SPE Cartridge

Overview

SPE（Solid Phase Extraction） is a method of sample preparation that concentrates and purifies analytes from solution by sorption onto a sorbent contained in either a disposable solid phase cartridge or a 96-well plate, followed by Elution of the analyte with a solvent and reconstitution into a mobile phase that is appropriate for the instrumental method used for analysis.

Classification

According to principle of reaction, SPE is divided into the following three categories.

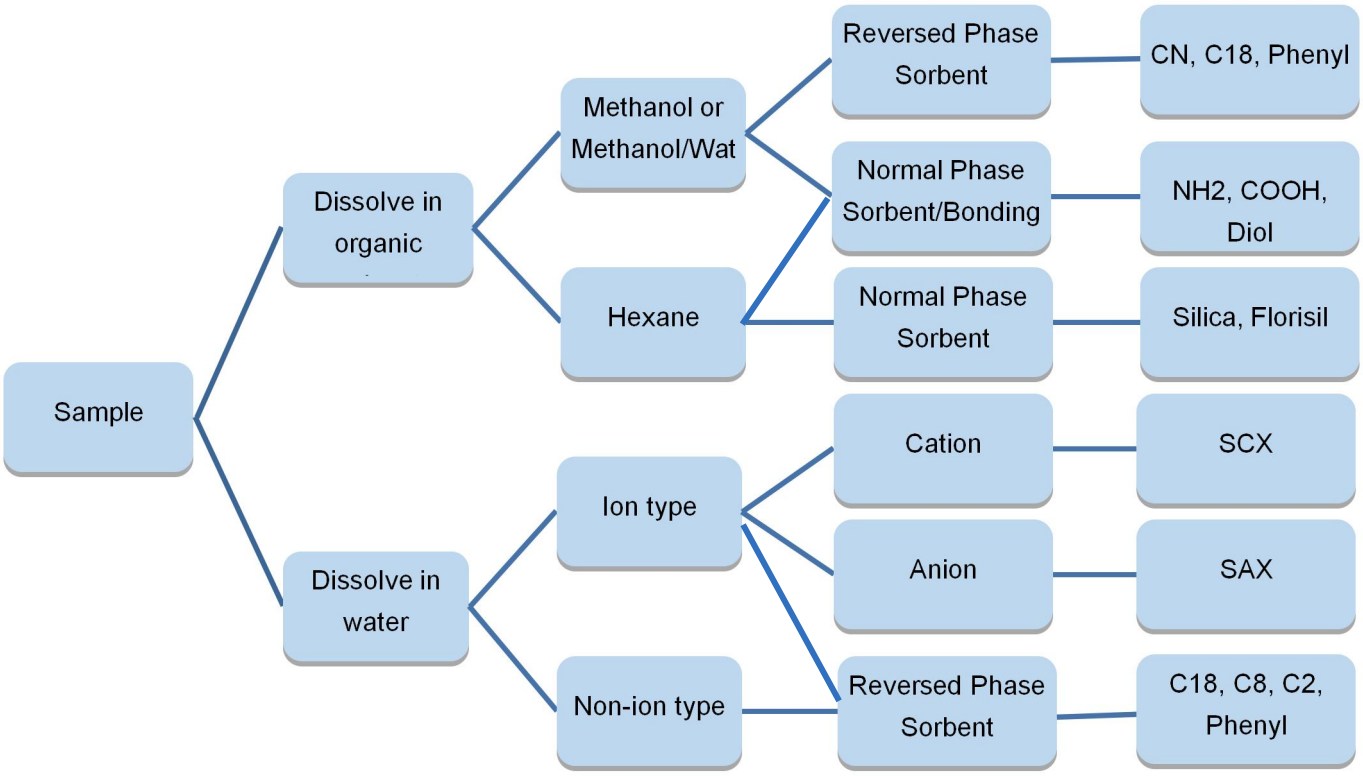
1. Normal-phase extraction- Adsorbents used in normal phase extraction is polar.

2. Reversed-phase extraction- The sorbent and the target analytes by reversed-phase extraction is usually the non-polar or weak polar, relying mainly on non-polar and non-polar interactions, is a fan of Edward force or dispersion force.

3. Ion exchange extraction- is relying on the interaction between target analytes and sorbent.

Selection

Select proper sorbent according to the difference between target analytes and disruptors such as polar, molecular weight and pKa, etc.



For reverse phase, normal phase and adsorption type SPE cartridges, the quantity of target analytes to SPE sorbent ratio is generally not more than 5%. For ion exchange SPE cartridges, need to consider the ion exchange capacity. Provide the conventional ion exchange capacity of Hawach is about 0.3meq/g, the following table for SPE cartridges capacity parameters.

Specification	Maximum Sample Load	Volume	Minimum Elution volume
50-100mg	2.5mg-5mg	1mL	100-200μL
100-200mg	5mg-10mg	3mL	200-500μL
200mg-1g	10mg-50mg	6mL	500μL-6mL
500mg-2g	25mg-100mg	12mL	3mL-10mL

Hawach SPE Cartridges are made of medical grade PP and forming in one time. Frits are made of UHMW-PE. There is a variety of models to choose. Hawach provides SPE OEM service in order to support you to establish your own SPE brands easily.

Operation Steps

According to the different sorbent retention mechanism (sorbent retain target analytes or retain impurities), the operation is slightly different.

1. Sorbent Retain Target Analytes

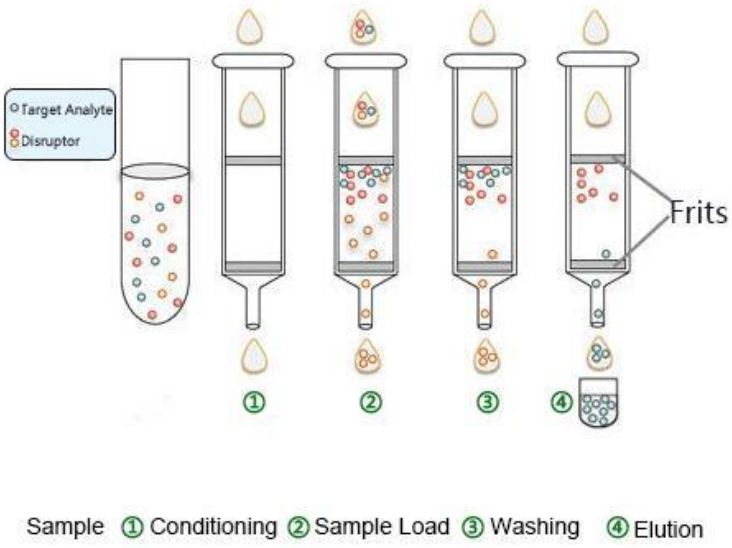
SPE operations are generally four steps:

(1) Conditioning and equilibration: Solvent is passed through the SPE material to wet the bonded functional groups => ensures consistent interaction.Sorbent/ phase is treated with a solution that is similar (in polarity, pH, etc.) to the sample matrix => maximizes retention.

(2) Sample Load: Introduction of the sample = analytes of interest are bound/ extracted onto the phase/sorbent.

(3) Washing: Selectively remove unwanted interference co-extracted with the analyte without prematurely eluting analytes of interest.

(4) Elution: Removing analytes of interest with a solvent that overcomes the primary and secondary retention interactions between sorbent and analytes of interest.



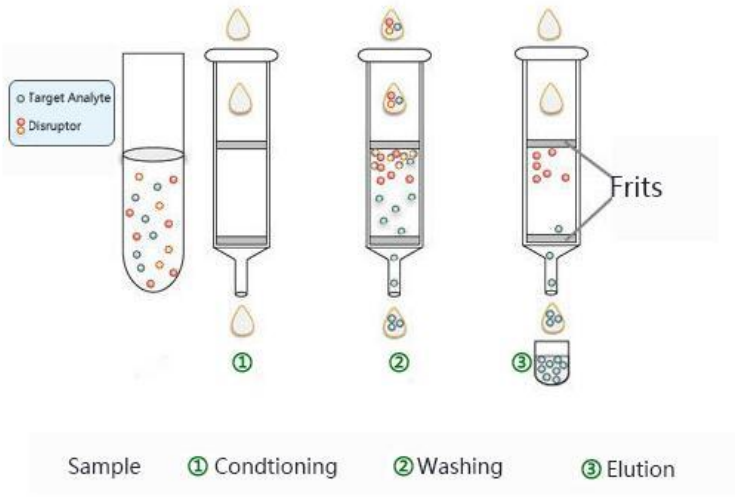
2. Sorbent Retain Disruptors

SPE operations are generally three steps:

(1) Conditioning and equilibration： Solvent is passed through the SPE material to wet the bonded functional groups => ensures consistent interaction.Sorbent/ phase is treated with a solution that is similar (in polarity, pH, etc.) to the sample matrix => maximizes retention.

(2) Sample Load: disruptors are bound/ extracted onto the phase/sorbent. Target analytes pass through cartridge with solution. Should collect solution in this step.

(3) Elution: Removing analytes of interest with a solvent that overcomes the primary and secondary retention interactions between sorbent and analytes of interest. Combine the solution with step (2).



1. Conventional SPE Cartridge

Description

Cartridges	Packing Material		Carbon Content	Particle Size	Surface Area	Average Pore Size
Normal Phase	Silica		-	40-75μm	480m^2/g	70Å
	PR grade Florisil		-	150-250μm	-	-
	Alumina		-	50-100μm	≥150m^2/g	-
	Diol		5.5%	40-75μm	290m^2/g	100Å
	CN		5.8%	40-75μm	280m^2/g	100Å
Reversed Phase	C18		17.6%	40-60μm	300m^2/g	120Å
	C18A		12%	40-75μm	300m^2/g	60Å
	C8		9%	40-75μm	280m^2/g	100Å
Ion-Exchange	SCX		9%	40-75μm	480-530m^2/g	70Å
	SAX		6.5%	40-75μm	480-530m^2/g	70Å
	NH2		4.5%	40-75μm	200m^2/g	100Å
	PSA		8%	50-75μm	500m^2/g	100Å
	PRS		4.5%	40-75μm	310m^2/g	100Å
Mixed Mode	C8/SCX		-	40-75μm	510m^2/g	70Å
	C8/SAX		-	40-75μm	510m^2/g	70Å
Graphited Carbon Black	Carb-GCB/NH2	NH2	4.5%	40-75μm	200m^2/g	100Å
		Carb-GCB	-	100-400 mesh	100m^2/g	-
	Carb-GCB/PSA	PSA	8%	40-75μm	280m^2/g	100Å
		Carb-GCB	-	100-400 mesh	100m^2/g	-

1.1 Normal Phase Cartridges

1.1.1 Silica Cartridges

Description

Hawach SPE Silica is polarity extraction cartridge of not bonding Silica gel as adsorbent. Silica is weak acid, and has a strong polarity. Hawach SPE Silica used for separation of non-polar, weak polar compounds, grease, etc., especially for the structure similar to the above material. Used for weak cationic compounds extraction.

Order Information

Cat#	Description
15011015	SPE Cartridge, Silica, 40-75μm, 70Å, 100mg/1mL, 100pcs/pk
15011016	SPE Cartridge, Silica, 40-75μm, 70Å, 200mg/3mL, 50pcs/pk
15011017	SPE Cartridge, Silica, 40-75μm, 70Å, 500mg/3mL, 50pcs/pk
15011018	SPE Cartridge, Silica, 40-75μm, 70Å, 500mg/6mL, 30pcs/pk
15011019	SPE Cartridge, Silica, 40-75μm, 70Å, 1g/6mL, 30pcs/pk
15011020	SPE Cartridge, Silica, 40-75μm, 70Å, 1g/12mL, 20pcs/pk
15011021	SPE Cartridge, Silica, 40-75μm, 70Å, 2g/12mL, 20pcs/pk

1.1.2 PR Grade Florisil Cartridges

Description

PR Grade Florisil (by 675℃ activation treatment) composed by magnesium oxide (15.5%), silica (84%) and sodium sulfate (0.5%) etc. Chemical composition, Florisil is a kind of excellent effect, economic common solid-phase extraction sorbent.

It's suitable for the separation of organochlorine pesticide residues, amine, polychlorinated biphenyls (PCBs), ketones, and organic acids, etc., satisfy the AOAC, EPA 608 method

Order Information

Cat#	Description
15011030	SPE Cartridge, PR Grade Florisil, 150-250μm, 100mg/1mL, 100pcs/pk
15011031	SPE Cartridge, PR Grade Florisil, 150-250μm, 200mg/3mL, 50pcs/pk
15011032	SPE Cartridge, PR Grade Florisil, 150-250μm, 500mg/3mL, 50pcs/pk
15011033	SPE Cartridge, PR Grade Florisil, 150-250μm, 500mg/6mL, 30pcs/pk
15011034	SPE Cartridge, PR Grade Florisil, 150-250μm, 1g/6mL, 30pcs/pk
15011035	SPE Cartridge, PR Grade Florisil, 150-250μm, 1g/12mL, 20pcs/pk
15011036	SPE Cartridge, PR Grade Florisil, 150-250μm, 2g/12mL, 20pcs/pk

1.1.3 Alumina Cartridges

Description

Alumina is a kind of strong polarity adsorption sorbent, the property similar to silica, but silica is stable under the condition of high PH.

Hawach provides porous high purity alumina, are usually used to remove aromatic and aliphatic compounds.

Alumina-A (ALA) PH: 4.0

Alumina-B (ALB) PH: 9.5

Alumina-N (ALN) PH: 7.0

Order Information

Alumina-A, Normal phase, PH:4.0, Surface area:＞150m2/g (Be Equivalent to Waters Sep-Pak Alumina-A)	
Cat#	**Description**
15011037	SPE Cartridge, Alumina, PH: 4.0, 50-100μm, 100mg/1mL, 100pcs/pk
15011038	SPE Cartridge, Alumina, PH: 4.0, 50-100μm, 200mg/3mL, 50pcs/pk
15011039	SPE Cartridge, Alumina, PH: 4.0, 50-100μm, 500mg/3mL, 50pcs/pk
15011040	SPE Cartridge, Alumina, PH: 4.0, 50-100μm, 500mg/6mL, 30pcs/pk
15011041	SPE Cartridge, Alumina, PH: 4.0, 50-100μm, 1g/6mL, 30pcs/pk
15011042	SPE Cartridge, Alumina, PH: 4.0, 50-100μm, 1g/12mL, 20pcs/pk
15011043	SPE Cartridge, Alumina, PH: 4.0, 50-100μm, 2g/12mL, 20pcs/pk
Alumina-B, Normal phase, PH:9.5, Surface area:＞150m2/g (Be Equivalent to Waters Sep-Pak Alumina-B)	
Cat#	**Description**
15011044	SPE Cartridge, Alumina, PH: 9.5, 50-100μm, 100mg/1mL, 100pcs/pk
15011045	SPE Cartridge, Alumina, PH: 9.5, 50-100μm, 200mg/3mL, 50pcs/pk
15011046	SPE Cartridge, Alumina, PH: 9.5, 50-100μm, 500mg/3mL, 50pcs/pk
15011047	SPE Cartridge, Alumina, PH: 9.5, 50-100μm, 500mg/6mL, 30pcs/pk
15011048	SPE Cartridge, Alumina, PH: 9.5, 50-100μm, 1g/6mL, 30pcs/pk
15011049	SPE Cartridge, Alumina, PH: 9.5, 50-100μm, 1g/12mL, 20pcs/pk
15011050	SPE Cartridge, Alumina, PH: 9.5, 50-100μm, 2g/12mL, 20pcs/pk
Alumina-N, Normal phase, PH:7.0, Surface area:＞150m2/g (Be Equivalent to Waters Sep-Pak Alumina-N)	
Cat#	**Description**
15011051	SPE Cartridge, Alumina, PH: 7.0, 50-100μm, 100mg/1mL, 100pcs/pk
15011052	SPE Cartridge, Alumina, PH: 7.0, 50-100μm, 200mg/3mL, 50pcs/pk
15011053	SPE Cartridge, Alumina, PH: 7.0, 50-100μm, 500mg/3mL, 50pcs/pk
15011054	SPE Cartridge, Alumina, PH: 7.0, 50-100μm, 500mg/6mL, 30pcs/pk
15011055	SPE Cartridge, Alumina, PH: 7.0, 50-100μm, 1g/6mL, 30pcs/pk
15011056	SPE Cartridge, Alumina, PH: 7.0, 50-100μm, 1g/12mL, 20pcs/pk
15011057	SPE Cartridge, Alumina, PH: 7.0, 50-100μm, 2g/12mL, 20pcs/pk

1.1.4 Diol Cartridges

Description

Hawach Diol with silica gel as the matrix of glycol base extraction cartridge, its separation properties is similar to silicone. Because of the bonded phase in the carbon chain can provide adequate non-polar forces to retain hydrophobic samples, and Silica have different selective when proportion solvent different. Hawach Diol is normally used to isolate drug or metabolites in urine and other biological solution, such as THC, etc.

Order Information

Cat#	Description
15011008	SPE Cartridge, Diol, 40-75μm, 100Å, 100mg/1mL, 100pcs/pk
15011009	SPE Cartridge, Diol, 40-75μm, 100Å, 200mg/3mL, 50pcs/pk
15011010	SPE Cartridge, Diol, 40-75μm, 100Å, 500mg/3mL, 50pcs/pk
15011011	SPE Cartridge, Diol, 40-75μm, 100Å, 500mg/6mL, 30pcs/pk
15011012	SPE Cartridge, Diol, 40-75μm, 100Å, 1g/6mL, 30pcs/pk
15011013	SPE Cartridge, Diol, 40-75μm, 100Å, 1g/12mL, 20pcs/pk
15011014	SPE Cartridge, Diol, 40-75μm, 100Å, 2g/12mL, 20pcs/pk

1.1.5 CN Cartridges

Description

CN cyanide propyl extract polar and non-polar compounds, concentration of metal ions. Cyanide propyl is weak hydrophobic silica-based bonded phase, can be used as normal phase and reversed phase adsorbents. In reversed phase, it extracts non-polar or weak polar acid, neutral and alkaline compounds from the aqueous solution. In normal phase, it extracts polar compounds from non-polar organic solvent. In addition, it can concentrate some metal ion in the aqueous solution. CN stationary phase is a better choice for the irreversible strong hydrophobic material than C18.

Features

Good compatibility biological matrix
It is available to adjust the polarity by proportion solvent

Parameters

Carbon Content: 5.8% Surface area：280 m^2 /g
Particle size: 40-75μm Average pore size: 100Å

Applications

Test drug and its metabolites in body fluids, such as sterols
Test pesticide and veterinary drug residue in food, dairy products
Analyze oil pollution and pesticide residues of environmental samples
Equivalent to Waters Sep-Pak CN

Order Information

Cat#	Description
15011022	SPE Cartridge, CN, 40-75μm, 100Å, 100mg/1mL, 100pcs/pk
15011023	SPE Cartridge, CN, 40-75μm, 100Å, 200mg/3mL, 50pcs/pk
15011024	SPE Cartridge, CN, 40-75μm, 100Å, 500mg/3mL, 50pcs/pk
15011025	SPE Cartridge, CN, 40-75μm, 100Å, 500mg/6mL, 30pcs/pk
15011026	SPE Cartridge, CN, 40-75μm, 100Å, 1g/6mL, 30pcs/pk
15011027	SPE Cartridge, CN, 40-75μm, 100Å, 2g/12mL, 20pcs/pk

1.2 Reversed Phase Cartridges

1.2.1 C18 Cartridges

Description

Hawach C18 (end) is the most commonly used silica gel matrix inverse SPE column, through the hydrophobic effect to extract non-polar compounds, its selectivity is very wide. Due to its can keep most of the organic matter from aqueous solution system, so is not strict with the structure of the organic matter.

Hawach C18 (end) has high carbon content and high hydrophobicity, can greatly increase the load rate and quantity of the sample.17% carbon content also can tolerate extremes of pH value .Sealing end to avoid the excessive absorption of alkaline and polar material, more suitable for extraction of low concentration of analyte .

Order Information

Cat#	Description
15011058	SPE Cartridge, C18, 40-60μm, 120Å, 100mg/1mL, 100pcs/pk
15011059	SPE Cartridge, C18, 40-60μm, 120Å, 200mg/3mL, 50pcs/pk
15011060	SPE Cartridge, C18, 40-60μm, 120Å, 500mg/3mL, 50pcs/pk
15011061	SPE Cartridge, C18, 40-60μm, 120Å, 500mg/6mL, 30pcs/pk
15011062	SPE Cartridge, C18, 40-60μm, 120Å, 1g/6mL, 30pcs/pk
15011064	SPE Cartridge, C18, 40-60μm, 120Å, 1g/12mL, 20pcs/pk
15011065	SPE Cartridge, C18, 40-60μm, 120Å, 2g/12mL, 20pcs/pk

1.2.2 C18A Cartridges

Description

Hawach C18A with full cover bonded silica as sorbent, excellent stability. It can use pure water as mobile phase, can separate acidic, neutral and alkaline organic compounds, drugs and polypeptide, etc.

Order Information

Cat#	Description
15011066	SPE Cartridge, C18A, 40-75μm, 60Å, 100mg/1mL, 100pcs/pk
15011067	SPE Cartridge, C18A, 40-75μm, 60Å, 200mg/3mL, 50pcs/pk
15011068	SPE Cartridge, C18A, 40-75μm, 60Å, 500mg/3mL, 50pcs/pk
15011069	SPE Cartridge, C18A, 40-75μm, 60Å, 500mg/6mL, 30pcs/pk
15011070	SPE Cartridge, C18A, 40-75μm, 60Å, 1g/6mL, 30pcs/pk
15011071	SPE Cartridge, C18A, 40-75μm, 60Å, 1g/12mL, 20pcs/pk
15011072	SPE Cartridge, C18A, 40-75μm, 60Å, 2g/12mL, 20pcs/pk

1.2.3 C8 Cartridges

Description

Hawach C8 cartridge belongs to the moderate hydrophobicity, on the adsorption is similar to C18, and interaction mainly by non-polar carbon bonds. But as C8 carbon bonds shorter than C18, so weaken in keeping non-polar compounds than c18, which help to wash out strong adsorption non-polar samples.
Hawach C8 cartridge can simultaneously extracted lipid soluble and water soluble vitamins from the plasma, pesticides of waste, also used in biological macro-molecule sample desalination

Order Information

Cat#	Description
15011073	SPE Cartridge, C8, 40-75μm, 100Å, 100mg/1mL, 100pcs/pk
15011074	SPE Cartridge, C8, 40-75μm, 100Å, 200mg/3mL, 50pcs/pk
15011075	SPE Cartridge, C8, 40-75μm, 100Å, 500mg/3mL, 50pcs/pk
15011076	SPE Cartridge, C8, 40-75μm, 100Å, 500mg/6mL, 30pcs/pk
15011077	SPE Cartridge, C8, 40-75μm, 100Å, 1g/6mL, 30pcs/pk
15011078	SPE Cartridge, C8, 40-75μm, 100Å, 2g/12mL, 20pcs/pk

1.3 Ion Exchanges Cartridges

1.3.1 SCX Cartridges

Description

Particle size: 40-75μm
Functional group: Sulfo group
Carbon content: 9%
Surface area: 480-530 m^2/g
Average pore size: 70 Å
Mechanism of action: SCX
Application: purify aqueous solution, urine, blood alkaline (cation), neutral compounds, like drugs and metabolite.

Order Information

Cat#	Description
15011079	SPE Cartridge, SCX, 40-75μm, 70Å, 30mg/1mL, 100pcs/pk
15011080	SPE Cartridge, SCX, 40-75μm, 70Å, 100mg/1mL, 100pcs/pk
15011082	SPE Cartridge, SCX, 40-75μm, 70Å, 200mg/3mL, 50pcs/pk
15011083	SPE Cartridge, SCX, 40-75μm, 70Å, 500mg/3mL, 50pcs/pk
15011084	SPE Cartridge, SCX, 40-75μm, 70Å, 200mg/6mL, 30pcs/pk
15011085	SPE Cartridge, SCX, 40-75μm, 70Å, 500mg/6mL, 30pcs/pk
15011086	SPE Cartridge, SCX, 40-75μm, 70Å, 1g/6mL, 30pcs/pk
15011087	SPE Cartridge, SCX, 40-75μm, 70Å, 1g/12mL, 20pcs/pk
15011088	SPE Cartridge, SCX, 40-75μm, 70Å, 2g/12mL, 20pcs/pk

1.3.2 SAX Cartridges

Description

Particle size: 40-75μm

Functional group: quaternary ammonium salt

Carbon content: 6.5%

Surface area: 480-530 m^2/g

Average pore size: 70 Å

Mechanism of action: SAX

Application: purify aqueous solution, urine, blood acidity (anion), neutral compounds, like drugs and metabolite.

Order Information

Cat#	Description
15011089	SPE Cartridge, SAX, 40-75μm, 70Å, 30mg/1mL, 100pcs/pk
15011090	SPE Cartridge, SAX, 40-75μm, 70Å, 100mg/1mL, 100pcs/pk
15011091	SPE Cartridge, SAX, 40-75μm, 70Å, 200mg/3mL, 50pcs/pk
15011092	SPE Cartridge, SAX, 40-75μm, 70Å, 500mg/3mL, 50pcs/pk
15011093	SPE Cartridge, SAX, 40-75μm, 70Å, 200mg/6mL, 30pcs/pk
15011094	SPE Cartridge, SAX, 40-75μm, 70Å, 500mg/6mL, 30pcs/pk
15011095	SPE Cartridge, SAX, 40-75μm, 70Å, 1g/6mL, 30pcs/pk
15011096	SPE Cartridge, SAX, 40-75μm, 70Å, 1g/12mL, 20pcs/pk
15011097	SPE Cartridge, SAX, 40-75μm, 70Å, 2g/12mL, 20pcs/pk

1.3.3 NH_2 Cartridges

Description

Hawach SPE NH_2 is aminopropyl extraction cartridge based on silica gel .It has the weak polar stationary phase and anion exchanger, through weak anion exchange (aqueous solution) or polarity adsorption (non-polar organic solution) to reach the effect, therefore has a dual role.

NH_2 Cartridge typical applications include separation of peptides, drugs and metabolites in biological matrix. It is also used in extraction of monosaccharides, polysaccharides, steroids, cholesterol. Can also be used to remove pigment and fatty acids, or remove the sulfonic acid root from strong anion in the sample.

Order Information

Cat#	Description
15011001	SPE Cartridge, NH2, 40-75μm, 100Å, 100mg/1mL, 100pcs/pk
15011002	SPE Cartridge, NH2, 40-75μm, 100Å, 200mg/3mL, 50pcs/pk
15011003	SPE Cartridge, NH2, 40-75μm, 100Å, 500mg/3mL, 50pcs/pk
15011004	SPE Cartridge, NH2, 40-75μm, 100Å, 500mg/6mL, 30pcs/pk
15011005	SPE Cartridge, NH2, 40-75μm, 100Å, 1g/6mL, 30pcs/pk
15011006	SPE Cartridge, NH2, 40-75μm, 100Å, 1g/12mL, 20pcs/pk
15011007	SPE Cartridge, NH2, 40-75μm, 100Å, 2g/12mL, 20pcs/pk

1.3.4 PSA Cartridges

Description

Hawach SPE PSA (ethylenediamine - N - propyl) selectivity is similar to NH2, at the same time can be used as a positive phase or reverse phase cartridge, the polarity stronger than C18 more and weaker than silica gel, and a wider range of medium polarity or many kinds of compounds in different system has good selectivity. Hawach PSA has two NH2, pKa values are 10.1 and 10.9 respectively. PSA has stronger ion exchange capability than NH2 cartridge. And PSA can be produced with metal ions, used for extraction of metal ions. Hawach PSA can effectively remove the influence the detection of pesticide residues in food of fatty acids (oleic acid, palmitic acid, linoleic acid, etc.), organic acids, some polar pigments, metal ions and sugar and other distractions.

Order Information

Cat#	Description
15011098	SPE Cartridge, PSA, 40-75μm, 100Å, 100mg/1mL, 100pcs/pk
15011099	SPE Cartridge, PSA, 40-75μm, 100Å, 200mg/3mL, 50pcs/pk
15011100	SPE Cartridge, PSA, 40-75μm, 100Å, 500mg/3mL, 50pcs/pk
15011101	SPE Cartridge, PSA, 40-75μm, 100Å, 500mg/6mL, 30pcs/pk
15011102	SPE Cartridge, PSA, 40-75μm, 100Å, 1g/6mL, 30pcs/pk
15011103	SPE Cartridge, PSA, 40-75μm, 100Å, 1g/12mL, 20pcs/pk
15011104	SPE Cartridge, PSA, 40-75μm, 100Å, 2g/12mL, 20pcs/pk

1.3.5 PRS Cartridges

Description

Hawach PRS is a strong cation exchange column, with the functional groups of propyl sulfonic acid. PRS is suitable for weak cation such as pyridine compounds, can get high recovery rate. Typical applications include malachite green and crystal violet in water or in biological samples and other alkaline substances.

Order Information

Cat#	Description
15011105	SPE Cartridge, PRS, 40-75μm, 100Å, 100mg/1mL, 100pcs/pk
15011106	SPE Cartridge, PRS, 40-75μm, 100Å, 200mg/3mL, 50pcs/pk
15011107	SPE Cartridge, PRS, 40-75μm, 100Å, 500mg/3mL, 50pcs/pk
15011108	SPE Cartridge, PRS, 40-75μm, 100Å, 500mg/6mL, 30pcs/pk
15011109	SPE Cartridge, PRS, 40-75μm, 100Å, 1g/6mL, 30pcs/pk
15011110	SPE Cartridge, PRS, 40-75μm, 100Å, 1g/12mL, 20pcs/pk
15011111	SPE Cartridge, PRS, 40-75μm, 100Å, 2g/12mL, 20pcs/pk

1.4 Mixed Mode Cartridges

1.4.1 C8/SCX Cartridges

Description

With silica gel as the matrix of C8 and strong cation exchange extraction cartridge(C8 / SCX), suitable for purification of alkaline aqueous solution (cation) or neutral compounds in urine and blood, such as drugs and metabolites.

C8/SCX, Mixed mode, 40-75 μm, 70Å, Surface area: 510m^2/g

Be Equivalent to Agilent Bond Elut Certify Ⅱ, Phenomenex Screen-C

Order Information

Cat#	Description
15011112	SPE Cartridge, C8/SCX, 40-75μm, 70Å, 30mg/1mL, 100pcs/pk
15011113	SPE Cartridge, C8/SCX, 40-75μm, 70Å, 100mg/1mL, 100pcs/pk
15011114	SPE Cartridge, C8/SCX, 40-75μm, 70Å, 200mg/3mL, 50pcs/pk
15011115	SPE Cartridge, C8/SCX, 40-75μm, 70Å, 500mg/3mL, 50pcs/pk
15011116	SPE Cartridge, C8/SCX, 40-75μm, 70Å, 200mg/6mL, 30pcs/pk
15011117	SPE Cartridge, C8/SCX, 40-75μm, 70Å, 500mg/6mL, 30pcs/pk
15011118	SPE Cartridge, C8/SCX, 40-75μm, 70Å, 1g/6mL, 30pcs/pk
15011120	SPE Cartridge, C8/SCX, 40-75μm, 70Å, 1g/12mL, 20pcs/pk
15011121	SPE Cartridge, C8/SCX, 40-75μm, 70Å, 2g/12mL, 20pcs/pk

1.4.2 C8/SAX Cartridges

Description

With silica gel as the matrix of C8 and strong anion exchange extraction column (C8/SAX), the most suitable for purification of alkaline aqueous solution (anion) or neutral compounds in urine and blood, such as drugs and metabolites.

Order Information

Cat#	Description
15011122	SPE Cartridge, C8/SAX, 40-75μm, 70Å, 30mg/1mL, 100pcs/pk
15011123	SPE Cartridge, C8/SAX, 40-75μm, 70Å, 100mg/1mL, 100pcs/pk
15011124	SPE Cartridge, C8/SAX, 40-75μm, 70Å, 200mg/3mL, 50pcs/pk
15011125	SPE Cartridge, C8/SAX, 40-75μm, 70Å, 500mg/3mL, 50pcs/pk
15011126	SPE Cartridge, C8/SAX, 40-75μm, 70Å, 200mg/6mL, 30pcs/pk
15011127	SPE Cartridge, C8/SAX, 40-75μm, 70Å, 500mg/6mL, 30pcs/pk
15011128	SPE Cartridge, C8/SAX, 40-75μm, 70Å, 1g/6mL, 30pcs/pk
15011129	SPE Cartridge, C8/SAX, 40-75μm, 70Å, 1g/12mL, 20pcs/pk
15011130	SPE Cartridge, C8/SAX, 40-75μm, 70Å, 2g/12mL, 20pcs/pk

1.5 Graphited Carbon Black Cartridge

1.5.1 Carb-GCB-NH_2 Cartridges

Description

Hawach Carb-GCB/NH_2 double SPE focused GCB and NH_2 the advantage of two kinds of sorbent, similar to GCB/PSA, remove the pigment, sterol, fatty acids and organic acids, etc. in the food system, is very suitable for detection pesticide residue in food (vegetables, fruits, meat, etc.) , especially for some of Japan's positive list of pesticide detection.

Order Information

Cat#	Description
15011131	SPE Cartridge, Carb-GCB-NH2, 40-75μm, 100Å, 500mg/500mg/6mL, 30pcs/pk

1.5.2 Carb-GCB/PSA Cartridges

Description

Carb-GCB/PSA double SPE focused GCB and PSA the advantage of two kinds of sorbent , similar to Garb-GCB/NH_2, remove the pigment, sterol, fatty acids and organic acids, etc. in the food system, is very suitable for detection pesticide residue in food ,including fruits, vegetables, meat, aquatic products, cereals and milk products, etc.

Order Information

Cat#	Description
15011132	SPE Cartridge, Carb - GCB/PSA, 50-75μm, 100Å, 500mg/500mg/6mL, 30pcs/pk

2. Polymeric SPE Cartridges

Polymeric	Matrix	Particle size	Surface area	Average pore size	Ion exchange capacity
HLB	PS/DVB	40μm	600m^2/g	300Å	/
MCX	PS/DVB-SO3-	40μm	600m^2/g	60Å	1.0meq/g
MAX	PS/DVB-NR3+Cl-	40μm	600m^2/g	60Å	0.3meq/g

2.1 HLB Cartridges

Description

Hawach HLB is widely suitable for the separation of organic matter, including the barbiturates antibiotics, phthalein, caffeine, dyes, aromatic oil, fat-soluble vitamins, fungicides, herbicides, phenols, steroids, surface active agent,

vitamins, phosphate, drug metabolites, etc. Many in the C18 are difficult to be preserved; there is still a good recovery on the HLB

Class	Description	Feature
HLB	Matrix: PS/DVB Particle size: 40μm Specific area:600m²/g Average pore size: 300Å	✧ Universal sorbent for exaction of acid, alkaline and neutral compounds ✧ Made from a special polymerization ✧ Hydrophilic lipotropy, water can be invasive inverting sorbent through the water phase to adjust the hydrophilic/hydrophobic balance, become as the most common and most widely used sorbent for acidic, neutral and alkaline compounds ,meet all of the demand of SPE ✧ Strong ability to retain model material which suitable for the separation medium polar and non-polar substances

Order Information

Cat#	Description
15011133	SPE Cartridge, HLB, 40μm, 300Å, 30mg/1mL, 100pcs/pk
15011134	SPE Cartridge, HLB, 40μm, 300Å, 60mg/1mL, 100pcs/pk
15011135	SPE Cartridge, HLB, 40μm, 300Å, 30mg/3mL, 50pcs/pk
15011136	SPE Cartridge, HLB, 40μm, 300Å, 60mg/3mL, 50pcs/pk
15011137	SPE Cartridge, HLB, 40μm, 300Å, 150mg/6mL, 30pcs/pk
15011138	SPE Cartridge, HLB, 40μm, 300Å, 200mg/6mL, 30pcs/pk
15011139	SPE Cartridge, HLB, 40μm, 300Å, 500mg/6mL, 30pcs/pk
15011140	SPE Cartridge, HLB, 40μm, 300Å, 500mg/12mL, 20pcs/pk

2.2 MCX Cartridges

Description

MCX is used for Alkaline compound Mixed-mode Cation Exchange and Reverse Phase Sorbents

Class	Description	Feature
MCX	Matrix: PS/DVB-SO3- Particle size: 40μm Specific area:600m²/g Average pore size: 60Å Ion exchange capacity: 1.0meq/g	MCX bond and become by sulfonic group covalent, is a kind of hybrid separation sorbent for ion exchange and hydrophobic effect, provide double retained mode: the ion exchange and reverse phase, Can be used to separate alkaline compound in plastic products, food or biological matrix (such as plasma, urine, bile and tissue homogenate), and amphetamine, melamine in milk powder and milk products, chlorpheniramine maleate, benzene ring set etc. MCX has large surface area, high ion exchange capacity, can effectively keep alkaline material, at the same time its acid resistance is strong, and very stable in the pH range 0 to 14.

Order Information

Cat#	Description
15011149	SPE Cartridge, MCX, 40μm, 60Å, 30mg/1mL, 100pcs/pk
15011150	SPE Cartridge, MCX, 40μm, 60Å, 60mg/1mL, 100pcs/pk
15011151	SPE Cartridge, MCX, 40μm, 60Å, 30mg/3mL, 50pcs/pk
15011152	SPE Cartridge, MCX, 40μm, 60Å, 60mg/3mL, 50pcs/pk
15011153	SPE Cartridge, MCX, 40μm, 60Å, 150mg/6mL, 30pcs/pk
15011154	SPE Cartridge, MCX, 40μm, 60Å, 200mg/6mL, 30pcs/pk
15011155	SPE Cartridge, MCX, 40μm, 60Å, 500mg/6mL, 30pcs/pk
15011156	SPE Cartridge, MCX, 40μm, 60Å, 500mg/12mL, 20pcs/pk
15011157	SPE Cartridge, MCX, 40μm, 60Å, 1g/12mL, 20pcs/pk

2.3 MAX Cartridges

Description

Hawach MAX is widely used for purification of different substrates such as serum, urine, plastic products or acidic and neutral compounds in food, and the separation and purification of estrogen, adenine, nucleoside, etc.

Class	Description	Feature
MAX	Matrix: PS/DVB-NR3+Cl-	MAX is used for separation and purification of acidic compounds in alkaline or neutral medium.Based on the quaternary ammonium salt groups, MAX is a kind of hybrid separation sorbent for strong anion exchange and the hydrophobic effect .PH range 1-14, widely used in the purification of different substrates such as serum, urine, plastic products or acidic and neutral compounds in food, such as estrogen, adenine, the separation and purification of nucleoside, etc.
	Particle size: 40μm	
	Specific area:600m^2/g	
	Average pore size: 60Å	
	Ion exchange capacity: 0.3meq/g	

Order Information

Cat#	Description
15011141	SPE Cartridge, MAX, 40μm, 60Å, 30mg/1mL, 100pcs/pk
15011142	SPE Cartridge, MAX, 40μm, 60Å, 60mg/1mL, 100pcs/pk
15011143	SPE Cartridge, MAX, 40μm, 60Å, 30mg/3mL, 50pcs/pk
15011144	SPE Cartridge, MAX, 40μm, 60Å, 60mg/3mL, 50pcs/pk
15011145	SPE Cartridge, MAX, 40μm, 60Å, 150mg/6mL, 30pcs/pk
15011146	SPE Cartridge, MAX, 40μm, 60Å, 200mg/6mL, 30pcs/pk
15011147	SPE Cartridge, MAX, 40μm, 60Å, 500mg/6mL, 30pcs/pk
15011148	SPE Cartridge, MAX, 40μm, 60Å, 1g/12mL, 20pcs/pk

3. SPE Cartridge Accessories

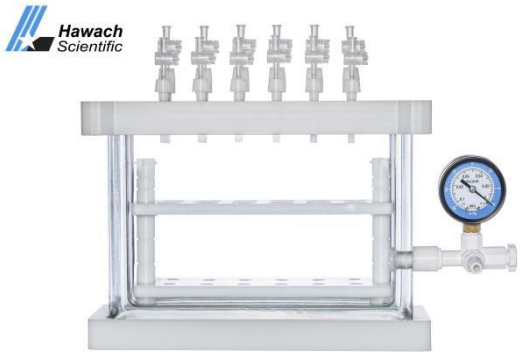
Empty SPE Cartridge		
Cat#	**Description**	**Cartridge Size**
15041101	Empty SPE Cartridge with 2pcs PE Frits, 1mL, 100pcs/pk	Cartridge ID=5.7mm, Length=56.5mm
15041102	Empty SPE Cartridge with 2pcs PE Frits, 3mL, 100pcs/pk	Cartridge ID=8.9mm, Length=64.6mm
15041103	Empty SPE Cartridge with 2pcs PE Frits, 6mL, 100pcs/pk	Cartridge ID=12.9mm, Length=67.6mm
15041104	Empty SPE Cartridge with 2pcs PE Frits, 12mL, 100pcs/pk	Cartridge ID=15.6mm, Length=79.2mm
15041105	Empty SPE Cartridge with 2pcs PE Frits, 20mL, 50pcs/pk	Cartridge ID=19.4mm, Length=93.6mm
15041106	Empty SPE Cartridge with 2pcs PE Frits, 30mL, 50pcs/pk	Cartridge ID=23.5mm, Length=105.7mm
15041107	Empty SPE Cartridge with 2pcs PE Frits, 60mL,25pcs/pk	Cartridge ID=26.4mm, Length=134.8mm
15041108	Empty SPE Cartridge with 2pcs PE Frits, 300mL, 10pcs/pk	Cartridge ID=49.4mm, Length=180mm

Connectors		
Cat#	**Description**	**Picture**
15041301	Connectors for 1/3/6/12-mL SPE Cartridges,10pcs/pk	
15041302	Connectors for 3-mL SPE Cartridges, 100pcs/pk	

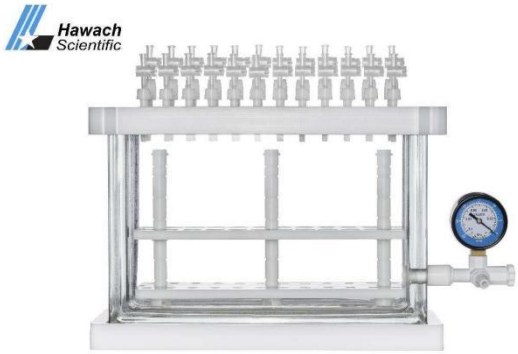
Flow Control Valves		
15041303	SPE Cartridge Flow Control Valves (Luer stopcocks), 10pcs/pk	

4. SPE Vacuum Manifolds

The solid-phase extraction (SPE) Vacuum Manifolds can simultaneously process multiple samples by controlling pressure to facilitate activation, sample loading, washing, and elution processes associated with sample pre-treatment in SPE. 12 and 24 port manifolds available.



12 port



24 port

Features

Each hole has a valve for precise flow control.
Pressure gauges are easily visible on the cover and side for convenient observation.
The test tube rack height is adjustable to accommodate different capacities.
The vacuum chamber uses thick, durable glass and corrosion-resistant materials.
It's designed to prevent cross-contamination and fogging.
It can be fitted with a large collector and a fast concentration drying device for processing samples in batches.

Specification

Cat#	15041401	15041402
Lid	Polyoxymethylene	
Glass Vacuum Chamber	Quartz	
Pressure Resistance	-80 Kpa	
Stable Pressure	0-80 Kpa	
Test Tubes	Shorter than 105 mm, Φ10/Φ13/Φ15	

Structure

Full set contains below:

1) Transparent glass vacuum chamber
2) Pressure gauge
3) Sealing upper lid (Including fixed bracket)

4) Test tube rack
5) Flow control valve
6) Silicone tube

Application

Testing for pesticide residues in water, soil, food, and beverages.
Environmental analysis, including tracing copper levels in water, detecting chalk interference in pesticides, and analyzing organics in the air.
Food analysis for items like vegetables, fruits, oil, and fish.
Bio-pharmaceutical analysis of serum, blood, plasma, urine, etc.
Veterinary drug residue analysis in the pharmaceutical field.

Order Information

Cat#	Description	Package
15041401	SPE Vacuum Manifolds, 12 port	1 set/box
15041402	SPE Vacuum Manifolds, 24 port	1 set/box