

Sample Pretreatment for SPE

Reproducible, high efficiency solid phase extraction requires that the sample be made liquid prior to loading onto an SPE device. The ideal SPE sample should meet the following conditions.

1. Liquid of low viscosity (to pass through the cartridge).
2. Low solids or particulate contaminants (to prevent clogging).
3. Solvent composition that is suitable for retention (each mechanism has different matrix solvent composition requirements for proper retention).

If the sample does not meet these requirements, it must undergo appropriate pretreatment prior to SPE, which will render it more suitable for extraction. The following table outlines some common pretreatment steps for various sample matrices.

Sample Matrix	Pretreatment Suggestions (no order of preference)
Soil, Sludge	Homogenize with organic or aqueous solvent depending upon analyte solubility, settle, decant and filter supernatant, perform Soxhlet extraction.
Ointments, Creams	<i>Oil based:</i> dissolve in nonpolar organic (hexane) and extract via polar SPE. <i>Water based:</i> dissolve in water or water miscible organic (MeOH) and extract via non-polar SPE.
Fruit, Vegetable, Herbs	Homogenize with organic or aqueous solvent depending upon analyte solubility and filter supernatant. Use appropriate SPE mechanism for the dissolution solvent (Hexane = polar mechanism, aqueous = non-polar mechanism, MeOH/ACN = either non-polar or polar after proper dilution)
Biological Samples (liquid) <i>Urine, whole blood, serum, plasma, bile, etc.</i>	Dilute sample 1:1 with appropriate buffer, precipitate proteins if proteinaceous (ZnSO ₄ , ACN), hydrolyze urinary glucuronides, disruption of protein binding (sonication, enzymatic, acids/bases).
Biological Samples (solid) <i>Organ tissues, feces, GI contents.</i>	Homogenize with organic or aqueous solvent depending upon analyte solubility, settle, decant, centrifuge or filter supernatant. Perform direct Matrix Solid Phase Dispersion (MSPD) extraction on tissue.

Please refer to the Phenomenex SPE Users Guide for more information.