Choosing SPE Product

General Guide

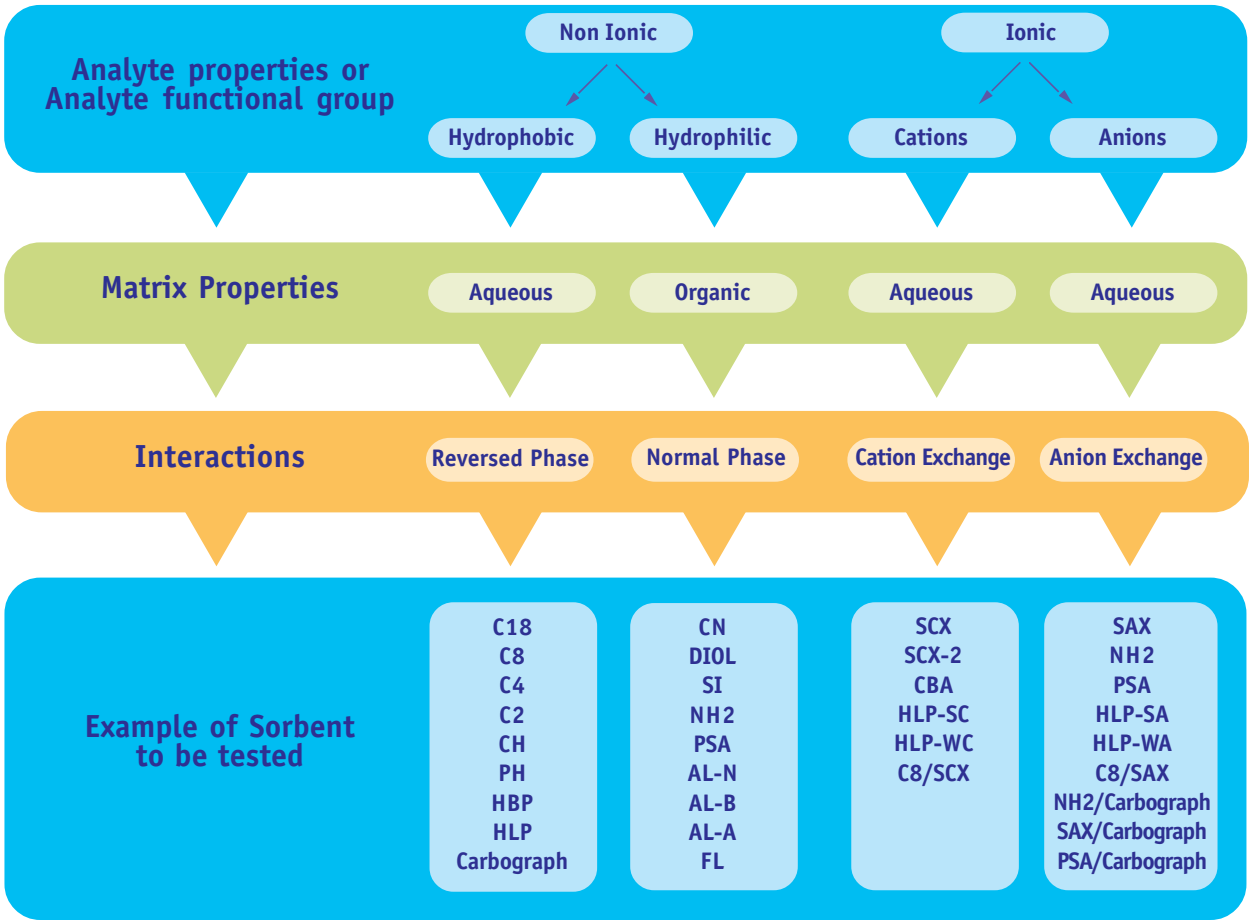
1. Characterize the sample. Factors such as the analyte's polarity relative to the matrix, the presence of charged functional groups, solubility, molecular weight, etc., determine how strongly the analyte is retained by the packed bed.

2. Select a retention strategy. Two approaches are possible: retain interfering compounds while the analyte passes through, or retain the analyte while interfering compounds pass through. This second approach allows concentration of the sample during analyte elution.

3. Select proper packing type and bed size. Choosing the packing material with the proper selectivity results in the cleanest extract with the highest recovery. Poor sample recovery often occurs when the packed bed dimensions are not optimized. Too large a bed results in incomplete elution while too small a bed results in incomplete retention. Due to unknown composition of many samples, experimentation may be required to determine the optimum bed dimension for an application. Start with an intermediate bed size, such as 200mg or 500mg. If you observe complete retention, you may be able to use a smaller bed size and elution volume. If you observe incomplete retention, you need a larger bed size and elution volume.

4. Select suitable conditioning, wash, and elution solvents. Consider the solvent strength relative to the packing material. The final conditioning solvent should be weak, so as not to act as an eluting solvent. Buffers should be used to control ionization of potentially charged compounds. Wash solvents should remove weakly retained interferences without being strong enough to elute the analyte. Elution solvents should be strong enough to completely elute an analyte in a small volume (1-2mL).

Choosing Sorbent by Analyte Properties



Choosing Sorbent by Specification

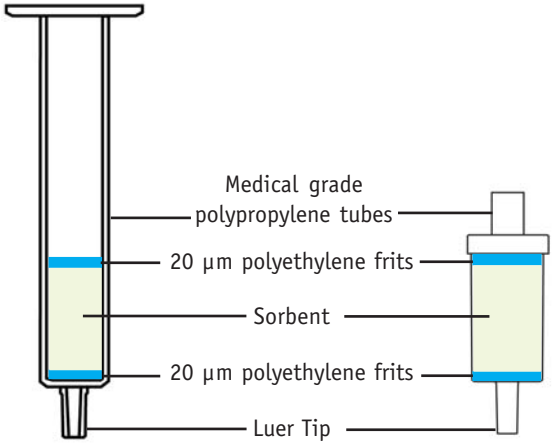
Phase	Base	Particle Size (µm)	Pore Size (Å)	Surface Area (m^2/g)	Carbon %	Endcap	pH Stability	Page
Reversed Phases (Non-Polar)								
Octadecyl C18	Silica	45-65	60-80	450-550	17	Yes	2-9	12
High Flow C18-HF	Silica	60-120	60-80	450-550	17	Yes	2-9	13
High Load C18-HL	Silica	45-65	60-80	450-550	23	Yes	2-9	14
Large Pore C18-LP	Silica	60-120	120-140	300-400	17	Yes	2-9	15
Octyl (C8)	Silica	45-65	60-80	450-550	12	Yes	2-9	16
Phenyl (PH)	Silica	45-65	60-80	450-550	9	Yes	2-9	17
Butyl (C4)	Silica	45-65	60-80	450-550	8	Yes	2-9	18
Ethyl (C2)	Silica	45-65	60-80	450-550	6	Yes	2-9	19
Methyl (C1)	Silica	45-65	60-80	450-550	4	Yes	2-9	20
Cyclohexyl (CH)	Silica	45-65	60-80	450-550	10	Yes	2-9	21
HBP	Hydrophobic Copolymer	30-50	80-90	700-800	-	No	1-14	43
HLP	Hydrophilic Copolymer	30-50	80-90	700-800	-	No	1-14	44
Carbograph	Graphitized Carbon	35-120	-	100-120	-	-	-	38
Normal Phases (Polar)								
Silica (Si)	Silica	45-65	60-80	450-550	-	No	2-9	22
Aminopropyl (NH2)	Silica	45-65	60-80	450-550	7	No	2-9	23
Cyanopropyl (CN)	Silica	45-65	60-80	450-550	8	No	2-7	24
Diol (2OH)	Silica	45-65	60-80	450-550	7	No	2-9	25
PSA	Silica	45-65	60-80	450-550	7	No	2-9	35
Florisil (FL)	Magnesium Silicate	75-150	60-80	300-450	-	No	-	26
Florisil-PR (FL-PR)	Magnesium Silicate	150-250	60-80	300-450	-	No	-	27
Alumina-N (AL-N)	Alumina Neutral	50-150	100-120	150-200	-	No	7.5	28
Alumina-A (AL-A)	Alumina Acid	50-150	100-120	150-200	-	No	4.5	29
Alumina-B (Al-B)	Alumina Basic	50-150	100-120	150-200	-	No	10	30
Ion Exchangers								
SCX	Silica	45-65	60-80	450-550	11	No	2-9	31
SCX-2	Silica	45-65	60-80	450-550	2	No	2-9	32
SAX	Silica	45-65	60-80	450-550	7	No	2-8	33
CBA	Silica	45-65	60-80	450-550	7	No	2-9	34
PSA	Silica	45-65	60-80	450-550	7	No	2-9	35
Specialty / Carbograph / Polymeric								
Carbograph	Graphitized Carbon	35-120	-	100-120	-	No	-	38
NH2/Carbograph	Silica/Graphitized Carbon	45-65/35-120	60-80/-	450-550/100-120	-	No	-	39
PSA/Carbograph	Silica/Graphitized Carbon	45-65/35-120	60-80/-	450-550/100-120	-	No	-	40
SAX/Carbograph	Silica/Graphitized Carbon	45-65/35-120	60-80/-	450-550/100-120	-	No	-	41
FL-PR/Carbograph	Silica/Graphitized Carbon	150-250/35-120	60-80/-	300-450/100-120	-	-	-	42
C8/SCX	Silica	45-65	60-80	450-550	9	-	2-9	36
C8/SAX	Silica	45-65	60-80	450-550	9	No	2-9	37
HBP	Hydrophobic Copolymer	30-50	80-90	700-800	-	No	1-14	43
HLP	Hydrophilic Copolymer	30-50	80-90	700-800	-	No	1-14	44
HLP-SC	Hydrophilic Copolymer	30-50	80-90	700-800	-	No	1-14	45
HLP-SA	Hydrophilic Copolymer	30-50	80-90	700-800	-	No	1-14	46
HLP-WC	Hydrophilic Copolymer	30-50	80-90	700-800		No	1-14	47
HLP-WA	Hydrophilic Copolymer	30-50	80-90	700-800		No	1-14	48

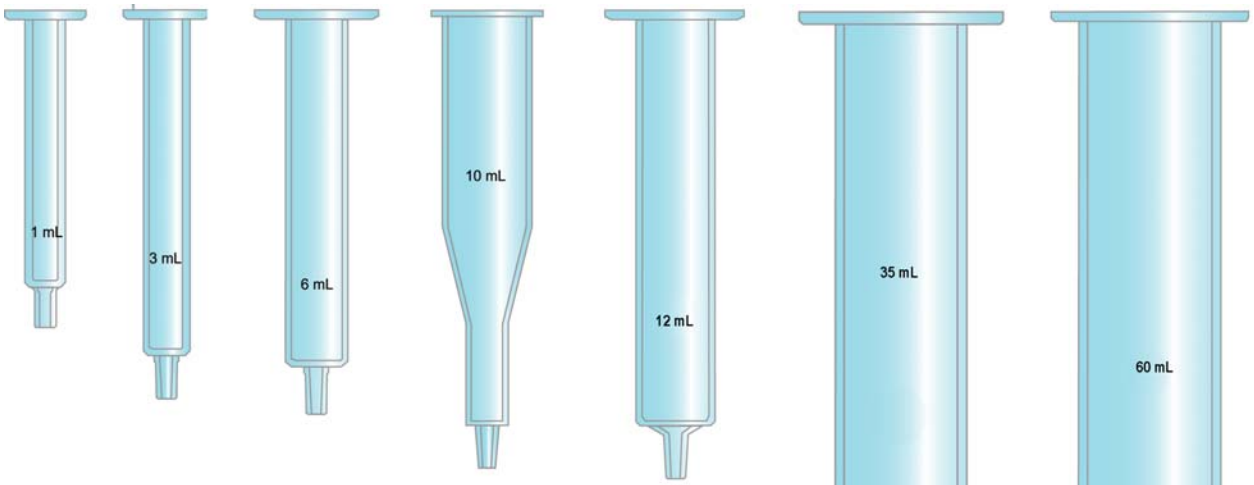
Choosing SPE format

Vertical has a wide range of SPE formats for a wide range of sample types and volumes. There are two industrial standard formats; tube and cartridge.

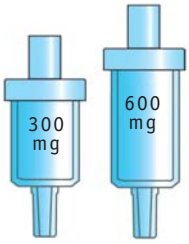
VertiPak™ Tubes are normally packed in straight-walled syringe barrel tubes. Medical grade polypropylene tubes and 20 µm polyethylene frits are used in standard manufacturer of our high quality SPE. There are several different phases to choose from.

VertiPak™ Cartridges are stackable and single shot alternative. Medical grade polypropylene tubes and 20 µm polyethylene frits are used in standard manufacturer of our high quality SPE. Capping with a male and female Luer fitting provides the capability to do single-shot extractions with a syringe and no adapters required. There are also several different phases to choose from.





VertiPak™ Tubes



VertiPak™ Cartridges

SPE