SPE products.

Extract-Clean™ Filter Column		
Description	**Qty.**	**Part No.**
Reversed-Phase Adsorbents		
Prevail™ C18 (11%)	100g	**5125474**
C18 (6%)	100g	**5122451**
C18 (17%)	100g	**5122452**
Large Pore C18 (14%)	100g	**5125479**
C8	100g	**5125473**
C2	100g	**5125475**
Phenyl	100g	**5122458**
Normal-Phase Adsorbents		
Silica	100g	**5122454**
Aminopropyl	100g	**5122455**
Diol	100g	**5122456**
Florisil®	227g	**5123114**
Florisil®-PR	227g	**5123112**
Alumina-N	100g	**5125478**
CN	100g	**5178127**
Ion-Exchange		
SCX (Cation Exchange)	100g	**5122457**
SAX (Anion Exchange)	100g	**5122453**
Carbograph 1 SPE 120/400 Mesh	25g	**5122145**

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