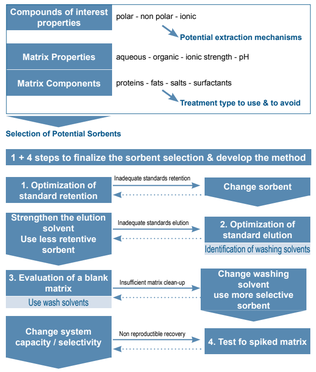
Sorbent Selection

The selected sorbent needs to have an excellent affinity for the compounds of interest and at the same time a weak affinity for irrelevant compounds within the matrix.

Choosing the correct sorbent results in a specific selectivity for the compounds of interest. A sufficient loading capacity also needs to be identified to optimise retention volumes of the desired compound.



Format Selection

Bed volume & Loading capacity

Bed volume definition:
The bed volume is defined as the minimum volume of solvent necessary to wet the defined quantity of sorbent within the column.
This can vary depending on the nature of the sorbent.
e.g. : ~ 120 µl per 100 mg of silica gel sorbent 60 Å
~ 180 µl per 100 mg of polymeric sorbent

[Incomplete elution of compound of interest will occur if the sorbent mass is too large for the volume of solvent used. Incomplete retention of compounds of interest will occur if there is an inadequate sorbent mass leading to compound eluting in the fraction or in the washing solvent. Such cases lead to lower recovery rates].

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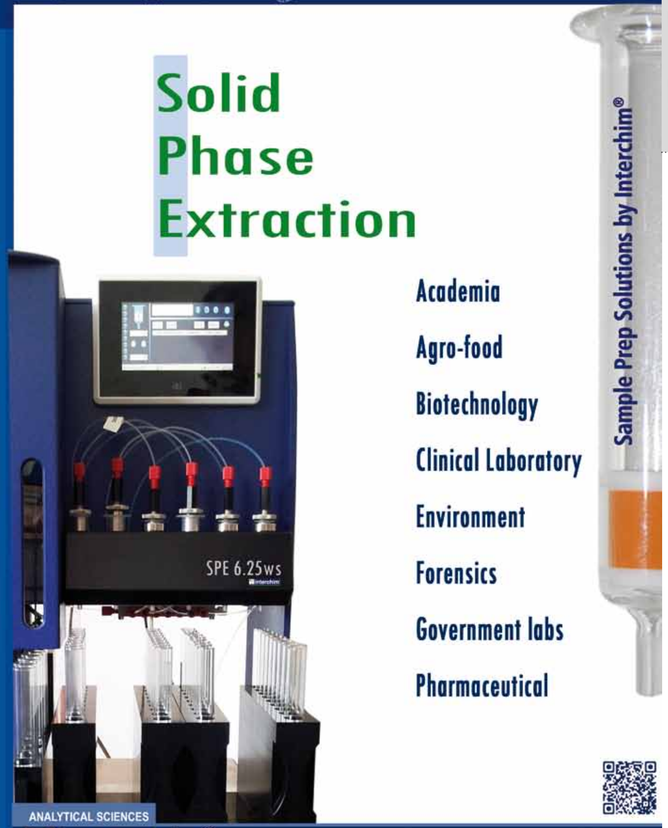
Solid Phase Extraction



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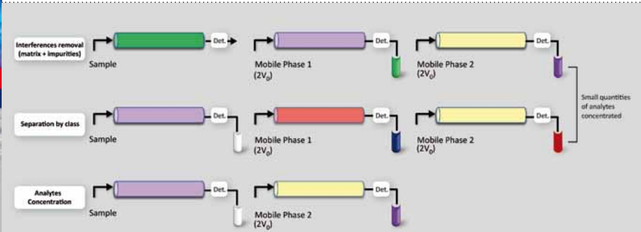
SPE principle

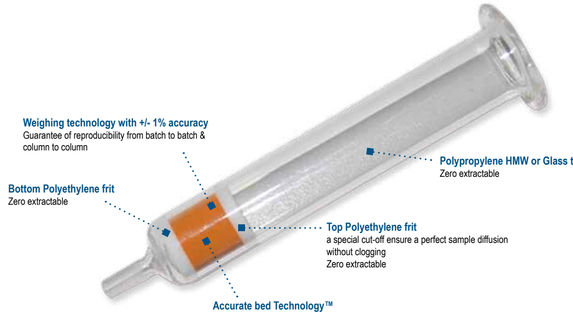


Interchim® Technologies

Solid Phase Extraction continues to be the fastest growing technique utilised for sample preparation. The ease of use and flexibility of SPE means that increasingly, this is the chosen pre-step adopted to clean and concentrate samples prior to analysis in HPLC, HPLC/MS, GC or GC/MS.

Advances in the analytical process are placing greater demands and expectations on sample cleaning and therefore increasing the quality required from SPE products. For this reason, polymeric sorbents with high loading capacities and spherical ultrapure silica have become widespread.

Recovery, capacity, selectivity & reproducibility are the principal sample prep. demands of todays analyst. We have developed a state-of-the-art SPE product range incorporating silica and polymer based technology **Upti-Clean™**, **Recovery™** (silica) - **Atoll™**, **PolyClean™** and **BioP™** (polymeric) push the boundaries of expectation from modern day sample preparation challenges.

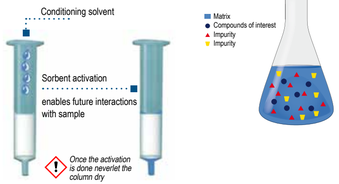


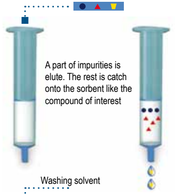
interchim®

Catch & Release Process

1- Conditioning Step

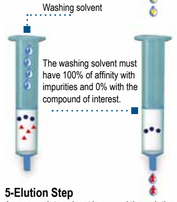
Sorbent activation and functional group activation are achieved by passing a volume of an appropriate solvent or a mixture of solvent, through the column. Column frits are simultaneously solvated.
Methanol or acetonitrile are commonly used for activating hydrophobic sorbents, whilst hexane or dichloromethane activate hydrophilic sorbents. 2 to 4 bed volumes are typically recommended





2- Sample Loading Step

Apply sample onto the upper part of the sorbent bed. Matrix contaminants may pass through the column unretained, and additionally, other matrix components may be more or less strongly retained on the sorbent surface. To get a maximum purification efficiency, the sample flow needs to be controlled. To achieve faster flow of viscous sample through a column, 90 to 140 µm sorbents can be used. The exchange capacity and selectivity are unaffected.
[It is necessary to analyze the unretained fraction to check if all compounds of interest have been retained]



3-Washing Step

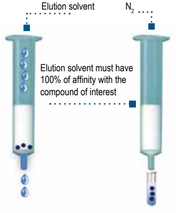
Passing solvents through columns washes away interfering compounds whilst leaving the analyte undisturbed on the sorbent bed. Different solvents or solvent mixtures may be used to improve the rinsing efficiency.

4-Drying Step

A drying step may sometimes be necessary.Solvent traces are evaporated by circulating air through the column over a 2 to 10 minutes time period. This improves the extraction yield.

5-Elution Step

An appropriate solvent is passed through the column to disrupt the analyte-sorbent interaction and to elute 100% of compounds of interest.
The appropriate solvent must have maximum interaction with the compound of interest and a minimal interaction with the remaining impurities, leaving them undisturbed on the sorbent bed. In addition the volume of the elution solvent needs to be as small as possible to maximize the concentration factor.
[Sorbent with low particle size (e.g 30,50 µm) gives a lower elution volume than larger sorbent particle size (e.g 90, 140 µm)].



6-Concentration Step

Compounds of interest are concentrated by evaporating a part of the solvent.
If necessary, dry the eluate with anhydrous sulfate to remove possible water traces.The concentrated sample is then ready for analysis.
We recommend that all steps should be carefully optimized according to your specific extraction. This will improve the quality of the final analysis.

QuEChERS (Quick Easy Cheap Effective Rugged & Safe)

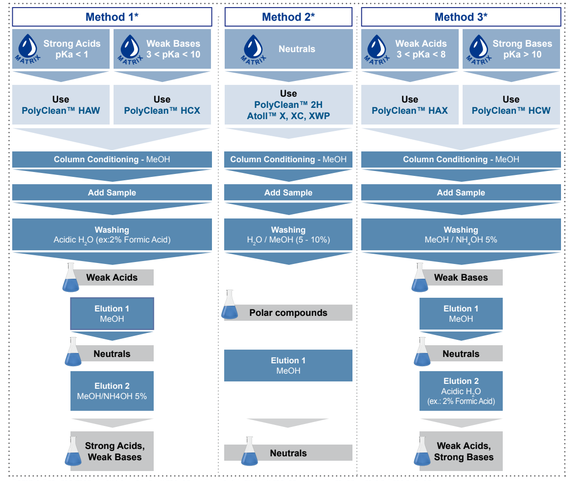
For more information about our product portfolio please scan the QR code:

All products are thoroughly quality control tested in-house to guarantee traceability.
Products are supplied with an individual certificate detailing the specific production number and sorbent batch.

Phases & Features

Sorbent Code	Type of material	Pore Size (Å)	Surface Area (m^2/g)	Modification / Treatment	%C	IE Capacity (meq/g)	Particle size (µm)	pH range	Global Loading Capacity (%)	General Application
Atoll™ 30XC	PSDVB	60	1500				30	0.0 - 14	30	Universal polymer with high surface area designed to clean a broad range of hydrophobic compounds through a variety of matrices (waters, oils, plasma, urines…) over the entire pH range.
Atoll™ XC	PSDVB	60	1500				70	0.0 - 14	30	
Atoll™ XWP	PSDVB	300	1200				90	0.0 - 14	25	Cleanup of proteins & peptides in biological fuids with a 500 KD cutoff.
Atoll™ X	PSDVB	100	800				40	0.0 - 14	20	Universal polymer with high surface area designed to clean a broad range of hydrophobic compounds (MW < 3000D) through a variety of matrices (waters, oils, plasma, urines…).
PolyClean™ 302H	modified Polymer	100	850	Hydrophilic / Hydrophobic			30	1.0 - 13	20	Universal polymer with high surface area designed to clean a broad range of hydrophobic /hydrophilic compounds through a variety of matrices (waters, oils, plasma, urines…).
PolyClean™ 2H	modified Polymer	100	850	Hydrophilic / Hydrophobic			60	1.0 - 13	20	
PolyClean™ 30HCX	modified Polymer	100	850	Strong Cation Exchange		1.0	30	1.0 - 13		Both reversed phase & strong cation exchange interactions enhance high selectivity and sensitivity for the extraction of Cationic charged & basic organic compounds (pKa < 10,5).
PolyClean™ HCX	modified Polymer	100	850	Strong Cation Exchange		1.0	60	1.0 - 13		
PolyClean™ 30HCW	modified Polymer	100	850	Weak Cation Exchange		0.8	30	1.0 - 13		Both reversed phase & weak cationic exchange inteactions enhances the clean-up of quaternary amines, drugs, metal ions, cytochrome C (pKa > 8).
PolyClean™ HCW	modified Polymer	100	850	Weak Cation Exchange		0.8	60	1.0 - 13		
PolyClean™ 30HAX	modified Polymer	100	850	Strong Anion Exchange		0.3	30	1.0 - 13		Both reversed phase & strong anion exchange interactions enhance high selectivity and sensitivity for the extraction of Anionic charged & acid organic compounds (pKa > 2).
PolyClean™ HAX	modified Polymer	100	850	Strong Anion Exchange		0.3	60	1.0 - 13		
PolyClean™ 30HAW	modified Polymer	100	850	Weak Anion Exchange		0.3	30	1.0 - 13		Both reversed phase & weak anionic exchange inteactions enhance the clean-up of acidic compounds (pKa < 5).
PolyClean™ HAW	modified Polymer	100	850	Weak Anion Exchange		0.3	60	1.0 - 13		
BioP™ 30P	modified Polymer	300	400	Hydrophilic / Hydrophobic			30	0.0 - 14		Universal polymer with high surface area designed to clean hydrophobic/hydrophilic biomolecules, biodrugs through a variety of matrices (waters, oils, plasma, urines…) in a pH range from 0 to 14.
BioP™ P	modified Polymer	300	400	Hydrophilic / Hydrophobic			60	0.0 - 14		
BioP™ 30CX	modified Polymer	300	400	Strong Cation Exchange		2.0	30	1.0 - 13		High selectivity and sensitivity for the extraction of Cationic charged & basic biomolecules and biodrugs (pKa < 10,5).
BioP™ CX	modified Polymer	300	400	Strong Cation Exchange		2.0	60	1.0 - 13		
BioP™ 30CW	modified Polymer	300	400	Weak Cation Exchange		2.0	30	1.0 - 13		Both reversed phase & weak cationic exchange inteactions enhance the clean-up of basic biomolecules and biodrugs (pKa > 8).
BioP™ CW	modified Polymer	300	400	Weak Cation Exchange		2.0	60	1.0 - 13		
BioP™ 30AX	modified Polymer	300	400	Strong Anion Exchange		2.0	30	1.0 - 13		High selectivity and sensitivity for the extraction of Anionic charged & acidic biomolecules and biodrugs.
BioP™ AX	modified Polymer	300	400	Strong Anion Exchange		2.0	60	1.0 - 13		
Recovery™ C18	Spherical Silica	120	350	C18	15		50	1.0 - 8.0	6	Full accessible surface media for the extraction of mid polar & non polar compounds from aqueous matrix
Recovery™ SI	Spherical Silica	120	350	Silica			50	1.0 - 7.5	10	Full accessible surface media for the extraction of non-ionic, polar organic compounds from non polar matrix
Upti-Clean® C18-S	Spherical Silica	60	500	C18	18		50	1.0 - 8.0	5	Extraction of mid polar & non polar compounds from aqueous matrix
Upti-Clean® C18U-S	Spherical Silica	60	500	C18 non-end capped	16		50	1.0 - 7.0	5	Extraction of polar, mid polar & non polar compounds from aqueous matrix
Upti-Clean® RPAQ	Spherical Silica	60	500	C18 Hydrophilic	14		50	1.0 - 7.5	5	Extraction of polar, mid polar & non polar compounds from aqueous matrix. 100% water compatible.
Upti-Clean® C18-S2F	Spherical Silica	60	500	C18 High flow			140	1.0 - 8.0	5	Extraction of mid polar & non polar compounds from complex aqueous matrix like serum, plasma, urine, …
Upti-Clean® C18U-S2F	Spherical Silica	60	500	C18 High flow NEC			140	1.0 - 7.0	5	Extraction of polar, mid polar & non polar compounds from complex aqueous matrix like serum, plasma, urine, …
Upti-Clean® C8-S	Spherical Silica	60	500	C8	11		50	1.5 - 7.5	7	Extraction of polar & mid polar compounds from aqueous matrix
Upti-Clean® C2	Granular Silica	60	450	C2	6		60	2.0 - 7.0	7	Extraction of polar & mid polar compounds from aqueous matrix
Upti-Clean® CN-S	Spherical Silica	60	500	Cyano	8		50	1.5 - 7.0	7	Extraction of polar compounds from non polar solvents or mid polar compounds from aqueous matrix
Upti-Clean® PH-S	Spherical Silica	60	500	Phenyl	9		50	1.5 - 7.0	5	Extraction of polar & mid polar aromatic compounds from aqueous matrix or non polar solvents
Upti-Clean® NH2-S	Spherical Silica	60	500	Amino	4		50	2.0 - 6.5	7	Weak anion exchangers (for strong acids), or polar media that can interact with OH, NH, SH ... Amino groups are scavenger for acid chlorides, isocyanates.
Upti-Clean® PSA-S	Spherical Silica	60	500	Primary & Secondary Amine			50	2.0 - 6.5	7	Primary & secondary amine are weak anion exchanger with pKa : 10.5. Suitable for the extraction of charged polar organics compounds.
Upti-Clean® SI-S	Spherical Silica	60	500				50	1.5 - 6.5	10	Clean-up of non-ionic, polar organic compounds from non polar solvents
Upti-Clean® OH	Spherical Silica	60	500	Diol			50	1.5 - 7.0	7	Provide globally a neutral surface onto the silica. It leads to greater clean-up of basic compounds vs. regular silica.
Upti-Clean® SCX	Spherical Silica	100	400	Strong Cation Exchange		0.5	50	1.0 - 7.5		Extraction of weak bases.
Upti-Clean® MM1	Spherical Silica	100	400	RP /Strong Cation Exchange		0.09	50	1.0 - 7.5		Very selective extraction of non polar and cationic compounds.
Upti-Clean® WCX	Spherical Silica	100	400	Weak Cation Exchange		0.22	50	1.0 - 7.5		Extraction of strong bases.
Upti-Clean® SAX	Spherical Silica	100	400	Strong Anion Exchange		0.5	50	1.5 - 7.0		Extraction of weak acids.
Upti-Clean® ALA	Alumina	60	200	Acid			32/63	1.0 - 12	5	The acidic treatment of the alumina allows selectivity for cationic compounds.
Upti-Clean® ALN	Alumina	60	200	Neutral			32/63	1.0 - 12	5	"Extraction of non ionizable polar compounds. Used for dioxine extraction."
Upti-Clean® ALB	Alumina	60	200	Basic			32/63	1.0 - 12	5	The basic treatment of the alumina allows selectivity for anionic compounds.
Upti-Clean® FL	Florisil			Standard			150/250		8	Extraction of polar compounds. Separation of lipids, decolorization…
Upti-Clean® FLPR	Florisil			Pesticides Grade			150/250		8	Special residue grade for pesticides extraction.
Upti-Clean® P6	Polyamide			P6			100			Extraction of flavonoides and others natural compounds.
Upti-Clean® GCB	Graphitized Carbon Black						50/100			Extraction of highly polar compounds in polar matrix.
Upti-Clean® WC4	Spherical Silica	300	100	C4	2,5		50	2.0 - 7.0	2,5	Extraction of non polar peptides et proteins.
Upti-Clean® WC8	Spherical Silica	300	100	C8	4		50	2.0 - 7.0	2,5	Extraction of mid-polar peptides et proteins.
Upti-Clean® WSC	Spherical Silica	300	100	Strong Cation Exchange			50	1.0 - 7.5		Extraction of high molecular weight cationic compounds.

Method Development Guide for Polymers



*Sample Pre-treatment (Soxhlet,Liq/Liq Extraction (LLE), Solid/Liquid Extraction (SLE), Filtration, Protein Precipitation…)

Quality Control Report

All columns are thoroughly quality control tested in-house to guarantee tracability.
Products are supplied with an individual certificate detailing the specific production number & sorbent batch.