

Generic SPE Method by Retention Mechanism

Each SPE mechanism/phase has a general set of solvent conditions under which SPE may be performed. Use the solvents/pH conditions listed below, volumes as determined in [Method and Sorbent Volume Selection](#).

Reversed Phase SPE Method

Sorbent	SDB-L, C18, C8, PH, CN, X, XL	
Analyte Properties	Low to moderate polarity (or nonpolar) Hydrophobic Neutralized/uncharged	Pharmaceuticals, Pesticides, Herbicides
Sample/Matrix	Aqueous, diluted with buffer	Biological fluids, Water
Conditioning Step	1. Solvation – polar organic solvents 2. Equilibration – aqueous, buffers	1. Methanol 2. Water or buffer
Wash Step	Aqueous buffers with 5 to 50 % polar organic solvent	Methanol: Water (5:95)
Elution Step	Polar or non-polar organic solvent(s) with or without water, buffer and/or strong acid or base	Methanol: Acetonitrile (50:50)

Normal Phase SPE Method

Sorbent	Silica, Florisil®, NH ₂ , CN	
Analyte Properties	Moderate to high polarity compounds (neutralized/uncharged)	Pesticides
Sample/Matrix	Non-polar organic solvents or moderately polar organic solvents	Hexane, chloroform, petroleum ether, toluene or methylene chloride
Conditioning Step	1. Solvation – polar organic solvents (optional) 2. Equilibration – sample/matrix solvent	1. Methanol (optional) 2. Hexane or chloroform
Wash Step	Non-polar organic solvents with a low concentration (1 to 5 %) of moderate to low polarity organic solvents	Hexane with 1 % THF, ethyl acetate, acetone, acetonitrile or IPA)
Elution Step	Non-polar organic solvents containing higher concentrations (5 to 50 %) of moderate to high polarity organic solvents	Hexane with 10 % THF, ethyl acetate, acetone, acetonitrile or IPA

Strong Ion-Exchange SPE Method

Sorbent	Anion exchange: Screen-A, SAX, X-A, X-AW, XL-A, XL-AW Cation exchange: Screen-C, SCX, X-C, X-CW, XL-C, XL-CW	
Analyte Properties	Ionized/charged compounds	Anion exchange: Acidic analytes Cation exchange: Basic drugs
Sample/Matrix	Aqueous; Low ionic strength buffers (> 30 mM), pH adjusted	Biological fluids plus buffer
Conditioning Step	1. Conditioning – polar organic solvents 2. Equilibration – low ionic strength buffers, pH adjusted	1. Methanol 2. 25 mM Tris-OAc, pH 7
Wash Step	Aqueous buffers of low salt concentrations with or without organic solvent	Anion exchange: Buffer pH 7: Methanol (50:50) Cation exchange: 1. Buffer pH 6 2. 1 M acetic acid 3. Methanol
Elution Step	• Neutralize the charge on the weak anion or cation • Increase the ionic strength and counter ion concentration • Add a strong counter ion displacer	Anion exchange: Hexane: ethyl acetate (75:25) +1 % glacial acetic acid Cation exchange: Methanol + 5 % NH ₃

NOTE: These are general starting conditions. Please [contact](#) your Phenomenex technical consultant for more assistance.