## Selection Guide for SPE Sorbents and Solvents

**ORGANIC SAMPLES MW< 2000 (in solution)** This Sorbent Selection Guide is a systematic guide classifying samples according to polarity, ionizability and solubility in water or organic solvents. This information is useful in selecting the necessary components of a preliminary extraction method.

### Sample Solubility

<table>
<thead>
<tr>
<th>Sample Matrix</th>
<th>Organic Solvent Soluble</th>
<th>Ionic Solvent Soluble</th>
<th>Water Soluble</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Organic</td>
<td>Aqueous</td>
<td>Anionic</td>
</tr>
<tr>
<td></td>
<td>Moderately Polar</td>
<td>Aqueous</td>
<td>Cationic</td>
</tr>
<tr>
<td></td>
<td>Non-polar</td>
<td>Aqueous</td>
<td>Non-polar</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Aqueous</td>
<td>Moderately Polar</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Aqueous</td>
<td>Polar</td>
</tr>
</tbody>
</table>

### Mechanism

<table>
<thead>
<tr>
<th>Mechanism</th>
<th>NPC</th>
<th>LSC</th>
<th>RPC</th>
<th>IEC</th>
<th>IEC</th>
<th>RPC</th>
<th>LSC</th>
<th>NPC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>H₂O-Philic DVB</td>
<td>H₂O-Philic DVB</td>
<td>H₂O-Philic DVB</td>
<td>H₂O-Philic SC-DVB</td>
<td>H₂O-Philic SC-DVB</td>
<td>H₂O-Philic DVB</td>
<td>H₂O-Philic DVB</td>
<td>H₂O-Philic DVB</td>
</tr>
<tr>
<td>Spe Phase</td>
<td>Cyano</td>
<td>Cyano</td>
<td>Cyano</td>
<td>Cyan</td>
<td>Cyan</td>
<td>Cyan</td>
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<td>Recommen</td>
<td>DVB</td>
<td>DVB</td>
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<td>DVB</td>
<td>DVB</td>
<td>DVB</td>
<td>DVB</td>
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<tr>
<td>d</td>
<td>Silica gel</td>
<td>Florisil Alumina</td>
<td>Silica gel</td>
<td>Florisil</td>
<td>Florisil</td>
<td>Florisil</td>
<td>Florisil</td>
<td>Florisil</td>
</tr>
<tr>
<td></td>
<td>1,2 Amino</td>
<td>1,2 Amino</td>
<td>1,2 Amino</td>
<td>1,2 Amino</td>
<td>1,2 Amino</td>
<td>1,2 Amino</td>
<td>1,2 Amino</td>
<td>1,2 Amino</td>
</tr>
</tbody>
</table>

### Solvents

<table>
<thead>
<tr>
<th>SOLVENTS</th>
<th>Hexane</th>
<th>Chloroform</th>
<th>Dichloromethane</th>
<th>Acetone</th>
<th>Methanol</th>
<th>Acids, buffers</th>
<th>Hexane</th>
<th>Chloroform</th>
<th>Dichloromethane</th>
<th>Acetone</th>
<th>Methanol</th>
<th>Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>3, 4 Solvents:</td>
<td>9262 Hexane, ULTRA RESI-ANALYZED™</td>
<td>9217 Chloroform, ULTRA RESI-ANALYZED™</td>
<td>9264 Dichloromethane, ULTRA RESI-ANALYZED™</td>
<td>9260 Ethyl acetate, ULTRA RESI-ANALYZED™</td>
<td>9254 Acetone, ULTRA RESI-ANALYZED™</td>
<td>9251 Acetonitrile, ULTRA RESI-ANALYZED™</td>
<td>9257 Chloroform, ULTRA RESI-ANALYZED™</td>
<td>9260 Ethyl acetate, ULTRA RESI-ANALYZED™</td>
<td>4219 Water, ULTRA RESI-ANALYZED™</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Separation Mechanisms
2. Bonded phases listed in order of increasing polarity
3. Eluting solvents listed in order of increasing polarity
4. Selective elution can be performed by combining two or more miscible solvents to achieve various degrees of polarity

**LSC:** Liquid Solid Chromatography (Adsorption)  
**NPC:** Normal Phase Chromatography (Bonded Phase Partition)  
**RPC:** Reverse Phase Chromatography (Bonded Phase Partition)  
**IEC:** Ion-Exchange Chromatography (Bonded Phase Ion-Exchange)  
**SDB:** Styrene Divinyl Benzene  
**DVB:** Divinyl Benzene  
**H₂O-Phobic WA-DVB:** Weak anion exchanger  
**H₂O-Phobic SC-DVB:** Strong anion exchanger  
**H₂O-Phobic SA-DVB:** Strong anion exchanger  
**H₂O-Phobic SC-DVB:** Strong cation exchanger  
**H₂O-Phobic WA-DVB:** Weak cation exchanger

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