



Preamble

As an integral part of an analysis, sample preparation has considerably evolved in the last few years. It is the most important step of the analytical process. Some studies show that sample preparation generally represents about 60% of a laboratory technician's work time and is one of the main sources of errors affecting the analysis result. With this in mind, it is easy to understand why good sample preparation has a direct impact on the detection limit, reproducibility and repeatability of the analysis. Its impact on the quality of the analysis is fundamental.

The matrices to be treated (blood, plasma, water, organs, meats, poisons, vegetables,...) require the use of various techniques: filtration, dialysis, liquid-liquid extraction, solid phase extraction (SPE). Among these, the solid phase extraction is certainly the technique that has evolved the most in the last years.

It is now present in most laboratories and allows efficient purification and concentration of the sample before HPLC, GC or GC/MS analysis. The level of quality required for SPE products has therefore increased. Thus, new technological innovations such as high surface area polymers, ion exchange polymers and pure spherical silicas have become essential.

Efficiency, capacity, selectivity and reproducibility are the main virtues that analysts expect from their sample processing methods. Thanks to our experience, our laboratories have developed the Upti-Clean® brand, pure spherical silica supports, as well as the Atoll™ and PolyClean™ brands, ultra-pure spherical polymers.

These product lines are perfectly suited to the needs of modern methods and contribute to making them more reliable, more reproducible and more robust.

General SPE Methodology

All sorbents filled in cartridges, columns or 96 well plates are single use (except for the on-line trapping columns used with an LC system).

Using an automated SPE workstation is recommended for the percolation of the different solvents (vacuum manifold, positive pressure automate, syringes).

The choice of the column is defined by the volume of the sample, the concentration of analytes and the types of exchanges sought. In environmental application areas, volumes of multiple hundred milliliters may be necessary for a good pre-concentration (e.g. organic pollutants). On the other hand, in the pharmaceutical industry, the volume of samples to be purified is only a few milliliters. The sorbent selected must have an excellent affinity with the target compounds. It must also have a minimum affinity with the matrix interferents.

A SPE protocol consists of several steps:

1. Conditioning

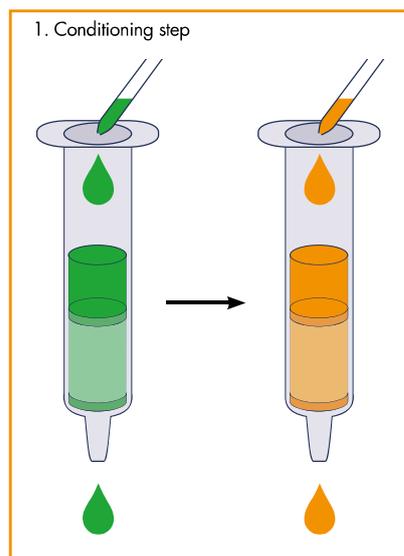
Activation step with an organic solvent or a mixture of solvents allows the removal of the contaminants and promotes exchanges in the sorbent. This step allows to "wet" the column frits.

Hexane, cyclohexane or dichloromethane are solvents regularly used in "normal phase" mode to condition virgin or bonded silica aminopropyl (R-NH₂), dihydroxypropyl (R-R'OH-R''OH), cyanopropyl (R-CN), ...

In "reverse phase" mode, for C18, C8, C2, phenyl, cyclohexyl grafted silicas, methanol or even acetonitrile are commonly used.

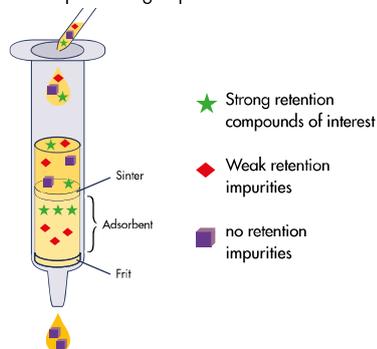
TECHNICAL TIP

- Check the miscibility of the solvents to be used.
- Always leave the solvent level above the sorbent to maintain its activation.
- For silicas bonded with an ion exchanger activate with methanol, water and then with buffered water at the desired pH.





2. Sample loading step



2. Sample Loading Step

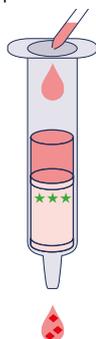
Load the sample onto the upper part of the sorbent bed. Matrix contaminants may pass through the column unretained, and additionally, other matrix components may be more or less strongly retained on the sorbent surface. To get a maximum purification efficiency, the sample flow must be controlled.

[It is necessary to analyze the unretained fraction to check if all compounds of interest have been retained]

The experimental values of the flows observed for particle sizes of approximately 50 μm are:

- 0.7-1 mL/min for 1 mL columns
- 2-3 mL/min for 3 mL columns
- 5-7 mL/min for 6 mL columns
- 7-10 mL/min for 15 mL columns
- 10-15 mL/min for 25 mL columns
- 0.6-1.1 mL/min for 96 well plates
- 4-5 mL/min for closed cartridges

3. Washing step - eliminate impurities



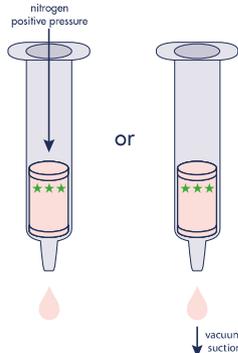
During the first tests, it is imperative to verify that all the compounds of interest in the sample have been fixed on the sorbent to analyze the elution fraction. In ion exchange, the pH of the sample must be identical to the pH of the buffer used during the sorbent activation step.

The percolation of viscous samples through a column can be facilitated by using sorbents of 90 to 140 μm . The exchange capacity and selectivity are not affected.

3. Washing Step

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

4. Drying step - remove solvent



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 minute time period. This improves the extraction yield.

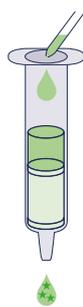
5. Elution Step

An appropriate solvent is passed through the column to disrupt the analyte-sorbent interaction and to elute 100% of the 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)].

5. Elution step - 100% compounds of interest



6. Drying

If necessary, the eluate can be dried with anhydrous sodium sulfate to remove any traces of water.

7. Concentration

The purpose of this step is to concentrate the compounds of interest in the elution fraction. It is generally carried out by evaporation of a part of the solvent. The concentrate obtained is either directly usable, or taken up in an analysis solvent. Once optimized, these steps guarantee a more sensitive analysis (increased concentration of the compounds of interest), more reproducible and resolute (elimination of impurities that can modify the robustness of the analysis).

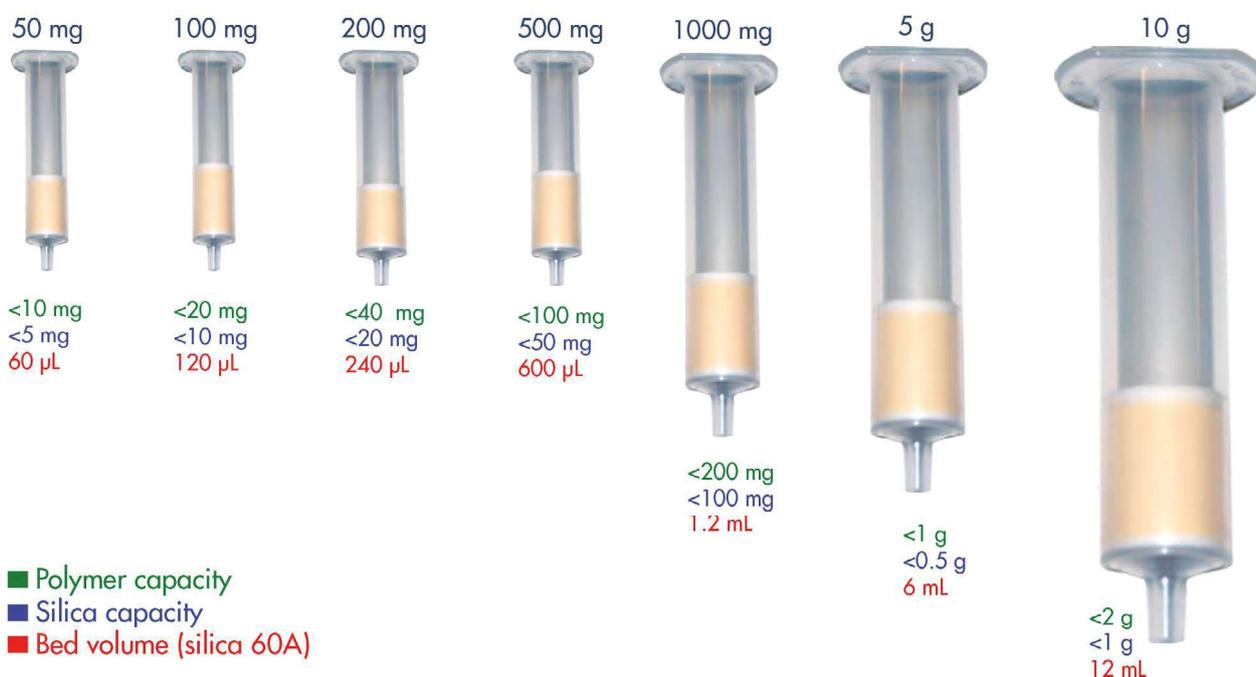


Bed volume

The bed volume is defined as the minimum volume of necessary solvent to wet the defined amount of sorbent within the column. This can vary depending on the nature of the sorbent.

e.g. :

- ~ 120 μ L per 100mg of silica gel sorbent 60 Å
- ~ 180 μ L per 100mg of polymeric sorbent



Incomplete elution of the compound of interest will occur if the sorbent mass is too large for the volume of solvent used. Incomplete retention of the 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.

Sorbent Selection?

Sorbent selection requires consideration of sample volume, the nature of the analyte, analyte concentration and the inherent properties of the sorbent itself.

For environmental studies, a volume of several hundred milliliters might be necessary for a good pre-concentration (e.g., organic pollutants) whereas in the pharmaceutical industry, the sample volumes that require cleaning may only be milliliters.

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 optimize retention volumes of the desired compound.

There are four general modes used in Solid Phase Extraction: reversed phase, normal phase and ion exchange that require different sorbent types, namely hydrophobic, hydrophilic, ion-exchange and mixed mode.





Polymer Atoll™ & PolyClean™

- Very chemically stable, they usually resist to a pH between 1 and 14.
- Weakly selective compared to grafted silicas (except ion exchange polymers).
- They have a much higher loading capacity than traditional silicas and allow the purification of a very large number of molecules or families of molecules whatever the matrix (water, oil, plasma, urine, ...)

The mass of adsorbable compounds can be up to 30% of the mass of polymer contained in the column. It is therefore possible to perform the same purification process with a quantity of polymer of 2 to 3 times less than a silica. The elution volume is much smaller, which leads to a higher concentration, a reduced evaporation time and finally a faster sample preparation.

| Sorbent | Weight sorbent | Surface area | Capacity of charge |
|-----------------------|----------------|------------------------|--------------------|
| Silica | 500 mg | 500 m ² /g | 5 - 50 mg |
| Polymer | 500 mg | 800 m ² /g | 15 - 100 mg |
| Polymer high capacity | 500 mg | 1500 m ² /g | 15 - 150 mg |

Silica Upti-Clean®

- Less chemically stable than polymers, they are stable at a pH between 2 and 7.5.
- Much more selective and specific than polymers with a lower loading capacity due to their lower specific surface (about 3 to 10 % of the sorbent mass) silicas are still used as reference sorbents.

We distinguish 4 families of silicas by their mode of operation as well as by their selectivity:

Silica for "Reverse Phase" mode

In "Reverse Phase" mode, the hydrophobic grafts work according to Van der Waals type interactions. The extraction allows an isolation of apolar or weakly polar compound families.

The addition of buffer is preferable when the compounds are ionizable (acids, bases).

The apolar phases not post-silanized (non-end capped) give, with the surface silanol groups, additional polar interactions which can improve the polar interactions with the surface silanol groups. Therefore, it can improve the retention of compounds containing polar functionalities.

For the same eluent, the shorter the carbon chain, the lower the retention of a compound.

For aromatic compounds, phenyl shows better interactions.

Methanol or acetonitrile are elution solvents regularly used.

Silica for "Normal Phase" mode

The "normal phase" mode remains a very interesting compromise for the extraction of molecules or families of molecules whose structure presents polar functions. The choice of the solvent is very important and directly influences on the type of interaction implemented for the extraction (an apolar solvent favors polar interactions between the sorbent and the compounds).

- Cyano bonded sorbent (CN) can be used either in "normal phase" for the extraction of polar compounds or in "reverse phase" for medium polar molecules.
- Diol bonded sorbent is an alternative to virgin silica for the extraction of polar compounds. Mixed phase, amino silica (NH₂) can be used as a weak anion exchanger (for very strong acids) or as a polar sorbent that can interact with functional groups.
- Mixed phase, amino silica (NH₂) can be used as a weak anion exchanger (for very strong acids) or as a polar sorbent that can interact with functional groups -OH, -NH, -SH, ...

Silica for ion exchange mode

With "ion exchange" mode, the retention mechanism is ionic interaction based. The sorbent creates a strong attraction on the sample compound(s) with antagonistic ionizable function(s). The interaction of the ion exchange phases depends mainly on the pH and the ionic strength of the counterion. The stronger acid and base pairing, the stronger of the bond strength, which can be problematic for the elution step and for obtaining a good recovery rate. This is why there are different ion exchange phases:

- Anion exchange phases (SAX) are usually a very strong quaternary amine. They are used to extract weak acids with negative charge(s).
- Cation exchange phases (SCX) with a sulfonic functionality are used to extract all weak basic compounds carrying a positive charge(s).



- Anion exchange phases, (DEAE, DEA, NH₂,...) on a less strong amine base than SAX, are used to extract strong acids with negative charge(s).
- Cation exchange phases (WCX) are functionalized by a carboxylic acid and are used to extract all strong basic compounds with positive charge(s).

Mixed mode silicas

One of the most selective techniques of bonded silica sorbent is the "mixed mode" technique. The double grafting (ion exchange and hydrophobic carbon chains) brings new selectivities. The compounds of interest, which must imperatively have an acid or basic function, are retained on the ion exchange graft. To begin, a powerful washing using pH eliminates the ionizable impurities. It is then possible to remove the other impurities retained on the hydrophobic grafting by an organic solvent. This technique is widely used for the extraction of basic compounds (drugs, medicines and metabolites) in biological fluids (blood, plasma, urine, ...).

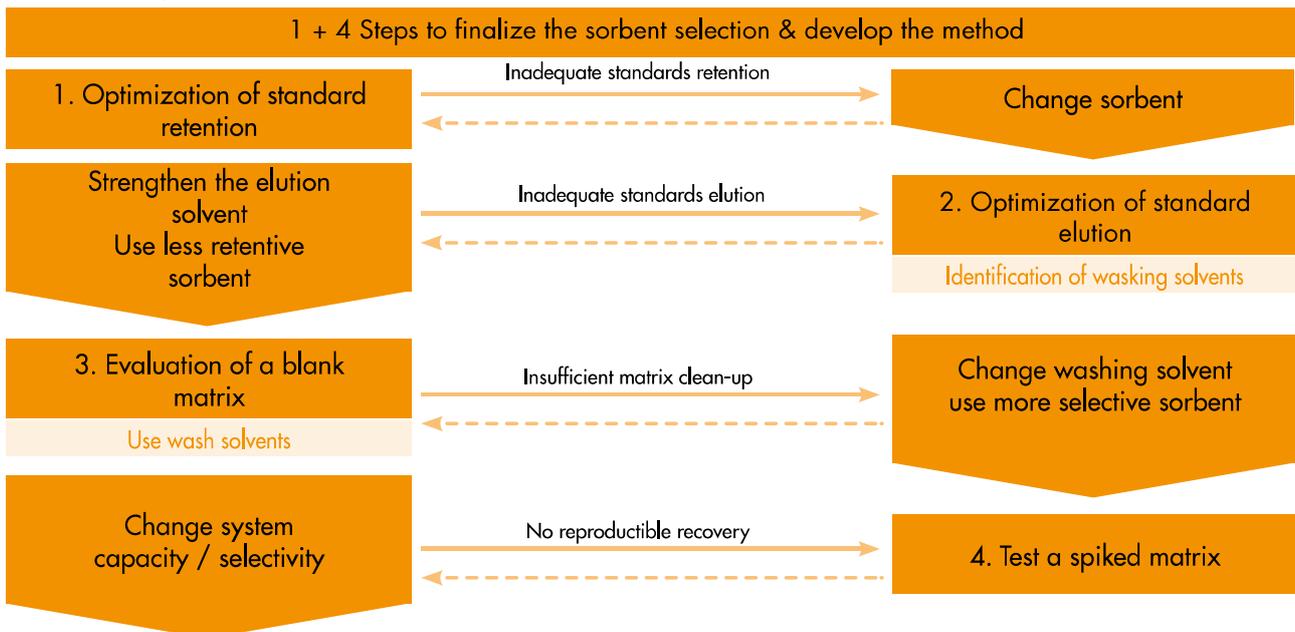
As in "ion exchange," there are different grafts specific to the compounds of interest:

The "mixed mode" phases (RP/SCX) are composed of a strong acid (sulfonic) and a hydrophobic graft. They are used to extract weak bases carrying one or more positive charges.

- The "mixed mode" phases (RP/SAX) are based on a quaternary amine and hydrophobic graft. They are used to extract weak acids carrying negative charge(s).
- The "mixed mode" phases (RP/WCX) are based on a weak acid (carboxylic) and hydrophobic grafts. They are used to extract strong bases carrying one or more negative charges.
- The "mixed mode" phases (RP/NH₂) are based on a weak amine and hydrophobic grafts. They are used to extract strong acids with negative charge(s).

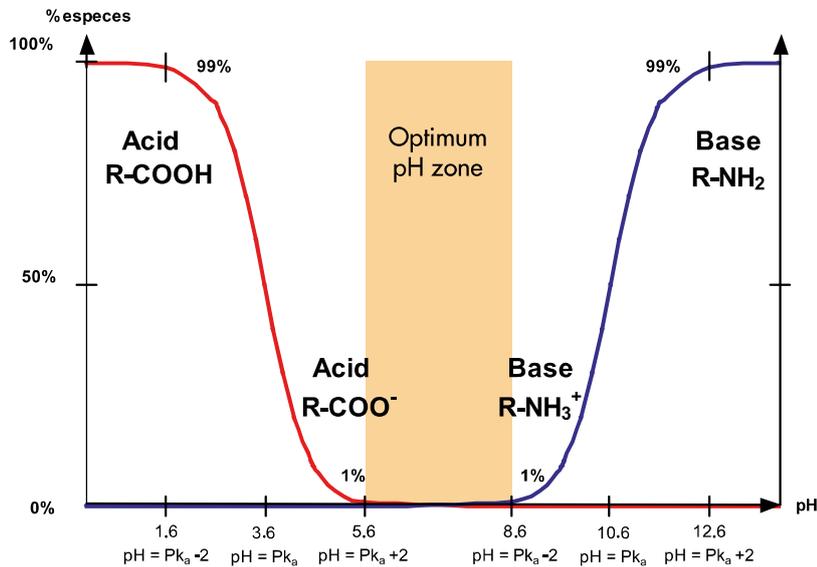
| | | |
|----------------------------------|---|----------------------------------|
| Compounds of interest properties | Polar - non polar - ionic | Potential extraction mechanisms |
| Matrix properties | Aqueous - organic - ionic strength - pH | |
| Matrix components | Proteins - fats - salts - surfactants | Treatment type to use & to avoid |

Selection of potential sorbents





Distribution according to the pH of the acid/conjugated base of an acidic (red) and basic (blue) ionizable compound in solution



TECHNICAL TIP

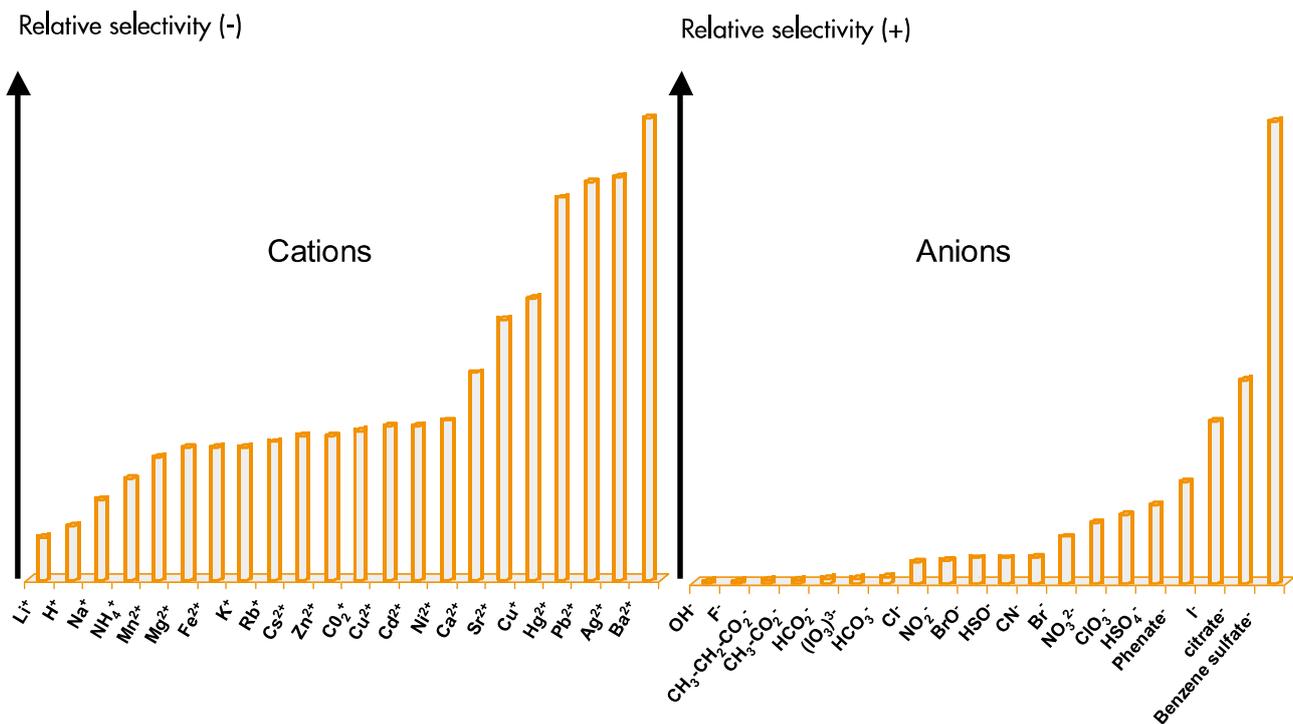
SPE extraction methods based on "Ion Exchange" and "Mixed Modes" are relatively complex to implement. At the sample level, the acids and bases in solution must be in their ionized forms to develop interactions with the sorbent.

To make the recovery rates reproducible and repeatable, it is essential to buffer the sample and the sorbent at the optimum pH.

Ex: For the pH range between 5.6 and 8.6 in the attached example, all acidic (pK_a 3.6) and basic (pK_a 10.6) compounds pair up to form a strong ionic bond.

Relative selectivity of the counter-ions

A counter-ion is an ionic entity able to interact with an ion exchange sorbent. It improves the efficiency of cleaning steps including elution according to its concentration in solution and its affinity with the exchanger sorbent.



Solid phase extraction - Method development



To develop a **robust, reproducible and repeatable** SPE method, it is fundamental to adequately choose: The type of sorbent (silicas or polymers), **the nature of the sorbent, the mass of sorbent and the volume of the container.**

These four parameters are essential to obtain:

A purification selectivity intrinsic to the sample, a necessary and sufficient **loading capacity**, a preconcentration **factor** and an **optimum extraction yield.**

Implementing a SPE extraction requires, at minimum, knowledge about the matrix, the impurities and the analytes to be extracted which will be analyzed afterwards. The method development kits are powerful and relevant tools to quickly assess the type of sorbent to use and the selectivity it provides to perform your extractions.

For more information, our service is committed to providing you with the best support and customized solutions do not hesitate to contact us.

Indicative protocol for the development of SPE methods on polymers



*Sample pre-treatment (Soxhlet, Lig/Liq extraction (LLE), Liquid/Solid extraction (SLE), Filtration, Protein precipitation...)

1- Sample pre-treatment:

Different protocols may be necessary before loading the sample on a SPE column (filtration, liquid/liquid extraction, extraction with a Soxhlet Soxhlet type equipment). These steps depend on the nature of the sample (mainly solid or liquid).

2 - Conditioning:

We use mainly organic solvents like Methanol, Acetonitrile, Dichloromethane. For aqueous samples, a second conditioning with water may be necessary.

3 - Sample loading

5 - Washing:

Washing removes interfering compounds from the matrix that would have a slight affinity with the stationary phase of the SPE column.

- A slightly acidic wash eliminates the weak acids present in the medium.
- A slightly basic wash eliminates the weak bases present in the medium.

6 - Elution:

The compounds of interest are desorbed from the stationary phase.

- An organic solvent (Methanol, Acetonitrile, Dichloromethane) is generally used for the elution of the compounds by order of decreasing polarity (here reverse phase).
- In ion exchange it is necessary to adjust the pH corresponding to the zone in where the analyte is in neutral form.





Custom manufacturing on demand

We manufacture columns and multi-well plates according to your specifications.

To do so, simply send a request to :

instrumentation@advion-interchim.com |
consumables.eu@advion-interchim.com
Tel.: +33 4 70 03 88 55

Specify the following points:

- the type of sorbent desired
- the mass of sorbent
- the nature of the column and the container
- the volume of the column and the container
- the nature and porosity of the frit
- the quantity of columns desired

One of our specialists will contact you within 48 hours to validate the project feasibility. A confidentiality agreement can be signed between the two parties.

Type of sorbent

It can be:

- a sorbent manufactured by you. In this case, you must specify its nature and physical characteristics as well as its safety data sheet.
- a sorbent marketed and/or manufactured by another company
- an Advion Interchim Scientific sorbent

Sorbent weight

It can be between 15 mg and 70 g (depending on the volume of the column or the chosen plate). The accuracy of our weighing can go up to 1%.

Three types of columns are available:

- Straight polypropylene tank
- Large capacity tank (LRC) in polypropylene
- Straight glass tank

We can fill any other type of container if it is compatible with our filling systems.

Volume of the column or container

- 1 - 3 - 6 - 15 - 25 - 75 - 150 mL for straight polypropylene tubes
- 15 mL for polypropylene LRC tanks
- 6 mL for glass straight tubes

Nature and porosity of the frit

- Polyethylene for polypropylene straight tubes and LRC tubes
- PTFE for glass straight tubes

Printed SPE columns





Hardwares

| Format | Picture | Material | Volumes | Frits |
|---------------|---------|------------------|------------------------------------|--------------------|
| Columns | | PP Medical Grade | 1 - 3 - 6 - 15 - 25 - 75 - 150 mL | 20 µm Polyethylene |
| LRC columns | | PP Medical Grade | Robotic Large Capacity (LRC) 15 mL | 20 µm Polyethylene |
| Glass columns | | Glass | 6 mL | 20 µm PTFE |
| Cartridges | | PP Medical Grade | Type 300 - 600 - 900 mg | 20 µm Polyethylene |

Advion Interchim Scientific Accurate Bed Technology™

The manufacturing process Interchim® Accurate Bed Technology™ has been developed to ensure a unique batch to batch and column to column reproducibility.

Our SPE sorbents have an optimized particle size distribution and are drastically controlled.

The amount of sorbents are loaded by weighing with an accuracy of +/- 1%.

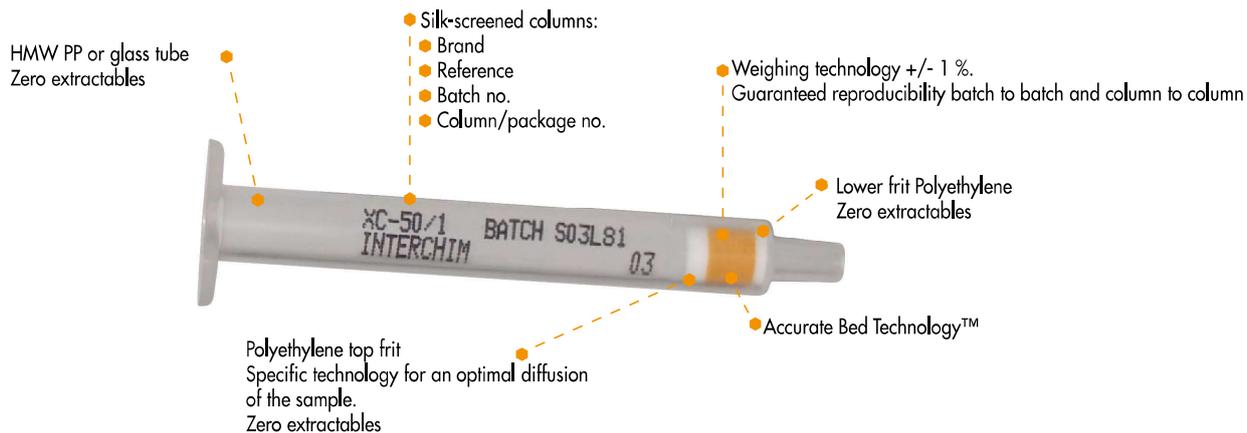
A weighting certificate is delivered.

This allows the optimization of the analysis technique and the interpretation of the results.

Our SPE columns are supplied in HDPE / Al packaging dedicated to long-term storage.

Our flexibility and our experience give us full confidence in satisfying any custom manufacturing request.

This approach provides technical solutions to our customers to ensure the development and optimization of their sample preparation.





Phases & Features Advion-Interchim Scientific

| Type | Code | Bonding | Pore size Å | Surface area m ² /g | Modification | % C | IE Capacity meq/g | Particule size µm µm |
|----------------------|----------|------------------|-------------|--------------------------------|----------------------------|-----|-------------------|----------------------|
| Atoll Xtrem Capacity | XC | PSDVB | 60 | 1500 | | | | 70 |
| Atoll X | X | PSDVB | 100 | 800 | | | | 40 |
| PolyClean 2H | 302H | Polymer modified | 100 | 850 | Hydrophile / Lipophile | | | 30 |
| PolyClean 2H | 2H | Polymer modified | 100 | 850 | Hydrophile / Lipophile | | | 60 |
| PolyClean HCX | 30HCX | Polymer modified | 100 | 850 | Strong cation exchange | | 1.0 | 30 |
| PolyClean HCX | HCX | Polymer modified | 100 | 850 | Strong cation exchange | | 1.0 | 60 |
| PolyClean HAX | 30HAX | Polymer modified | 100 | 850 | Strong anion exchange | | 0.3 | 30 |
| PolyClean HAX | HAX | Polymer modified | 100 | 850 | Strong anion exchange | | 0.3 | 60 |
| Recovery C18 | REC18 | Spherical silica | 120 | 350 | C18 | 15 | | 50 |
| Recovery Silice | RESI | Spherical silica | 120 | 350 | Silica | | | 50 |
| Upti-Clean C18-S | C18-S | Spherical silica | 60 | 500 | C18 | 18 | | 50 |
| Upti-Clean C18U-S | C18U-S | Spherical silica | 60 | 500 | C18 No end-capped | 16 | | 50 |
| Upti-Clean C18 RPAQ | C18-RPAQ | Spherical silica | 60 | 500 | C18 Hydrophile | 14 | | 50 |
| Upti-Clean C18-S2F | C18-S2F | Spherical silica | 60 | 500 | C18 High flowrate | | | 140 |
| Upti-Clean C8-S | C8-S | Spherical silica | 60 | 500 | C8 | 11 | | 50 |
| Upti-Clean CNS | CNS | Spherical silica | 60 | 500 | Cyano | 8 | | 50 |
| Upti-Clean PHS | PHS | Spherical silica | 60 | 500 | Phenyl | 9 | | 50 |
| Upti-Clean NH2-S | NH2-S | Spherical silica | 60 | 500 | Amino | 4 | | 50 |
| Upti-Clean Silice | SI-S | Spherical silica | 60 | 500 | | | | 50 |
| Upti-Clean Diol | OH | Spherical silica | 60 | 500 | Diol | 7 | | 50 |
| Upti-Clean SCX | SCX | Spherical silica | 100 | 400 | Strong cation exchange | | 0.5 | 50 |
| Upti-Clean MM1 | MM1 | Spherical silica | 100 | 400 | RP /Strong cation exchange | | 0.09 | 50 |
| Upti-Clean WCX | WCX | Spherical silica | 100 | 400 | Weak cation exchange | | 0.22 | 50 |
| Upti-Clean SAX | SAX | Spherical silica | 100 | 400 | Weak anion exchange | | 0.5 | 50 |
| Upti-Clean DEAE | DEAE | Spherical silica | 60 | 450 | Weak anion exchange | | 0.33 | 60 |
| Alumine Acid | ALA | Alumine | 60 | 200 | Acid | | | 32/63 |
| Alumine Neutral | ALN | Alumine | 60 | 200 | Neutral | | | 32/63 |
| Alumine Basic | ALB | Alumine | 60 | 200 | Basic | | | 32/63 |
| Florisil 60/100 | FL | Florisil | 150/250 | | Standard | | | 200 |
| Florisil PR 60/100 | FLPR | Florisil | 150/250 | | Grade Pesticides | | | 200 |
| Polyamide | P6 | Polyamide | | | P6 | | | 100 |

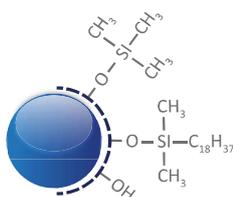


Solid Phase Extraction - Sorbent selection guide



| pH range | Capacity of charge | General application |
|-----------|--------------------|---|
| 0.0 - 14 | 30 | Ultra high capacity universal polymer designed for cleaning a wide range of hydrophobic compounds from various matrices (water, oil, plasma, urine ...). |
| 0.0 - 14 | 20 | Universal high capacity polymer designed for cleaning a wide range of hydrophobic compounds from various matrices (water, oil, plasma, urine ...). |
| 1.0 - 13 | 20 | Universal high capacity polymer designed for cleaning a wide range of hydrophilic / hydrophobic compounds from various matrices (water, oil, plasma, urine ...). |
| 1.0 - 13 | 20 | |
| 1.0 - 13 | | High selectivity and sensitivity for the extraction of charged and basic cationic organic compounds (pKa <11). |
| 1.0 - 13 | | |
| 1.0 - 13 | | High selectivity and sensitivity for the extraction of charged organic and acidic anionic compounds (pKa >3). |
| 1.0 - 13 | | |
| 1.0 - 8.0 | 6 | Extraction of polar and non-polar compounds from aqueous matrices. |
| 1.0 - 7.5 | 10 | Extraction of non-ionic polar organic compounds from a non-polar matrix. |
| 1.0 - 8.0 | 5 | Extraction of polar and non-polar compounds from aqueous matrices. |
| 1.0 - 7.0 | 5 | Extraction of polar and non-polar compounds from an aqueous matrix. |
| 1.0 - 7.5 | 5 | Extraction of polar, mid polar and non-polar compounds from an aqueous matrix- 100% water compatible. |
| 1.0 - 8.0 | 5 | Extraction of polar and non-polar compounds from a complex aqueous matrix such as serum, plasma, urine, ... |
| 1.5 - 7.5 | 7 | Extraction of polar and medium polar compounds from an aqueous matrix. |
| 1.5 - 7.0 | 7 | Extraction of polar compounds from non-polar solvents or medium polar compounds from an aqueous matrix. |
| 1.5 - 7.0 | 5 | Extraction of polar and medium polar aromatic compounds from aqueous matrix or non-polar solvents. |
| 2.0 - 6.5 | 7 | Weak anion exchanger (for strong acids) (pH <8), or polar media that can interact with OH, NH, SH ... Amino groups are nitrogen scavengers for acid chlorides, isocyanates. |
| 1.5 - 6.5 | 10 | Cleaning of non-ionic polar organic compounds from non-polar solvents. |
| 1.5 - 7.0 | 7 | Provides a totally neutral surface to the silica. It allows a better cleaning of basic compounds compared to regular silica. |
| 1.0 - 7.5 | | Extraction of weak bases. |
| 1.0 - 7.5 | | Highly selective extraction of non-polar and cationic compounds. |
| 1.0 - 7.5 | | Extraction of strong bases. |
| 1.5 - 7.0 | | Extraction of weak acids. |
| 1.5 - 7.0 | | Weak exchanger for the extraction of negatively charged polar organic compounds. Polar selectivity complementary to NH ₂ and SAX. |
| 1.0 - 12 | 5 | The acid treatment of alumina allows an ideal selectivity for cationic compounds. |
| 1.0 - 12 | 5 | Extraction of non-ionizable polar compounds. Used for the extraction of dioxin. |
| 1.0 - 12 | 5 | The basic treatment of alumina allows an important selectivity for anionic compounds. |
| | 8 | |
| | 8 | Extraction of polar compounds. Separation of lipids, decoloration ... |
| | 8 | Special "residue" grade for the extraction of pesticides. |
| | | Flavonoids and other natural compounds. |



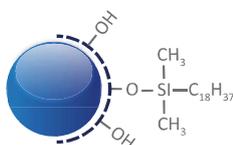
**Upti-Clean® C18-S**60 Å - 500 m²/g - 50 µm

C18 end-capped

% C: 18

pH range: 1.0 - 8.0

Extraction of apolar and moderately polar compounds in aqueous matrices.

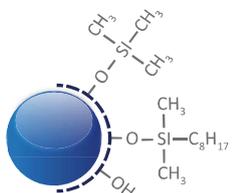
**Upti-Clean® C18-US**60 Å - 500 m²/g - 50 µm

C18

% C: 16

pH range: 1.0 - 7.0

Extraction of apolar, moderately polar and polar compounds in aqueous matrices.

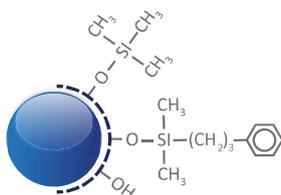
**Upti-Clean® C8-S**60 Å - 500 m²/g - 50 µm

C8 end-capped

% C: 11

pH range: 1.0 - 7.5

Extraction of polar and moderately polar compounds in aqueous matrices.

**Upti-Clean® PHS**60 Å - 500 m²/g - 50 µm

Phenyl

% C: 9

pH range: 1.5 - 7.0

Extraction of polar and medium polar aromatic compounds in aqueous matrices or apolar organic solvents.

Upti-Clean® S-Series

Upti-Clean® S-Series columns are easy to use, efficient SPE cleaning devices with widespread applications throughout the pharmaceutical, toxicology and clinical areas.

Reverse Phase Columns

| Weight | Vol. | Qty | C18-S | C18U-S | RPAQ |
|-----------------------------|-------|-------|-------------|--------------|------------|
| Standard columns - frits PE | | | | | |
| 50 mg | 1 mL | 50 u | C18-S-50/1 | C18U-S-50/1 | RPAQ-50/1 |
| 100 mg | 1 mL | 100 u | C18-S-100/1 | C18U-S-100/1 | RPAQ-100/1 |
| 100 mg | 3 mL | 50 u | C18-S-100/3 | C18U-S-100/3 | RPAQ-100/3 |
| 200 mg | 3 mL | 50 u | C18-S-200/3 | C18U-S-200/3 | RPAQ-200/3 |
| 500 mg | 3 mL | 50 u | C18-S-500/3 | C18U-S-500/3 | RPAQ-500/3 |
| 500 mg | 6 mL | 30 u | C18-S-500/6 | C18U-S-500/6 | RPAQ-500/6 |
| 1000 mg | 6 mL | 30 u | C18-S-1G/6 | C18U-S-1G/6 | RPAQ-1G/6 |
| 2000 mg | 6 mL | 20 u | C18-S-2G/6 | C18U-S-2G/6 | RPAQ-2G/6 |
| 2000 mg | 15 mL | 20 u | C18-S-2G/15 | C18U-S-2G/15 | RPAQ-2G/15 |
| 2000 mg | 25 mL | 20 u | C18-S-2G/25 | C18U-S-2G/25 | RPAQ-2G/25 |

LRC columns - Frits PE

| | | | | | |
|--------|--------|------|--------------|---------------|-------------|
| 100 mg | LRC 15 | 50 u | C18-S-100LRC | C18U-S-100LRC | RPAQ-100LRC |
| 200 mg | LRC 15 | 50 u | C18-S-200LRC | C18U-S-200LRC | RPAQ-200LRC |
| 500 mg | LRC 15 | 50 u | C18-S-500LRC | C18U-S-500LRC | RPAQ-500LRC |

Glass columns - Frits PTFE

| | | | | | |
|---------|------|------|--------------|---------------|-------------|
| 200 mg | 6 mL | 30 u | C18-S-200/6G | C18U-S-200/6G | RPAQ-200/6G |
| 500 mg | 6 mL | 30 u | C18-S-500/6G | C18U-S-500/6G | RPAQ-500/6G |
| 1000 mg | 6 mL | 30 u | C18-S-1G/6G | C18U-S-1G/6G | RPAQ-1G/6G |

| Weight | Vol. | Qty | C8-S | PH-S |
|-----------------------------|-------|-------|------------|------------|
| Standard columns - frits PE | | | | |
| 50 mg | 1 mL | 50 u | C8-S-50/1 | PH-S-50/1 |
| 100 mg | 1 mL | 100 u | C8-S-100/1 | PH-S-100/1 |
| 100 mg | 3 mL | 50 u | C8-S-100/3 | PH-S-100/3 |
| 200 mg | 3 mL | 50 u | C8-S-200/3 | PH-S-200/3 |
| 500 mg | 3 mL | 50 u | C8-S-500/3 | PH-S-500/3 |
| 500 mg | 6 mL | 30 u | C8-S-500/6 | PH-S-500/6 |
| 1000 mg | 6 mL | 30 u | C8-S-1G/6 | PH-S-1G/6 |
| 2000 mg | 6 mL | 20 u | C8-S-2G/6 | PH-S-2G/6 |
| 2000 mg | 15 mL | 20 u | C8-S-2G/15 | PH-S-2G/15 |
| 2000 mg | 25 mL | 20 u | C8-S-2G/25 | PH-S-2G/25 |

LRC columns - Frits PE

| | | | | |
|--------|--------|------|-------------|-------------|
| 100 mg | LRC 15 | 50 u | C8-S-100LRC | PH-S-100LRC |
| 200 mg | LRC 15 | 50 u | C8-S-200LRC | PH-S-200LRC |
| 500 mg | LRC 15 | 50 u | C8-S-500LRC | PH-S-500LRC |

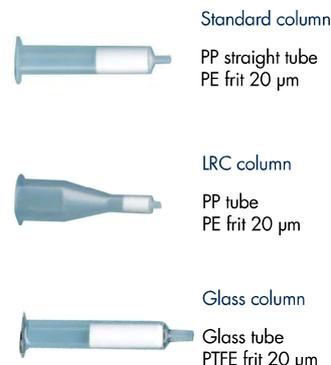
Glass columns - Frits PTFE

| | | | | |
|---------|------|------|-------------|-------------|
| 200 mg | 6 mL | 30 u | C8-S-200/6G | PH-S-200/6G |
| 500 mg | 6 mL | 30 u | C8-S-500/6G | PH-S-500/6G |
| 1000 mg | 6 mL | 30 u | C8-S-1G/6G | PH-S-1G/6G |

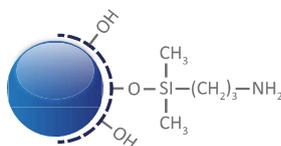


Columns - Normal phase

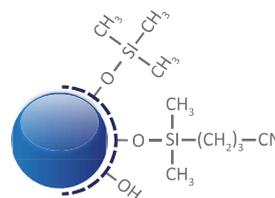
| Weight | Vol. | Qty | SI-S | NH2-S | CN-S | OH |
|----------------------------|--------|-------|-------------|--------------|-------------|-----------|
| SPE columns - Frits PE | | | | | | |
| 50 mg | 1 mL | 50 u | SI-S-50/1 | NH2-S-50/1 | CN-S-50/1 | OH-50/1 |
| 100 mg | 1 mL | 100 u | SI-S-100/1 | NH2-S-100/1 | CN-S-100/1 | OH-100/1 |
| 100 mg | 3 mL | 50 u | SI-S-100/3 | NH2-S-100/3 | CN-S-100/3 | OH-100/3 |
| 200 mg | 3 mL | 50 u | SI-S-200/3 | NH2-S-200/3 | CN-S-200/3 | OH-200/3 |
| 500 mg | 3 mL | 50 u | SI-S-500/3 | NH2-S-500/3 | CN-S-500/3 | OH-500/3 |
| 500 mg | 6 mL | 30 u | SI-S-500/6 | NH2-S-500/6 | CN-S-500/6 | OH-500/6 |
| 1000 mg | 6 mL | 30 u | SI-S-1G/6 | NH2-S-1G/6 | CN-S-1G/6 | OH-1G/6 |
| 2000 mg | 6 mL | 20 u | SI-S-2G/6 | NH2-S-2G/6 | CN-S-2G/6 | OH-2G/6 |
| 2000 mg | 15 mL | 20 u | SI-S-2G/15 | NH2-S-2G/15 | CN-S-2G/15 | OH-2G/15 |
| 2000 mg | 25 mL | 20 u | SI-S-2G/25 | NH2-S-2G/25 | CN-S-2G/25 | OH-2G/25 |
| LRC columns - PE frits | | | | | | |
| 100 mg | LRC 15 | 50 u | SI-S-100LRC | NH2-S-100LRC | CN-S-100LRC | OH-100LRC |
| 200 mg | LRC 15 | 50 u | SI-S-200LRC | NH2-S-200LRC | CN-S-200LRC | OH-200LRC |
| 500 mg | LRC 15 | 50 u | SI-S-500LRC | NH2-S-500LRC | CN-S-500LRC | OH-500LRC |
| Glass columns - PTFE frits | | | | | | |
| 200 mg | 6 mL | 30 u | SI-S-200/6G | NH2-S-200/6G | CN-S-200/6G | OH-200/6G |
| 500 mg | 6 mL | 30 u | SI-S-500/6G | NH2-S-500/6G | CN-S-500/6G | OH-500/6G |
| 1000 mg | 6 mL | 30 u | SI-S-1G/6G | NH2-S-1G/6G | CN-S-1G/6G | OH-1G/6G |



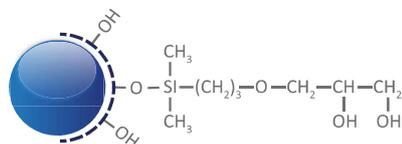
Upti-Clean® SI-S
60 Å - 500 m²/g - 50 μm
pH range: 1.5 - 6.5
Clean-up of polar, non-ionic organic compounds in apolar solvents.



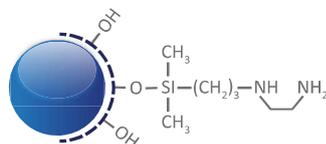
Upti-Clean® NH2-S
60 Å - 500 m²/g - 50 μm
Amino
% C: 4
pH range: 2.0 - 6.5
Weak anion exchanger (for strong acids at pH < 8), good polar selectivity with OH, NH, SH GROUPS. Scavenger for chlorinated acids and isocyanates.



Upti-Clean® CN-S
60 Å - 500 m²/g - 50 μm
Cyano
% C: 8
pH range: 100 - 7.0
Extraction of polar compounds in apolar solvents and of moderately polar compounds in aqueous matrices.

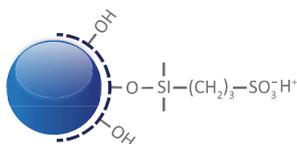


Upti-Clean® OH
60 Å - 500 m²/g - 50 μm
Diol
% C: 7
pH range: 1.5 - 7.0
The surface of the silica is globally neutral, allowing a better clean-up of basic compounds compared to silica without bonding.

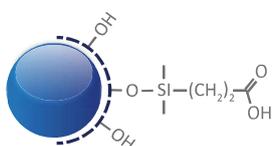


Upti-Clean® PSA-S
60 Å - 500 m²/g - 50 μm
%C: 7
pH range: 2.0 - 6.5
Weak anion exchanger (pKa: 10.5) for the extraction of charged polar organic compounds.

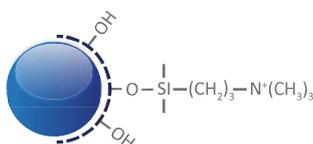




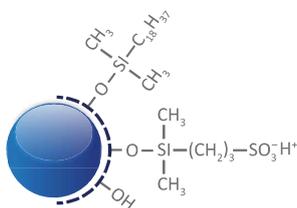
Upti-Clean® SCX
 100 Å - 400 m²/g - 50 µm
 Exchange capacity: 0.5 meq/g
 pH range: 1.0 - 7.5
 Strong cation exchanger for the extraction of weak bases.



Upti-Clean® WCX
 100 Å - 400 m²/g - 50 µm
 Exchange capacity: 0.22 meq/g
 pH range: 1.0 - 7.5
 Weak cation exchanger for the extraction of strong bases.



Upti-Clean® SAX
 100 Å - 400 m²/g - 50 µm
 Exchange capacity: 0.5 meq/g
 pH range: 1.5 - 7.0
 Strong anion exchanger for the extraction of weak acids.



Upti-Clean® MM1
 100 Å - 400 m²/g - 50 µm
 Reverse phase/SCX
 Exchange capacity: 0.09 meq/g
 pH range: 1.0 - 7.5
 Selective extraction of apolar and cationic compounds.

Upti-Clean® Series-S Ion exchange columns

| Weight | Vol. | Qty | SCX | WCX | SAX |
|-----------------------------|-------|-------|-----------|-----------|-----------|
| Standard columns - PE frits | | | | | |
| 50 mg | 1 mL | 50 u | SCX-50/1 | WCX-50/1 | SAX-50/1 |
| 100 mg | 1 mL | 100 u | SCX-100/1 | WCX-100/1 | SAX-100/1 |
| 100 mg | 3 mL | 50 u | SCX-100/3 | WCX-100/3 | SAX-100/3 |
| 200 mg | 3 mL | 50 u | SCX-200/3 | WCX-200/3 | SAX-200/3 |
| 500 mg | 3 mL | 50 u | SCX-500/3 | WCX-500/3 | SAX-500/3 |
| 500 mg | 6 mL | 30 u | SCX-500/6 | WCX-500/6 | SAX-500/6 |
| 1000 mg | 6 mL | 30 u | SCX-1G/6 | WCX-1G/6 | SAX-1G/6 |
| 2000 mg | 6 mL | 20 u | SCX-2G/6 | WCX-2G/6 | SAX-2G/6 |
| 2000 mg | 15 mL | 20 u | SCX-2G/15 | WCX-2G/15 | SAX-2G/15 |
| 2000 mg | 25 mL | 20 u | SCX-2G/25 | WCX-2G/25 | SAX-2G/25 |

LRC columns - PE frits

| | | | | | |
|--------|--------|------|------------|------------|------------|
| 100 mg | LRC 15 | 50 u | SCX-100LRC | WCX-100LRC | SAX-100LRC |
| 200 mg | LRC 15 | 50 u | SCX-200LRC | WCX-200LRC | SAX-200LRC |
| 500 mg | LRC 15 | 50 u | SCX-500LRC | WCX-500LRC | SAX-500LRC |

Glass columns - PTFE frits

| | | | | | |
|---------|------|------|------------|------------|------------|
| 200 mg | 6 mL | 30 u | SCX-200/6G | WCX-200/6G | SAX-200/6G |
| 500 mg | 6 mL | 30 u | SCX-500/6G | WCX-500/6G | SAX-500/6G |
| 1000 mg | 6 mL | 30 u | SCX-1G/6G | WCX-1G/6G | SAX-1G/6G |

Mixed mode columns

| Weight | Vol. | Qty | MM1 |
|-----------------------------|-------|-------|-----------|
| Standard columns - PE frits | | | |
| 50 mg | 1 mL | 50 u | MM1-50/1 |
| 100 mg | 1 mL | 100 u | MM1-100/1 |
| 100 mg | 3 mL | 50 u | MM1-100/3 |
| 200 mg | 3 mL | 50 u | MM1-200/3 |
| 500 mg | 3 mL | 50 u | MM1-500/3 |
| 500 mg | 6 mL | 30 u | MM1-500/6 |
| 1000 mg | 6 mL | 30 u | MM1-1G/6 |
| 2000 mg | 6 mL | 20 u | MM1-2G/6 |
| 2000 mg | 15 mL | 20 u | MM1-2G/15 |
| 2000 mg | 25 mL | 20 u | MM1-2G/25 |

LRC columns - PE frits

| | | | |
|--------|--------|------|------------|
| 100 mg | LRC 15 | 50 u | MM1-100LRC |
| 200 mg | LRC 15 | 50 u | MM1-200LRC |
| 500 mg | LRC 15 | 50 u | MM1-500LRC |

Glass tube - PTFE frits

| | | | |
|---------|------|------|------------|
| 200 mg | 6 mL | 30 u | MM1-200/6G |
| 500 mg | 6 mL | 30 u | MM1-500/6G |
| 1000 mg | 6 mL | 30 u | MM1-1G/6G |



Solid phase extraction - Upti-Clean® Columns



Upti-Clean® Series S2F

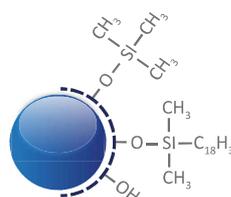
Filled with pure 140 µm spherical particles, Upti-Clean S2F Series columns enable to purify apolar and medium polar compounds from viscous matrices without clogging or plugging.

The columns are available in medical grade polypropylene for use with standard solvents. Glass columns remain the most reliable container when using strong organic solvents. They avoid contamination of samples by extractables from frit or standard plastic tubes.

- Applications: urine, plasma, oil, ...

Reverse phase columns

| Weight | Vol. | Qty | C18-S2F |
|-----------------------------|--------|-------|----------------|
| Standard columns - PE frits | | | |
| 50 mg | 1 mL | 50 u | C18-S2F-50/1 |
| 100 mg | 1 mL | 100 u | C18-S2F-100/1 |
| 100 mg | 3 mL | 50 u | C18-S2F-100/3 |
| 200 mg | 3 mL | 50 u | C18-S2F-200/3 |
| 500 mg | 3 mL | 50 u | C18-S2F-500/3 |
| 500 mg | 6 mL | 30 u | C18-S2F-500/6 |
| 1000 mg | 6 mL | 30 u | C18-S2F-1G/6 |
| 2000 mg | 6 mL | 20 u | C18-S2F-2G/6 |
| 2000 mg | 15 mL | 20 u | C18-S2F-2G/15 |
| 2000 mg | 25 mL | 20 u | C18-S2F-2G/25 |
| LRC columns - PE Frits | | | |
| 100 mg | LRC 15 | 50 u | C18-S2F-100LRC |
| 200 mg | LRC 15 | 50 u | C18-S2F-200LRC |
| 500 mg | LRC 15 | 50 u | C18-S2F-500LRC |



Upti-Clean® C18-S2F
60 Å - 500 m²/g - 140 µm
C18 end-capped
pH range : 1.0 - 8.0

Extraction of apolar and moderately polar compounds in complex aqueous matrices (serum, plasma, urine...).



Standard column

PP straight tube
PE frit 20 µm



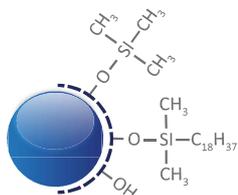
LRC column

PP tube
PE frit 20 µm

RELATED PRODUCTS

UptiVial Advion-Interchim Scientific GC / LC certified vials kit:
Vials and caps are tested and delivered with a certificate.
See chapter: Vials & Capsules




Upti-Clean® Recovery™ REC18
120 Å - 350 m²/g - 50 µm

C18 end-capped

% C: 15

pH range: 1.0 - 8.0

Extraction of apolar and moderately polar compounds in aqueous matrices.


Upti-Clean® Recovery™ RESI
120 Å - 350 m²/g - 50 µm

pH range: 1.0 - 7.5

Extraction of non polar compounds in apolar matrices.

Upti-Clean Recovery®

Advion Interchim Scientific Recovery™ columns address recovery and reproducibility problems, highlighted in recent studies, that are associated with only a part of the standard 60 Å silica's specific surface area accessibility in SPE silica based cleanup procedures.

Recovery™ columns extractables use an optimized version of Upti-prep™ silica. They prevent from physical phenomena related to older generations of silica sorbent and use 100% of their specific surface area. Recovery™ can be used in all solvent conditions (including 100% water) achieving greater reproducibility and consistency.

Upti-Clean Recovery® REC18

C18, fully end-capped for non-polar, mid-polar & polar compounds in aqueous environments.

Upti-Clean Recovery® RESI

Virgin silica for polar and mid-polar compounds from organic matrices.

Applications: Pharmaceutical & Environmental.

| Weight | Vol. | Qty | REC18 | RESI |
|-----------------------------|--------|-------|--------------|-------------|
| Standard columns - PE frits | | | | |
| 50 mg | 1 mL | 50 u | REC18-50/1 | RESI-50/1 |
| 100 mg | 1 mL | 100 u | REC18-100/1 | RESI-100/1 |
| 100 mg | 3 mL | 50 u | REC18-100/3 | RESI-100/3 |
| 200 mg | 3 mL | 50 u | REC18-200/3 | RESI-200/3 |
| 500 mg | 3 mL | 50 u | REC18-500/3 | RESI-500/3 |
| 500 mg | 6 mL | 30 u | REC18-500/6 | RESI-500/6 |
| 1000 mg | 6 mL | 30 u | REC18-1G/6 | RESI-1G/6 |
| 2000 mg | 6 mL | 20 u | REC18-2G/6 | RESI-2G/6 |
| 2000 mg | 15 mL | 20 u | REC18-2G/15 | RESI-2G/15 |
| 2000 mg | 25 mL | 20 u | REC18-2G/25 | RESI-2G/25 |
| LRC columns - PE frits | | | | |
| 100 mg | LRC 15 | 50 u | REC18-100LRC | RESI-100LRC |
| 200 mg | LRC 15 | 50 u | REC18-200LRC | RESI-200LRC |
| 500 mg | LRC 15 | 50 u | REC18-500LRC | RESI-500LRC |
| Glass columns - PTFE frits | | | | |
| 200 mg | 6 mL | 30 u | REC18-200/6G | RESI-200/6G |
| 500 mg | 6 mL | 30 u | REC18-500/6G | RESI-500/6G |
| 1000 mg | 6 mL | 30 u | REC18-1G/6G | RESI-1G/6G |

RELATED PRODUCTS

For annual subscriptions and bulk orders, contact Advion Interchim Scientific teams:
 analyticalsciences@advion-interchim.com - Tel +33 470037309
 Online form:
https://www.interchim.com/vials_and_filters_subscription.php





Upti-Clean® Special Series

Complementing the S and S2F Series, the Upti-Clean® Special Series column range offers users new selectivity for SPE extraction. The medical grade polypropylene column hardware is compatible with most extraction solvents. The ultra-pure polyethylene frit provides excellent wettability. Solvent and sample flows are perfectly reproducible, thus avoiding extraction yield variability.

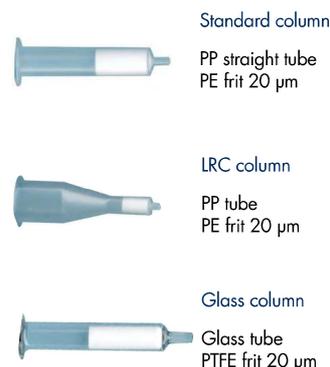
Resistant to aggressive solvents, glass columns with PTFE frits guarantee purifications without any extractables.

Florisil

Working on the basis of polar interactions, Florisil or magnesium silicate is ideal for rapidly trapping polar impurities within non-polar matrices.

It can be used as an alternative to traditional virgin silica when working with viscous solvents. The PR (Pesticides Residus) grade is perfectly suited to the methods of purification of chlorinated pesticides in organic media.

| Weight | Vol. | Qty | FL | FLPR |
|-----------------------------|--------|------|-----------|-------------|
| Standard columns - PE frits | | | | |
| 200 mg | 3 mL | 50 u | FL-200/3 | FLPR-200/3 |
| 500 mg | 3 mL | 50 u | FL-500/3 | FLPR-500/3 |
| 500 mg | 6 mL | 30 u | FL-500/6 | FLPR-500/6 |
| 1000 mg | 6 mL | 30 u | FL-1G/6 | FLPR-1G/6 |
| 2000 mg | 6 mL | 20 u | FL-2G/6 | FLPR-2G/6 |
| 2000 mg | 15 mL | 20 u | FL-2G/15 | FLPR-2G/15 |
| 2000 mg | 25 mL | 20 u | FL-2G/25 | FLPR-2G/25 |
| LRC columns - PE frits | | | | |
| 200 mg | LRC 15 | 50 u | FL-200LRC | FLPR-200LRC |
| 500 mg | LRC 15 | 50 u | FL-500LRC | FLPR-500LRC |
| Glass columns - PTFE frits | | | | |
| 200 mg | 6 mL | 30 u | FL-200/6G | FLPR-200/6G |
| 500 mg | 6 mL | 30 u | FL-500/6G | FLPR-500/6G |
| 1000 mg | 6 mL | 30 u | FL-1G/6G | FLPR-1G/6G |





Upti-Clean® ALN

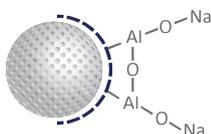
60 Å - 200 m²/g - 32/63 µm

Alumina

pH range: 1.0 - 12.0

Extraction of non-ionizable polar compounds.

Extraction of dioxins.



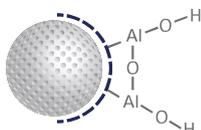
Upti-Clean® ALB

60 Å - 200 m²/g - 32/63 µm

Activated alumina, basic

pH range: 1.0 - 12.0

The basic treatment gives a good selectivity for anionic compounds.



Upti-Clean® ALA

60 Å - 200 m²/g - 32/63 µm

Activated alumina, acid

pH range: 1.0 - 12.0

The acid treatment gives a good selectivity for cationic compounds.

Upti-Clean® Special Series

Alumina

The aluminum atom lacks two electrons within its center that are responsible for ion pairing interaction.

The acidic treatment of Alumina favors the retention of cationic species whilst a basic treatment of Alumina leads to the retention of anionic species.

Neutral Alumina is suitable to clean non ionizable compounds with polar function.

Applications: Environmental (dioxines, PCBs,...)

| Weight | Vol. | Qty | Acidic Alumina | Basic Alumina | Neutral Alumina |
|-----------------------------|-------|------|----------------|---------------|-----------------|
| Standard columns - PE frits | | | | | |
| 200 mg | 3 mL | 50 u | ALA-200/3 | ALB-200/3 | ALN-200/3 |
| 500 mg | 3 mL | 50 u | ALA-500/3 | ALB-500/3 | ALN-500/3 |
| 500 mg | 6 mL | 30 u | ALA-500/6 | ALB-500/6 | ALN-500/6 |
| 1000 mg | 6 mL | 30 u | ALA-1G/6 | ALB-1G/6 | ALN-1G/6 |
| 2000 mg | 6 mL | 20 u | ALA-2G/6 | ALB-2G/6 | ALN-2G/6 |
| 2000 mg | 15 mL | 20 u | ALA-2G/15 | ALB-2G/15 | ALN-2G/15 |
| 2000 mg | 25 mL | 20 u | ALA-2G/25 | ALB-2G/25 | ALN-2G/25 |

LRC columns - PE frits

| | | | | | |
|--------|-------|------|------------|------------|------------|
| 200 mg | LRC15 | 50 u | ALA-200LRC | ALB-200LRC | ALN-200LRC |
| 500 mg | LRC15 | 50 u | ALA-500LRC | ALB-500LRC | ALN-500LRC |

Amberlite™

Amberlite™ is the first generation of polymer resins. They are used for fast separation of a variety of compounds from biological fluids. Amberlite™ suffers from weak selectivity.

| Weight | Vol. | Qty | XAD-2 |
|-----------------------------|-------|-------|-------------|
| Standard columns - PE frits | | | |
| 100 mg | 1 mL | 100 u | XAD2-100/1 |
| 200 mg | 3 mL | 50 u | XAD2-200/3 |
| 500 mg | 3 mL | 50 u | XAD2-500/3 |
| 500 mg | 6 mL | 30 u | XAD2-500/6 |
| 1000 mg | 6 mL | 30 u | XAD2-1G/6 |
| 1000 mg | 12 mL | 20 u | XAD2-1G/12 |
| 2000 mg | 6 mL | 30 u | XAD2-2G/6 |
| 2000 mg | 12 mL | 20 u | XAD2-2G/12 |
| 5000 mg | 35 mL | 20 u | XAD2-5G/35 |
| 10000 mg | 60 mL | 12 u | XAD2-10G/60 |
| 20000 mg | 60 mL | 12 u | XAD2-20G/60 |



PP straight tube
20 µm PE frits

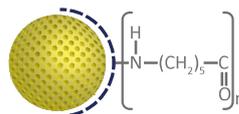


Upti-Clean® Special Series

Polyamide

Amide functionality bonded to a Nylon support. Polyamide columns are typically used for aromatic and natural compound extraction such as PAH or flavanoids

| Weight | Vol. | Qty | P6 |
|-----------------------------|-------|-------|----------|
| Standard columns - PE frits | | | |
| 100 mg | 1 mL | 100 u | P6-100/1 |
| 100 mg | 3 mL | 50 u | P6-100/3 |
| 200 mg | 3 mL | 50 u | P6-200/3 |
| 500 mg | 3 mL | 50 u | P6-500/3 |
| 500 mg | 6 mL | 30 u | P6-500/6 |
| 1000 mg | 6 mL | 30 u | P6-1G/6 |
| 2000 mg | 6 mL | 20 u | P6-2G/6 |
| 2000 mg | 15 mL | 20 u | P6-2G/15 |
| 2000 mg | 25 mL | 20 u | P6-2G/25 |



Upti-Clean® P6
100 µm
Selective extraction of flavonoids and other natural products

RELATED PRODUCTS

For annual subscriptions and bulk orders, contact Advion Interchim Scientific teams:
analytical-sciences@advion-interchim.com - Tel +33 470037309
Online form:
https://www.interchim.com/vials_and_filters_subscription.php





PP cartridge
PE frits 20 µm

Upti-Clean® Cartridges

Upti-Clean® cartridges are easy to use and have been specially developed for the fast and efficient implementation of SPE purifications.

It is not necessary to have a specific SPE device. Lueur tip syringes will allow the transfer of the sample to the sorbent.

C18 media ensures the extraction of apolar and polar compounds for most aqueous matrices. Virgin silica allows the extraction of polar compounds in apolar solvents. The polypropylene protective shell is compatible with a large number of solvents.

- Common applications: Pharmaceutical, Toxicology, Clinical monitoring...
- Diverted applications: Storage and transport of samples.

| Type | REC18 | Qty | Type | RESI | Qty |
|-------------------|---------------|------|--------|--------------|------|
| Recovery™ sorbent | | | | | |
| 300 mg | REC18-390/SC | 50 u | 300 mg | RESI-300/SC | 50 u |
| 600 mg | REC18-910/SC | 50 u | 600 mg | RESI-700/SC | 50 u |
| 900 mg | REC18-1690/SC | 50 u | 900 mg | RESI-1300/SC | 50 u |

| Type | C18-S | Qty | Type | SI-S | Qty | Type | Sodium sulfate | Qty |
|---------------------|-------------|------|--------|------------|------|--------|----------------|------|
| Upti-Clean® sorbent | | | | | | | | |
| 300 mg | C18-390/SC | 50 u | 300 mg | SI-300/SC | 50 u | | | |
| 600 mg | C18-910/SC | 50 u | 600 mg | SI-700/SC | 50 u | | | |
| 900 mg | C18-1690/SC | 50 u | 900 mg | SI-1300/SC | 50 u | 900 mg | SS-1320/SC | 50 u |

Solid phase extraction - Specific kit for PAH's extraction



Extraction of PAHs from water or soil

Developed for the extraction of polycyclic aromatic hydrocarbons (PAHs) in water or soil matrices, Advion Interchim Scientific SPE application kits allow adsorption of polar impurities and trapping of water traces contained in the matrix.

The compounds of interest have no interaction with the sorbents and are generally analyzed by gas chromatography.

Containers can be polypropylene or glass with polyethylene or PTFE frits. A glass container with PTFE frits guarantees the solvent fractions without extractables.

A first processing step is necessary: PAHs are extracted by Liq./Liq. or Solid/Liq. extraction (PSE, soxhlet ...)

| Description | P/N | Qty |
|--|---------|------|
| SPE kit for the extraction of PAHs from water or soil 4g/6mL - PP columns - PE frits | SPE-SA2 | 30 u |
| SPE kit for the extraction of PAHs from water or soil 4g/6mL - Glass columns - PTFE frits | SPE-SA3 | 30 u |

Extraction of PAHs from water containing humic acids

Developed for the extraction of polycyclic aromatic hydrocarbons (PAHs) from waters containing humic acids, Advion Interchim Scientific SPE application kits allow the pre-concentration of PAHs, while strongly retaining humic acids.

The available container is polypropylene with polyethylene sintering.

| Description | P/N | Qty |
|--|---------|------|
| SPE Kit for the extraction of PAHs from water containing humic acids - 1.5g/6mL - PP columns - PE frits | SPE-SA4 | 30 u |

Indicative protocol:

- Column conditioning: 5 mL MeOH then 7 mL DI H₂O/EtOH (9/1 v/v)
- Matrix preparation: 500 mL (sample) + 20-30 mL EtOH
- Column washing 1: 2 mL MeOH/H₂O with 100 mM acetic acid (5/95 v/v)
- Column washing 2: 1-3 mL DI H₂O/EtOH (9/1 v/v)
- Drying: 15 min
- Elution: 5 mL Dichloromethane

Extraction of PAHs from soils & oils

Developed for the extraction of PAHs from soils and oils, Advion Interchim Scientific SPE application kits allow the adsorption of polar impurities as well as the selective adsorption of PAHs.

Containers can be polypropylene or glass with polyethylene or PTFE frits. A glass container with PTFE frits guarantees solvent fractions without extractables.

Indicative protocol available on request

| Description | P/N | Qty |
|---|---------|------|
| SPE Kit for the extraction of PAHs from soils & oils 1.5g/6mL - PP columns - PE frits | SPE-SA5 | 30 u |
| SPE Kit for the extraction of PAHs from soils & oils 1.5g/6mL - Glass columns - PTFE frits | SPE-SA6 | 30 u |

PUBLICATIONS

PAH & Aliphatic hydrocarbons (C12 up to C41) from petroleum residues
 Publication Name : Roberto Alzaga and all,
 Environmental Chemistry Department, IQABCSIC,
 Jordi Girona 18-26, E-08034 Barcelona,
 Spain ; Journal of Chromatography A, 1025
 (2004) 133-138 ; Fast solid-phase extraction - gas
 chromatography - mass spectrometry procedure for
 oil fingerprinting Application to the Prestige oil spill.



Extraction of PCBs from oils

Advion Interchim Scientific SPE application kits are used for organic sample treatment and allow the removal of impurities which may interfere with PCBs during the gas chromatography analysis.

| Description | P/N | Qty |
|--|----------|------|
| SPE Kit for the extraction of PCBs from oils 1g/3mL - PP columns - PE frits | SPE-SA12 | 50 u |
| SPE Kit for the extraction of PCBs from oils 1g/6mL -PP columns - PE frits | SPE-SA13 | 30 u |

Applications: EN61619 Norm

The Upti-Clean® CT20 columns are used for the treatment of organic samples and allow the removal of impurities which could interfere with PCBs during gas chromatography analysis.

These columns have undergone an acidic treatment that makes sample cleaning more efficient in particular by oxidation of some impurities.

Applications: EN61619 Norm

| Description | P/N | Qty |
|---------------------------------|--------|------|
| Custom SPE columns CT-20 - 3 mL | CT-20F | 50 u |
| Custom SPE columns CT-20 - 6 mL | CT-20G | 30 u |

Extraction of PAHs and PCBs from sludge

Upti-Clean® CT-33 columns are used for the treatment of organic samples. They allow the removal of sulfur compounds. Polar impurities are also retained on the sorbent. Sodium sulfate is a drying agent to trap water traces. PAHs and PCBs can be analyzed by liquid or gas chromatography.

Applications: XP X33-012 Norm

| Description | P/N | Qty |
|---------------------------------|--------|------|
| SPE Custom columns CT-33 - 6 mL | CT-33A | 30 u |
| SPE Custom columns CT-33 - 3 mL | CT-33B | 50 u |



Solid phase extraction - Specific kit for pesticide extraction



PBDEs extraction from sediments and sewage sludge

Upti-Clean CT-35 columns are used for the treatment of organic samples and allow the removal of impurities which could interfere with polybrominated diphenyl ethers (PBDE) during gas chromatography analysis.

Applications: NF EN ISO 22032

| Description | P/N | Qty |
|---------------------------------|--------|------|
| SPE Custom columns CT-35 - 6 mL | CT-35A | 50 u |

Extraction and Purification of dioxin-like PCDD / PCDF & PCBs

The extraction and purification products necessary for the implementation of NF EN 1948 are available on request (used in the analysis process of dioxin-like Polychlorodibenzo-p-dioxin (PCDD), polychlorodibenzo-furan (PCDF) and polychlorinated biphenyls (PCBs).

To do this, simply send your request to:

analytical-sciences@advion-interchim.com

Extraction of basic drugs from biological fluids*

| Description | P/N | Qty |
|--|---------|------|
| Extraction of basic drugs from biological fluids | SPE-SA1 | 50 u |

Extraction of Oil & Grease from aqueous matrices* (EPA Method 1664)

| Description | P/N | Qty |
|--|---------|------|
| Extraction of Oil & Grease from aqueous matrices (EPA Method 1664) - 1 g/6 mL | SPE-SA7 | 30 u |
| Extraction of Oil & Grease from aqueous matrices (EPA Method 1664) - 500 mg/3 mL | SPE-SA8 | 50 u |

Extraction of Pesticides and Herbicides from aqueous matrices*

| Description | P/N | Qty |
|---|----------|------|
| Extraction of Pesticides and Herbicides from aqueous matrices | SPE-SA10 | 50 u |

Extraction of Steroids from biological fluids*

| Description | P/N | Qty |
|---|----------|------|
| Extraction of Steroids from biological fluids | SPE-SA11 | 50 u |

Extraction of SVOCs from water (EPA 525)*

| Description | P/N | Qty |
|--|----------|------|
| Extraction of SVOCs from water (EPA 525) | SPE-SA14 | 30 u |

*Protocol available on request

Multilayer columns and bulk sorbents available on request.





Introduction

Advion Interchim Scientific offers a complete range of Polymers of various chemical natures, with specific intrinsic characteristics allowing the purification and/or pre-concentration of molecules and macromolecules from all types of matrices.

- PolyClean™, range of mixed polymers (hydrophilic / hydrophobic) made of ultrapure spherical particles, modified or unmodified by ion exchange groups, for extraction and pre-concentration of acidic, basic and neutral compounds.
- Atoll™, range of PSDVB hydrophobic polymers, with different loading capacities for non-polar to moderately polar compounds.

The complete PolyClean™ and Atoll™ ranges provide specific selectivities adapted to all types of matrices and families of compounds.

Advion Interchim Scientific expertise and know-how in terms of filling quality guarantee perfect repeatability and reproducibility of extraction rates.

Each products are delivered in a packaging specially designed for long term storage, protected from air and light, accompanied by an individual certificate mentioning the manufacturing number and the batch number of the sorbent used.

The PolyClean™ and Atoll™ columns can be used with all automated SPE workstations.

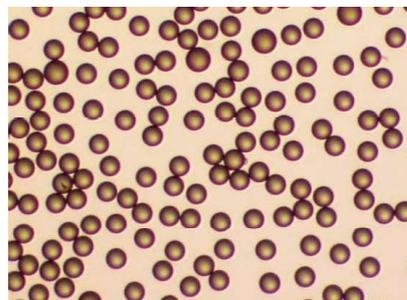
| Name | Code | Type | Particule size | Surface area | Modification | IE capacity |
|-------------------------|--------------|---|----------------|------------------------|------------------------|-------------|
| PolyClean 2H | 302H 2H | Mixed Polymer (hydrophilic /hydrophobic) | 30 µm 60 µm | 850 m ² /g | non | n.a |
| PolyClean HCX | 30HCX HCX | Mixed Polymer (hydrophilic /hydrophobic) | 30 µm 60 µm | 850 m ² /g | Strong Cation Exch. | 1 meq/g |
| PolyClean HAX | 30HAX HAX | Mixed Polymer (hydrophilic /hydrophobic) | 30 µm 60 µm | 850 m ² /g | Strong Anion Exch. | 0,3 meq/g |
| Atoll Xtrem | X | PSDVB | 40 µm | 800 m ² /g | no | n.a |
| Atoll Xtrem Capacity | XC | PSDVB | 70 µm | 1500 m ² /g | no | n.a |

Please refer to our sorbent selection guide in the beginning of this chapter for more information.

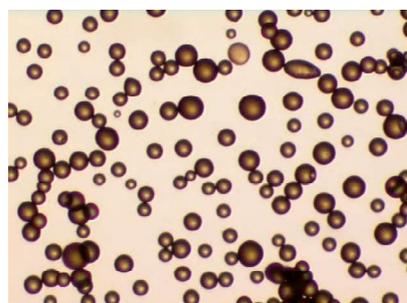


PolyClean

Accurate Bed Technology™ vs Competitors



PolyClean™ 2H 60 µm



Competitor W 60 µm

PolyClean™ 2H & 302H, Hydrophilic/Hydrophobic interactions

From the latest Advion Interchim Scientific R & D developments, the PolyClean™ 2H polymer has a proprietary structure made of chemical groups providing mixed mode Hydrophilic / Hydrophobic interactions.

The PolyClean™ 2H optimizes the methods developed on sorbents conventionally used in reverse phase (bonded silicas or polymers) which do not have the required selectivity and loading capacity.

Available in 30 & 60 µm, ultrapure spherical polymer particles allow the extraction of acidic, basic and neutral compounds in all matrices.

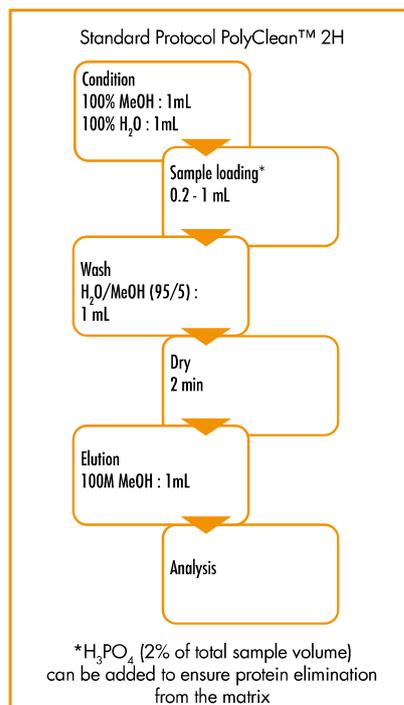
Use 60 µm particle size for viscous samples.

The 30 µm version provides a higher pre-concentration factor (using the same sorbent weight) compared to the 60 µm.

Applications :

- Pharmaceutical compounds and their metabolites in biological fluids and tissues.
- Traces of organic pollutants in environmental matrices.
- Endocrine disruptors.

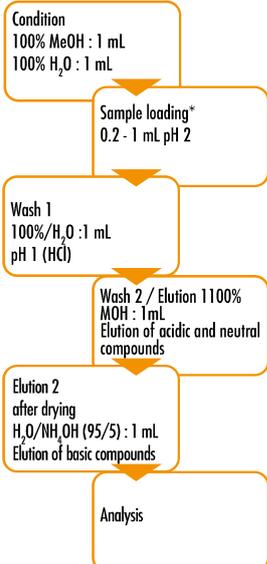
| Weight | Vol. | Qty | PolyClean™ 2H 60 µm | PolyClean™ 302H 30 µm |
|-----------------------------|-------|------|---------------------|-----------------------|
| Standard columns - PE frits | | | | |
| 30 mg | 1 mL | 50 u | 2H-30/1 | 302H-30/1 |
| 100 mg | 1 mL | 50 u | 2H-100/1 | 302H-100/1 |
| 30 mg | 3 mL | 50 u | 2H-30/3 | 302H-30/3 |
| 60 mg | 3 mL | 50 u | 2H-60/3 | 302H-60/3 |
| 100 mg | 3 mL | 50 u | 2H-100/3 | 302H-100/3 |
| 200 mg | 3 mL | 50 u | 2H-200/3 | 302H-200/3 |
| 150 mg | 6 mL | 30 u | 2H-150/6 | 302H-150/6 |
| 200 mg | 6 mL | 30 u | 2H-200/6 | 302H-200/6 |
| 500 mg | 6 mL | 30 u | 2H-500/6 | 302H-500/6 |
| 500 mg | 15 mL | 20 u | 2H-500/15 | 302H-500/15 |
| 1000 mg | 15 mL | 20 u | 2H-1G/15 | 302H-1G/15 |
| 1000 mg | 25 mL | 20 u | 2H-1G/25 | 302H-1G/25 |
| LRC columns - PE frits | | | | |
| 30 mg | LRC | 50 u | 2H-30LRC | 302H-30LRC |
| 60 mg | LRC | 50 u | 2H-60LRC | 302H-60LRC |
| Glass columns - PTFE frits | | | | |
| 200 mg | 6 mL | 30 u | 2H-200/6G | 302H-200/6G |





PolyClean

Standard Protocol PolyClean™ HXC



PolyClean™ HXC, Mixed Mode / SCX for the extraction of Basic compounds

The PolyClean™ HXC is a mixed polymer Hydrophilic / Hydrophobic modified with an SCX (Strong Cation Exchange) group. It induces a high selectivity for weak bases in purification and preconcentration.

- SCX interaction (IE capacity of 1 meq / g).
- Mixed Hydrophilic / Hydrophobic interaction.

Applications :

- Pharmaceutical compounds and their metabolites from biological matrices (Blood, urine, plasma, tissues ...)
- Environmental analysis: Pesticides, Herbicides.

| Weight | Vol. | Qty | PolyClean™ HXC 60 µm | PolyClean™ HXC 30 µm |
|-----------------------------|-------|------|----------------------|----------------------|
| Standard columns - PE frits | | | | |
| 30 mg | 1 mL | 50 u | HXC-30/1 | 30HXC-30/1 |
| 100 mg | 1 mL | 50 u | HXC-100/1 | 30HXC-100/1 |
| 30 mg | 3 mL | 50 u | HXC-30/3 | 30HXC-30/3 |
| 60 mg | 3 mL | 50 u | HXC-60/3 | 30HXC-60/3 |
| 100 mg | 3 mL | 50 u | HXC-100/3 | 30HXC-100/3 |
| 200 mg | 3 mL | 50 u | HXC-200/3 | 30HXC-200/3 |
| 150 mg | 6 mL | 30 u | HXC-150/6 | 30HXC-150/6 |
| 200 mg | 6 mL | 30 u | HXC-200/6 | 30HXC-200/6 |
| 500 mg | 6 mL | 30 u | HXC-500/6 | 30HXC-500/6 |
| 500 mg | 15 mL | 20 u | HXC-500/15 | 30HXC-500/15 |
| 1000 mg | 15 mL | 20 u | HXC-1G/15 | 30HXC-1G/15 |
| 1000 mg | 25 mL | 20 u | HXC-1G/25 | 30HXC-1G/25 |

LRC columns - PE frits

| | | | | |
|-------|-----|------|-----------|-------------|
| 30 mg | LRC | 50 u | HXC-30LRC | 30HXC-30LRC |
| 60 mg | LRC | 50 u | HXC-60LRC | 30HXC-60LRC |

Glass columns - PTFE frits

| | | | | | |
|--------|--|------|------|------------|--------------|
| 200 mg | | 6 mL | 30 u | HXC-200/6G | 30HXC-200/6G |
|--------|--|------|------|------------|--------------|

RELATED PRODUCTS

UptiVial Advion Interchim Scientific GC / LC certified vials kit:
Vials and caps are tested and delivered with a certificate.
See chapter : Vials & Caps





PolyClean™

PolyClean™ HAX, mixed mode/ SAX for the separation of acidic compounds
PolyClean™ HAX polymer, modified by a SAX (Strong Anion Exchange) type exchanger, is dedicated to the purification and preconcentration of weak acids.

Different retention mechanisms are used:
Strong SAX type interaction (ionic exchange capacity of 0.3meq/g).
Mixed Hydrophilic/Hydrophobic interaction.

Applications :

- Metabolites, acidic compounds from biological fluids and tissues.
- Food hygiene: preservatives, contaminants.

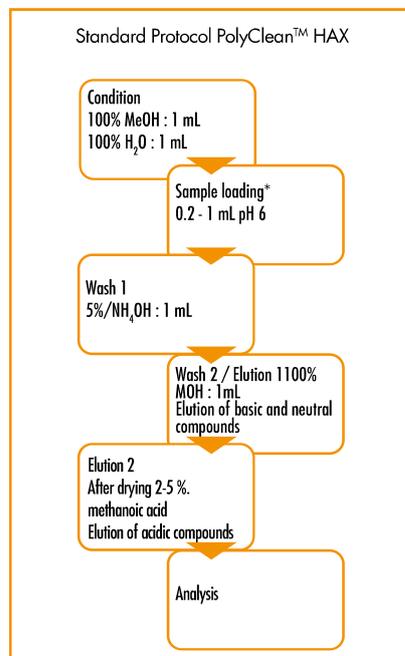
| Weight | Vol. | Qty | PolyClean™ HAX 60 µm | PolyClean™ HAX 30 µm |
|-----------------------------|-------|------|----------------------|----------------------|
| Standard columns - PE frits | | | | |
| 30 mg | 1 mL | 50 u | HAX-30/1 | 30HAX-30/1 |
| 100 mg | 1 mL | 50 u | HAX-100/1 | 30HAX-100/1 |
| 30 mg | 3 mL | 50 u | HAX-30/3 | 30HAX-30/3 |
| 60 mg | 3 mL | 50 u | HAX-60/3 | 30HAX-60/3 |
| 100 mg | 3 mL | 50 u | HAX-100/3 | 30HAX-100/3 |
| 200 mg | 3 mL | 50 u | HAX-200/3 | 30HAX-200/3 |
| 150 mg | 6 mL | 30 u | HAX-150/6 | 30HAX-150/6 |
| 200 mg | 6 mL | 30 u | HAX-200/6 | 30HAX-200/6 |
| 500 mg | 6 mL | 30 u | HAX-500/6 | 30HAX-500/6 |
| 500 mg | 15 mL | 20 u | HAX-500/15 | 30HAX-500/15 |
| 1000 mg | 15 mL | 20 u | HAX-1G/15 | 30HAX-1G/15 |
| 1000 mg | 25 mL | 20 u | HAX-1G/25 | 30HAX-1G/25 |

LRC columns - PE frits

| | | | | |
|-------|-----|------|-----------|-------------|
| 30 mg | LRC | 50 u | HAX-30LRC | 30HAX-30LRC |
| 60 mg | LRC | 50 u | HAX-60LRC | 30HAX-60LRC |

Glass columns - PTFE frits

| | | | | |
|--------|------|------|------------|--------------|
| 200 mg | 6 mL | 30 u | HAX-200/6G | 30HAX-200/6G |
|--------|------|------|------------|--------------|



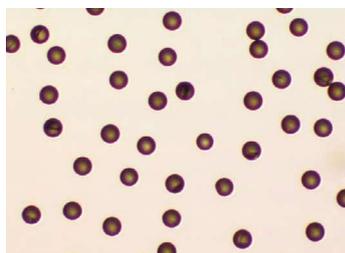
RELATED PRODUCTS

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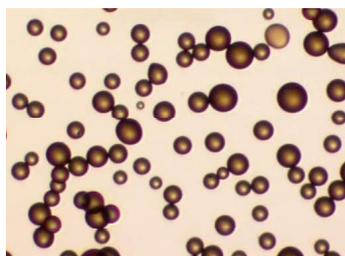




Accurate Bed Technology™ vs Competitors



Atoll™ XC



Competitor

Atoll™ Xtrem

The Atoll™ Xtrem polymer of the Polystyrene-divinyl benzene (PSDVB) type is presented as a hydrophobic support dedicated to the extraction and pre-concentration of apolar to moderately polar compounds thanks to a larger specific surface area than traditional silicas.

Atoll™ Xtrem is a first alternative choice to the media classically used in reverse phase (C18, C8 grafted silicas, ...).

Unlike silicas, the polymer has the advantage of being stable at all pH and compatible with all common solvents.

Resistant to aggressive solvents, glass columns with PTFE sintered guarantee purifications without any extractables.

Applications :

- Apolar and moderately polar compounds in aqueous or organic samples.

| Weight | Vol. | Qty | Atoll™ X |
|-----------------------------|-------|------|----------|
| Standard columns - PE frits | | | |
| 30 mg | 1 mL | 50 u | X-30/1 |
| 100 mg | 1 mL | 50 u | X-100/1 |
| 30 mg | 3 mL | 50 u | X-30/3 |
| 60 mg | 3 mL | 50 u | X-60/3 |
| 100 mg | 3 mL | 50 u | X-100/3 |
| 200 mg | 3 mL | 50 u | X-200/3 |
| 150 mg | 6 mL | 30 u | X-150/6 |
| 200 mg | 6 mL | 30 u | X-200/6 |
| 500 mg | 6 mL | 30 u | X-500/6 |
| 500 mg | 15 mL | 20 u | X-500/15 |
| 1000 mg | 15 mL | 20 u | X-1G/15 |
| 1000 mg | 25 mL | 20 u | X-1G/25 |
| LRC columns - PE frits | | | |
| 30 mg | LRC | 50 u | X-30LRC |
| 60 mg | LRC | 50 u | X-60LRC |
| Glass columns - PTFE frits | | | |
| 200 mg | 6 mL | 30 u | X-200/6G |



Atoll™ Xtrem Capacity

With the highest specific surface area on the market (1,500 m²/g), the polymer Atoll™ Xtrem Capacity is a universal sorbent for the purification and pre-concentration of polar and apolar compounds.

The loading capacity is 2 to 3 times higher than conventional silicas.

The nature of the interactions allows the adsorption of acid, basic and neutral molecules.

Its highly cross-linked structure is stable at a pH between 0 and 14.

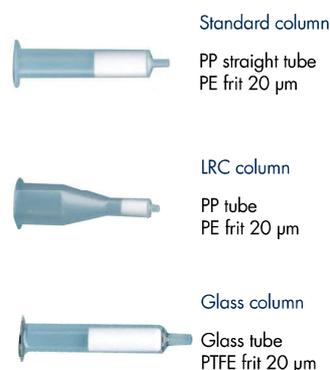
The pure spherical particles, available in 70 µm, allow a perfect reproducibility of purifications regardless of the matrices and solvents used.

Resistant to aggressive solvents, the glass columns with PTFE sintered guarantee purifications without any extractables.

- Pharmaceutical applications: drugs and their metabolites in biological fluids (whole blood, plasma, urine, ...)
- Environmental applications: apolar or polar compounds in water or other matrix (PAHs, PCBs, carbamates, phenyl-ureas, acrylamide, glyphosate, etc.)



| Weight | Vol. | Qty | Atoll™ XC |
|-----------------------------|-------|------|-----------|
| Standard columns - PE frits | | | |
| 30 mg | 1 mL | 50 u | XC-30/1 |
| 100 mg | 1 mL | 50 u | XC-100/1 |
| 30 mg | 3 mL | 50 u | XC-30/3 |
| 60 mg | 3 mL | 50 u | XC-60/3 |
| 100 mg | 3 mL | 50 u | XC-100/3 |
| 200 mg | 3 mL | 50 u | XC-200/3 |
| 150 mg | 6 mL | 30 u | XC-150/6 |
| 200 mg | 6 mL | 30 u | XC-200/6 |
| 500 mg | 6 mL | 30 u | XC-500/6 |
| 500 mg | 15 mL | 20 u | XC-500/15 |
| 1000 mg | 15 mL | 20 u | XC-1G/15 |
| 1000 mg | 25 mL | 20 u | XC-1G/25 |
| LRC columns - PE frits | | | |
| 30 mg | LRC | 50 u | XC-30LRC |
| 60 mg | LRC | 50 u | XC-60LRC |
| Glass columns - PTFE frits | | | |
| 200 mg | 6 mL | 30 u | XC-200/6G |





Please refer to our sorbent selection guide in the beginning of this chapter for more information.

Extraction and Pre-concentration of Acid, Basic & Neutral compounds

These kits are composed of the following sorbents:

- Polymer Atoll™ XC
- Polymer PolyClean™ 302H
- Polymer PolyClean™ 30HCX
- Polymer PolyClean™ 30HAX

| Description | P/N | Qty |
|-----------------------|----------|----------|
| Kit SPE 30 mg / 1 mL | SPE-D142 | 4 x 10 u |
| Kit SPE 60 mg / 3 mL | SPE-D143 | 4 x 10 u |
| Kit SPE 100 mg / 3 mL | SPE-D144 | 4 x 10 u |

Pre-concentration of hydrophobic analytes in aqueous matrices

These kits are composed of the following sorbents:

- Silica Recovery C18
- Silica Upti-Clean® C18-S
- Polymer Atoll™ XC
- Polymer PolyClean™ 2H
- Polymer Atoll™ X

| Description | P/N | Qty |
|-----------------------|----------|----------|
| Kit SPE 200 mg / 6 mL | SPE-D137 | 5 x 10 u |
| Kit SPE 200 mg / 3 mL | SPE-D138 | 5 x 10 u |

Pre-concentration of hydrophilic analytes

These kits are composed of the following sorbents:

- Virgin silica Upti-Clean®
- Silica Upti-Clean® NH2
- Silica Upti-Clean® CN

| Description | P/N | Qty |
|-----------------------|----------|----------|
| Kit SPE 500 mg / 6 mL | SPE-D128 | 3 x 10 u |
| Kit SPE 500 mg / 3 mL | SPE-D129 | 3 x 10 u |

Any development kit can be made to order.
Please contact us.



Removal of polar impurities from aqueous and organic matrices

These kits are composed of the following sorbents:

- Silica vierge Upti-Clean®
- Silica Upti-Clean® NH₂
- Silica Upti-Clean® Florisil

| Description | P/N | Qty |
|-----------------------|----------|----------|
| Kit SPE 500 mg / 6 mL | SPE-D130 | 3 x 10 u |
| Kit SPE 500 mg / 3 mL | SPE-D131 | 3 x 10 u |

Extraction of Acidic, Basic or Neutral compounds from aqueous or organic matrices is written twice

This kit is composed of the following sorbents:

- Polymer Atoll™ XC
- Polymer PolyClean™ 2H 30 µm
- Polymer PolyClean™ 2H 60 µm
- Polymer Atoll™ X

| Description | P/N | Qty |
|-----------------------|----------|----------|
| Kit SPE 100 mg / 3 mL | SPE-D139 | 4 x 10 u |

Extraction of weak bases from aqueous matrices

This kit is composed of the following sorbents:

- Silica Upti-Clean® SCX
- Silica Upti-Clean® MM1

| Description | P/N | Qty |
|-----------------------|----------|----------|
| Kit SPE 500 mg / 6 mL | SPE-D134 | 2 x 10 u |

Generic SPE method available on request.
For more information, please contact our technical department.

RELATED PRODUCTS

For annual subscriptions and bulk orders, contact Advion Interchim Scientific teams:
analyticalsciences@advion-interchim.com - Tel +33 470037309
Online form:
https://www.interchim.com/vials_and_filters_subscription.php



Upti-trap™

Upti-trap™ allows extraction and/or pre-concentration of samples before HPLC analyses without clogging or damaging the analytical column.

The Upti-Trap™ are available in multiple sizes

- 20 x 4.0 mm
- 10 x 2.0 mm

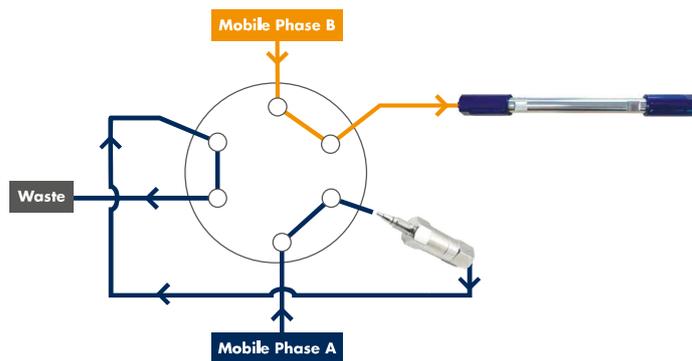
This technique is very applicable to the analysis of biological fluids where the search for drug candidates, drugs and their metabolites must be fast and efficient.

Upti-trap™ is an excellent pre-concentration tool for environmental samples (analysis of polyaromatic hydrocarbons (PAH), polychlorinated biphenyls (PCBs), phenyl-ureas, triazines, carbamates, ...)

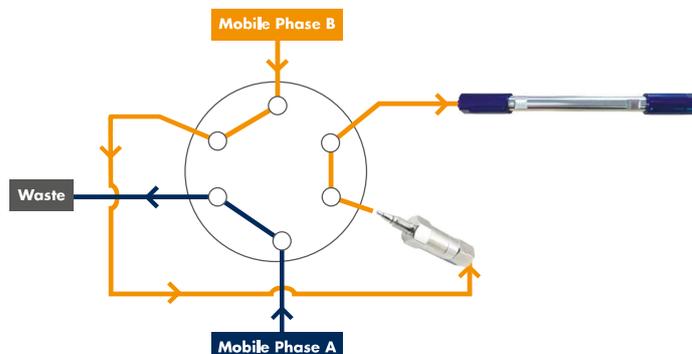
On-line extraction represents real time savings compared to an off-line method, while keeping a high sensitivity. This reproducible and repeatable method is easily automated.

1- Extraction mode

The compound(s) of interest are blocked on the sorbent while the rest is eluted to waste thanks to the washing solvent (mobile phase A). Two HPLC pumps are needed, one for extraction, the other for elution.

**2- Elution mode**

The mobile phase of the second pump (mobile phase B) elutes the compound(s) of interest to the HPLC column.

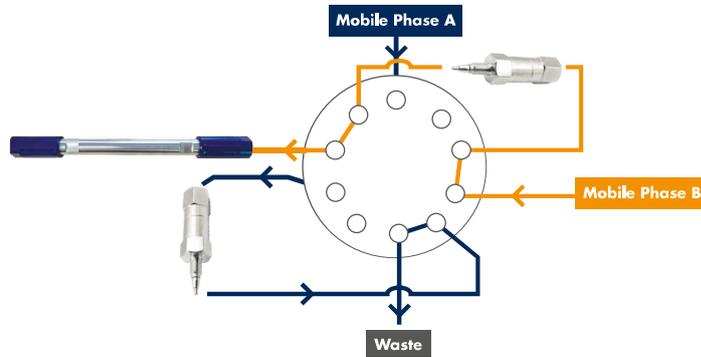




Solid phase extraction - SPE "on-line" Upti-trap™



The use of a 10-way / 2-position valve increases productivity. One sample is extracted while a second one is being analyzed.



| Sorbent | | Particle size | 10 x 2.0 mm | 20 x 4.0 mm |
|------------------|-------------------------------|---------------|---------------|---------------|
| PolyClean™ 302H | Hydrophilic / Hydrophobic | 30 µm | 302H-010/020 | 302H-020/040 |
| PolyClean™ 30HCX | Hydrophilic / Hydrophobic-SCX | 30 µm | 30HCX-010/020 | 30HCX-020/040 |

| Description | P/N |
|------------------------|-----------|
| Column holder 10x2.0mm | SPEOL-10H |
| Column holder 20x4.0mm | SPEOL-20H |



SPE columns Upti-trap™



SPE columns Upti-trap™





QuEChERS (Quick, Easy, Cheap, Effective, Rugged & Safe)

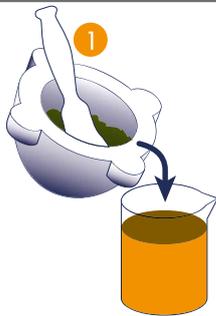
The improvement and optimization of analytical techniques (LC/MS, GC/MS) make it possible to achieve high levels of sensitivity. Meanwhile, the sample preparation step prior analysis becomes increasingly crucial to achieve the desired results, especially for trace analysis and to prolong the life of the analytical instruments.

Research and determination of pesticide residues in food is an important topic for many years. As classical sample preparation methods like liquid/liquid extraction (LLE) are not able to achieve the required levels of sensitivity, a new technique called QuEChERS appeared.

It follows precise methodology, from drastic EN or AOAC norms to detect contaminants. It is a simple, fast and efficient method with only two implementation steps and can determine more than 200 pesticides residues from a variety of matrices (fruits, vegetables, meat, fish...), with high recoveries.

Quick Start Guide

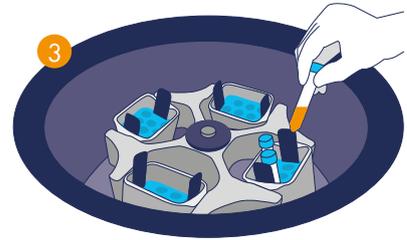
Step 1 - Liq/Liq extraction



Grind & homogenize the sample in a crucible.
Add the internal standard within the extraction solvent.

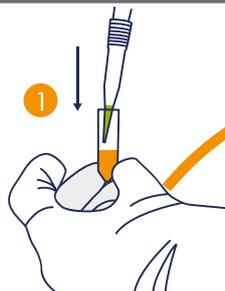


Transfer the mixture to a 50mL extraction tube containing QuEChERS salts.
Immediately stir vigorously for a min.

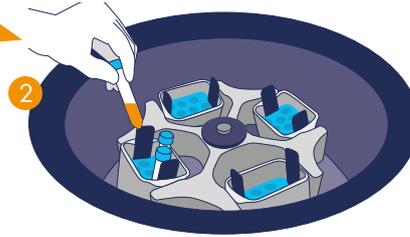


Centrifuge the 50mL tube for 1 to 5 min @ high speed.

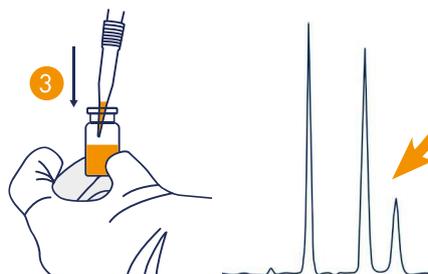
Step 2 - Dispersive SPE process (dSPE)



Transfer supernatant to a 2mL or 15mL tube that contains dSPE sorbents, then shake the tube.



Centrifuge the tube for 1 to 5 min @ high speed.



Transfer supernatant to an auto-sampler vial for further LC or GC analysis.



- Magnesium Sulfate (MgSO₄): eliminates H₂O traces and enhances the homogenisation of the sample for a better treatment of the organic extract.
- Primary Secondary Amine (PSA) bonded silica: eliminates acidic compounds, polar pigments, sugars and fatty acids.
- Octadecyl (C18) bonded silica: eliminates lipids, sterols, ...
- Graphitized Carbon Black (GCB): eliminates carotenoids, pigments such as chlorophyll, planar molecules, ...

Original
QuEChERS Method

AOAC 2007.01
QuEChERS Method

EN 15662
QuEChERS Method

Step 1 - Liq/Liq extraction

Extraction of Pesticide Residues and other compounds such as organic acids

Add 10 mL of Acetonitrile to 10 g of sample in a 50 mL centrifuge tube containing 4 g anhydrous MgSO₄ & 1 g NaCl.
Add Internal Standard
Shake & Centrifuge

Recover 1 mL aliquot of supernatant

Add 15 mL of Acetonitrile/ Acetic Acid 1% to 15 g sample in a 50 mL centrifuge tube containing 6 g anhydrous MgSO₄ & 1.5 g Na Acetate.
Add Internal Standard

Recover 1-8 mL aliquot of supernatant

Add 10 mL Acetonitrile to 10g sample in a 50 mL centrifuge tube containing 4g anhydrous MgSO₄, 1g NaCl, 1g Na3Citrate Dihydrate & 0.5g Na2HCitrate Sesquihydrate.
Add Internal Standard
Shake & Centrifuge

Recover X mL aliquot of supernatant

Step 2 - Dispersive SPE process (dSPE)

Final cleaning step of Pesticides Residues

Transfer the aliquot obtained from step 1 in a micro centrifuge tube containing 150 mg anhydrous MgSO₄ & 50 mg PSA
Shake & Centrifuge

Transfer 0.5 mL of extract for LC or GC analysis

Transfer the aliquot obtained from step 1 in a micro centrifuge tube containing 150 mg anhydrous MgSO₄ and 50 mg PSA per mL of supernatant
Shake & Centrifuge

Transfer extract preserved with 6.7 mM Formic Acid for LC analysis.
Transfer extract preserved with toluene for GC analysis.
Add triphenylphosphate (TPP)

Transfer the aliquot obtained from step 1 in a micro centrifuge tube containing X*150 mg anhydrous MgSO₄ and X*25 mg PSA
Add GCB for samples containing high levels of chlorophyll or carotenoids
Shake & Centrifuge

Transfer Y mL of extract preserved with Y*10 µL Acetonitrile/Formic Acid 5% (10 µL/mL extract) for LC or GC analysis

*Pigments contained in plants are frequently a problem for the analysis.
To reduce interferences, the weight ratio of GCB may be modified.*



SAMPLE PREPARATION

Solid phase extraction - QuEChERS



The tube kits (*) are delivered with the sorbents in the tubes

Extraction Kits - Step 1

| Composition | Application | Method |
|---|-------------|--------------|
| 4 g MgSO ₄ + 1 g NaCl + 1g NaCit _r , + 0.5 g NaCit _r , Sesquihydrate | General | EN 15662 |
| 6 g MgSO ₄ + 1.5 g Na Acetate | General | AOAC 2007.01 |
| 4 g MgSO ₄ + 1 g NaCl | General | Original |
| 6 g MgSO ₄ + 1.5 g NaCl | General | - |
| 8 g MgSO ₄ + 3.5 g NaCl | General | - |
| 6 g MgSO ₄ + 1.5 g NaCl + 1.5g NaCit _r , + 0.75g NaCit _r , Sesquihydrate | General | - |
| 4 g MgSO ₄ + 1.75 g NaCl | General | - |
| 4 g MgSO ₄ + 0.5 g NaCl | Acrylamides | - |

Purification Kits - Step 2

| Composition | Application | Method |
|--|--|--------------|
| 900 mg MgSO ₄ + 300 mg C18 + 150 mg PSA | General | - |
| 150 mg MgSO ₄ + 50 mg PSA + 50 mg C18 + 7,5 mg GCB | High lipid content | AOAC 2007.01 |
| 900 mg MgSO ₄ + 300 mg PSA + 150 mg GCB | Wine & berries | - |
| 150 mg MgSO ₄ + 25 mg PSA | Fruits & vegetables | EN 15662 |
| 900 mg MgSO ₄ + 150 mg PSA | Fruits & vegetables | EN 15662 |
| 150 mg MgSO ₄ + 50 mg PSA | Fruits & vegetables | AOAC 2007.01 |
| 1200 mg MgSO ₄ + 400 mg PSA | Fruits & vegetables | AOAC 2007.01 |
| 150 mg MgSO ₄ + 50 mg C18 | Lightly pigmented fruits & vegetables | - |
| 150 mg MgSO ₄ + 25 mg PSA + 2,5 mg GCB | Pigmented fruits & vegetables | EN 15662 |
| 900 mg MgSO ₄ + 150 mg PSA + 15 mg GCB | Pigmented fruits & vegetables | EN 15662 |
| 885 mg MgSO ₄ + 150 mg PSA + 15 mg GCB | Pigmented fruits & vegetables | EN 15662 |
| 150 mg MgSO ₄ + 50 mg PSA + 50 mg C18 + 50 mg GCB | Pigmented fruits & vegetables | AOAC 2007.01 |
| 1200 mg MgSO ₄ + 400 mg PSA + 400 mg GCB | Pigmented fruits & vegetables | AOAC 2007.01 |
| 150 mg MgSO ₄ + 25 mg PSA + 7,5 mg GCB | Highly pigmented fruits & vegetables | EN 15662 |
| 900 mg MgSO ₄ + 150 mg PSA + 45 mg GCB | Highly pigmented fruits & vegetables | EN 15662 |
| 855 mg MgSO ₄ + 150 mg PSA + 45 mg GCB | Highly pigmented fruits & vegetables | EN 15662 |
| 1200 mg MgSO ₄ + 400 mg C18 + 400 mg PSA + 400 mg GCB | Fruits & vegetables with pigments & fats | AOAC 2007.01 |
| 150 mg MgSO ₄ + 25 mg PSA + 25 mg C18 | Fruits & vegetables with fats & waxes | EN 15662 |
| 900 mg MgSO ₄ + 150 mg C18 + 150 mg PSA | Fruits & vegetables with fats & waxes | EN 15662 |
| 150 mg MgSO ₄ + 50 mg PSA + 50 mg C18 | Fruits & vegetables with fats & waxes | AOAC 2007.01 |
| 1200 mg MgSO ₄ + 400 mg C18 + 400 mg PSA | Fruits & vegetables with fats & waxes | AOAC 2007.01 |

*Bulk purification tubes kits are designed with 15ml or 2ml tubes depending on the composition of the sorbents mix.

Empty centrifuge tubes

| Description | Qty | P/N |
|---|-------|--------|
| Empty centrifuge tubes 50 mL, blue caps | 500 u | 1A0142 |
| Empty centrifuge tubes 15 mL, blue caps | 500 u | 1A0132 |
| Empty centrifuge tubes 2 mL, white caps | 500 u | 1A1600 |
| Empty centrifuge tubes 2 mL, blue caps | 500 u | 118930 |



| | P/N Kits tubes* 50 mL (50 u) | P/N - Reloaded pouches (50 u) | P/N Kits tubes* 50 mL Bulk (500 u) | P/N - Reloaded pouches Bulk (500 u) |
|--|------------------------------|-------------------------------|------------------------------------|-------------------------------------|
| | JO3910 | SST600 | SST590 | 1L9810 |
| | JO3900 | SST660 | SST650 | 1L9800 |
| | JO3920 | SST640 | SST630 | 1L9820 |
| | 1A3420 | SST700 | SST690 | 1L9750 |
| | 1A1440 | SST720 | SST710 | 1L9760 |
| | 1D2630 | SST680 | SST670 | 1L9770 |
| | 1E9820 | SST620 | SST610 | 1L9780 |
| | 1F4740 | SST570 | SST560 | 1L9790 |

| | P/N Kits tubes* 15 mL (50 u) | P/N Kits tubes* 2 mL (100 u) | P/N - Reloaded pouches (50 u) | P/N - Reloaded pouches (100 u) | P/N Kits tubes* Bulk (500 u) |
|--|------------------------------|------------------------------|-------------------------------|--------------------------------|------------------------------|
| | 1A1360 | --- | SST140 | --- | SST130 |
| | --- | SST100 | --- | SST120 | SST110 |
| | JO4090 | --- | SST550 | --- | SST540 |
| | --- | JO3950 | --- | SST320 | SST300 |
| | JO3960 | --- | SST310 | --- | SST290 |
| | --- | JO3930 | --- | SST280 | SST260 |
| | JO3970 | --- | SST270 | --- | SST250 |
| | --- | SST330 | --- | SST350 | SST340 |
| | --- | JO4050 | --- | SST510 | SST490 |
| | JO4040 | --- | SST500 | --- | SST480 |
| | 1F9240 | --- | SST530 | --- | SST520 |
| | --- | JO4070 | --- | SST450 | SST440 |
| | JO4060 | --- | SST470 | --- | SST460 |
| | --- | JO3990 | --- | SST410 | SST390 |
| | JO3980 | --- | SST400 | --- | SST370 |
| | 1F9260 | --- | SST430 | --- | SST420 |
| | JO4080 | --- | SST240 | --- | SST230 |
| | --- | JO4000 | --- | SST220 | SST200 |
| | JO4030 | --- | SST210 | --- | SST190 |
| | --- | JO4010 | --- | SST180 | SST160 |
| | JO4020 | --- | SST170 | --- | SST150 |

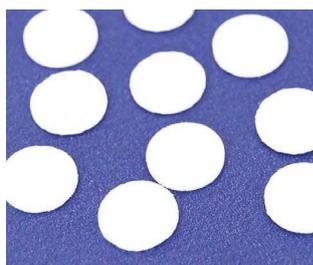




Empty column



Column + one polyethylene 20µm frit



Polyethylene frit

Cap
F97350Cap
F97510

920941

Polypropylene tubes

| Volume | P/N | Qty |
|-------------------------------------|--------|-------|
| Empty columns | | |
| 1 mL | 541410 | 100 u |
| 3 mL | 541420 | 100 u |
| 6 mL | 541430 | 100 u |
| 12 mL | 541440 | 100 u |
| 25 mL | 541450 | 100 u |
| 75 mL | 823370 | 50 u |
| 150 mL | S28581 | 25 u |
| Column + one polyethylene 20µm frit | | |
| 1 mL | F97660 | 100 u |
| 3 mL | F97710 | 100 u |
| 6 mL | F97730 | 100 u |
| 12 mL | F97750 | 100 u |
| 25 mL | F97760 | 100 u |
| 75 mL | HQ3270 | 50 u |

Polyethylene frits

| Volume column | P/N | Qty |
|--|--------|-------|
| 1/16" frits - 20µm | | |
| 1 mL | 779530 | 100 u |
| 3 mL | 841880 | 100 u |
| 6 mL | 858750 | 100 u |
| 12 mL | 823280 | 100 u |
| 25 mL | 885460 | 100 u |
| 75 mL | 823380 | 50 u |
| 1/8" frits - 20µm | | |
| 15 mL | S08600 | 100 u |
| 25 mL | S08610 | 100 u |
| 75 mL | S08620 | 50 u |
| 150 mL | S28600 | 50 u |
| Caps | | |
| 1 mL | F97350 | 100 u |
| 3 mL | F97360 | 100 u |
| 6 mL | F97370 | 100 u |
| 12 mL | F97440 | 100 u |
| 25 mL | F97470 | 100 u |
| 75 mL | F97490 | 50 u |
| Male luer plug for bottom of SPE column 1 at 150 mL | F97510 | 100 u |

Adapters for SPE columns

Attached to the top of the 1, 3 and 6 mL SPE columns, these female luer tip compatible adapters have several functions:

- Increase the overall available volume of the columns by adding a larger capacity reservoir (15, 25 or 75 mL) to the adapter.
- Allow multiple selectivities by stacking columns filled with different sorbents one on top of the other.

| Description | P/N | Qty |
|------------------------------|--------|------|
| Universal adapter 1, 3, 6 mL | 920941 | 15 u |



Advion Interchim Scientific SPE LV6

Compact solid phase extraction system

Make your analytical process more reliable and secure

The SPE LV6 is a fully automated positive pressure workstation for sample preparation by SPE solid phase extraction. Specially developed for all analytical chemists looking for performance and alternatives to manual use, the SPE LV6 ensures method development and routine applications are executed with ease. Equipped with an innovative and robust technology, the SPE LV6 saves time and increases productivity thanks to the full automated process. The SPE LV6 uses calibrated tubings to grant high reproducibility and efficiency.

Applications: environmental analysis of contaminants in water, toxicology, biopharma, agri-food...

Specifications

- Positive pressure, guarantees optimal reproducibility & precision
- Compatible SPE Polypropylene column sizes: 1.3 & 6 mL
- Software integrated in a 9" touch screen (2 GB memory) + offline version
Method creation & loading in a few minutes
End of method report for easy sample traceability
- Sample
Up to 6 samples in series
Automated sample injection (RSD = 0.15 %)
Sample loading via the syringe pump (volume between 10 mL and 5 L)
or by the autosampler in a calibrated loop (volume between 100 µL and 25 mL)
(Advion Interchim Scientific zero cross contamination technology)
Sample volume: 100 µL to 5 liters
- 10 solvent channels + 3 waste collection channels at the outlet of the column
(organic, aqueous, chlorinated)
- Gas supply (nitrogen or compressed air): 1-2 bar
(very low consumption: 0.12 L/min)
- Integrated retention tank
Automatic calculation of collection capacities according to the method programmed
- Robustness & quality of integrated technologies
10 mL syringe pump and 20 position valve
Wide range of plunger sizes for SPE columns 1,3 & 6 mL
Inert materials to avoid contaminations
Reduced costs & maintenance downtimes
- Accuracy & Reproducibility
Flow rate range: from 50 µl to 15 L/min
Calibrated fluidic paths for accurate dead volume control
- Reduced column drying time (up to 30 seconds for up to 99% drying efficiency)
Up to 5 collection tubes per column (for easy fraction control during method development)
Fully automated system for total autonomy (up to 95% time savings)
- Accessories
Sample rack: 13 x 100 mm (closed vials can be used) & 18 x 150 mm
Collection rack: 12 x 32, 12 x 75, 13 x 100, 16 x 100, 18 x 150 mm
Ability to collect directly in a 2 mL, 4 mL or 2 mL eppendorf vial
- CE & UL certified





Plunger technology for 6mL columns

| Description | P/N | Qty |
|---|--------|-----|
| Instrument | | |
| Advion Interchim Scientific SPE workstation LV6 | SPE000 | 1 |
| Sample rack (for autosampler) | | |
| Advion Interchim Scientific SPE workstation LV6 Sample Rack 13X100MM | SPE010 | 1 |
| Advion Interchim Scientific SPE workstation LV6 Sample Rack 18X150MM | SPE020 | 1 |
| Collection rack | | |
| Advion Interchim Scientific SPE workstation LV6 collection rack 12X32MM | SPE030 | 1 |
| Advion Interchim Scientific SPE workstation LV6 collection rack 12X75MM | SPE040 | 1 |
| Advion Interchim Scientific SPE workstation LV6 collection rack 13X100MM | SPE050 | 1 |
| Advion Interchim Scientific SPE workstation LV6 collection rack 16X100MM | SPE060 | 1 |
| Advion Interchim Scientific SPE workstation LV6 collection rack 18X150MM | SPE070 | 1 |
| Advion Interchim Scientific SPE workstation LV6 collection rack 28X140MM | SPE300 | 1 |
| Plungers for SPE columns 1- 3 and 6 mL | | |
| Advion Interchim Scientific SPE workstation LV6 plunger 1 mL cartridges | SPE080 | 1 |
| Advion Interchim Scientific SPE workstation LV6 plunger 3 mL cartridges | SPE090 | 1 |
| Advion Interchim Scientific SPE workstation LV6 plunger 6 mL cartridges | SPE100 | 1 |
| Adapters for SPE columns 1 and 6 mL | | |
| Advion Interchim Scientific SPE workstation LV6 insert 1 mL cartridges | SPE110 | 1 |
| Advion Interchim Scientific SPE workstation LV6 insert 3 mL cartridges | SPE120 | 1 |
| Consumables - seals for plungers | | |
| Advion Interchim Scientific SPE workstation LV6 seal for plunger 1 mL cartridges | SPE130 | 10 |
| Advion Interchim Scientific SPE workstation LV6 seal for plunger 3 mL cartridges | SPE140 | 10 |
| Advion Interchim Scientific SPE workstation LV6 seal for plunger 6 mL cartridges | SPE150 | 10 |
| Advion Interchim Scientific SPE workstation LV6 seal Kalrez for plunger 1 mL cartridges | SPE160 | 10 |
| Advion Interchim Scientific SPE workstation LV6 seal Kalrez for plunger 3 mL cartridges | SPE170 | 10 |
| Advion Interchim Scientific SPE workstation LV6 seal Kalrez for plunger 6 mL cartridges | SPE160 | 10 |



Concentrate your elution fractions with the puriVap-6™ evaporation system