

## Choosing the best film for your gas sampling needs

Film	Unique Properties	Advantages	Limitations
ALTEF	<ul> <li>Developed specifically for gas sampling applications</li> <li>Chemically inert to most acids, aliphatic and aromatic organic compounds, chlorinated solvents, and alcohols</li> <li>Max. operating temp: 302°F</li> <li><i>ALTEF</i> bags are made of .003" thick film vs. competitor's bags of .002" thick</li> </ul>	<ul> <li>Economical</li> <li>Readily available</li> <li>Suitable for sampling VOC's and sulfur compounds</li> <li>Low VOC background</li> <li>Longer sample storage times than most other bag materials</li> <li>Does not exhibit background levels of DMAC or phenol, as Tedlar<sup>®</sup> does</li> </ul>	<ul> <li>More permeable than Tedlar<sup>®</sup> (.003" thickness is recommended versus .002" for Tedlar<sup>®</sup>)</li> <li>Not suitable for sampling ketones and esters in high concentrations (&gt;30%)</li> <li>Lower resistance to UV light than Tedlar<sup>®</sup></li> </ul>
Multi-Layer Foil	<ul> <li>Multiple layers provide low permeability and a moisture barrier</li> <li>Opaqueness protects samples from ultraviolet light</li> </ul>	<ul> <li>The only bag material that adequately holds H<sub>2</sub>S for long pe- riods (&gt;5 to 7 days)</li> <li>Ideal for collecting low molecular weight compounds</li> <li>Sample stability for up to 5 days for most compounds</li> <li>Good VOC stability</li> <li>Readily available</li> </ul>	Not suitable for collecting low ppm to high ppb VOC's
Tedlar <sup>®</sup>	<ul> <li>Low gas permeation levels</li> <li>High tensile strength</li> <li>Continuous temperature range from –98°F to 225°F</li> <li>Unaffected by the chemical components of gases commonly sampled, like carbon monoxide, sulfur dioxide, hydrogen sulfide, radon and mercaptons</li> </ul>	<ul> <li>Less permeable than FEP, PFA and TFM</li> <li>Bags resist puncture in the field</li> <li>Less expensive than FEP and PFA film</li> <li>Recommended in many EPA testing methods</li> </ul>	<ul> <li>Exhibits background levels of DMAC and phenol</li> <li>Not readily available</li> <li>Substantial recent price increases due to global shortage</li> </ul>
FEP	One of the most chemically inert materials available for making gas sampling bags	<ul> <li>Works well in extreme temperatures ranging from -400°F to 400°F; allowing it to be used in all stack sampling conditions</li> <li>Heavier gauge (.005") film is resistant to most severe corrosives as well as tolerates applications involving rough handling or difficult service conditions</li> <li>Less expensive than PFA</li> <li>Readily available</li> </ul>	<ul> <li>Poor storage stability for most VOC's and sulfur compounds</li> <li>More permeable than Tedlar<sup>®</sup>, <i>ALTEF</i>, and Multi-Layer Foil bags</li> <li>More expensive than Tedlar<sup>®</sup>, <i>ALTEF</i>, Multi-Layer Foil bags</li> </ul>
PFA	<ul> <li>Highest purity, most chemically inert film available for making gas sampling bags</li> <li>Widest temperature range; from -420°F to 500°F</li> </ul>	<ul> <li>Not affected by the most corrosive chemicals, such as HF, Nitric, HCL and Sulfuric Acids</li> <li>Readily available</li> </ul>	<ul> <li>The most expensive film option for gas sampling bags</li> <li>Much more permeable than Tedlar<sup>®</sup></li> </ul>

Tedlar<sup>®</sup> is a registered trademark of E.I DuPont