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If you have questions about applying methodology described in this article to a current application, please contact our technical service chemists.
For convenience, economy, and safety, many analysts have made the decision to switch from gas cylinders to gas generators. While gas generators do offer these attractive benefits, some attention must be given to both the input to and the output from these devices. All generators that depend on an input of compressed air, including zero air and general-purpose air generators, and carrier gas grade and general grade nitrogen generators, must be protected from poor quality, contaminated house air. Old, oil-sealed air compressors introduce unacceptable levels of oil vapor, water vapor, rust, and dirt into the gas lines. If possible, it is best to use a modern, oilless compressor or a gas generator that features a built-in compressor. Yet, if an oilless compressor is located in an atmosphere high in water and/or oil vapors, it may still introduce these contaminants into the compressed air. Consequently, the gas output from the generator may need to be upgraded to acceptable purity for gas chromatography.

To make house air acceptable to most gas generators, you must remove three major contaminants: oil, water vapor, and particles. In the order shown, the filters and purifiers in Figure A first remove liquids, then vapors. Particles are removed through progressively smaller size filtration. Although these devices typically remove 99.9% of the oil and water vapors from compressed air, reducing them to 1000ppm or less, this is not sufficient incoming purity for most gas generators. The hydrocarbon and water vapor traps in Figure A adsorb the contaminants that escape the filters, reducing their concentrations to acceptable levels (1 ppm or less).

Because high flows of air often must be purified, large (750cc) traps that trap contaminants efficiently at flow rates of up to 10 liters per minute are needed. The concern here is that the gas has sufficient contact time in the purifier for water vapor or hydrocarbons to be absorbed. A nitrogen generator, for example, typically requires an input of about 70 liters of air per minute to produce 1 liter of nitrogen per minute. In fact, the flow demands of nitrogen generators and general-purpose air generators often can exceed the flow capacity of even the 750cc purifiers. Under these circumstances, one approach is to use several purifiers of each type in parallel (Figure B).

We also recommend installing a hydrocarbon trap downstream from the generator, to remove any trace amount of hydrocarbon breakthrough. With twice the trapping capability of typical activated carbon purifiers, our Supelcarb™ HC Hydrocarbon Trap is the best choice for removing C6 and heavier hydrocarbons. Supelcarb is a special carbon sieve designed to have high capacity and good particle strength. Unlike irregular-shaped activated carbon particles, which can create inconsistent packing densities and potential shifting of the packing in use, Supelcarb is a spherical bead that has extremely good packing characteristics. Activated carbon purifiers must be mounted in a vertical position, but a Supelcarb trap can be mounted either horizontally or vertically.

Our new Bulletin 918 rates popular gas purifiers on their contaminant-trapping ability, gas flow capacity, expected lifetime, and other considerations.

### Ordering Information:

<table>
<thead>
<tr>
<th>Purifier</th>
<th>Cat. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molecular Sieve 5A Moisture Trap, 750cc</td>
<td>23991</td>
</tr>
<tr>
<td>1/4&quot; fittings</td>
<td>23992</td>
</tr>
<tr>
<td>Supelcarb HC Hydrocarbon Trap, 750cc</td>
<td>24564</td>
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<tr>
<td>1/4&quot; fittings</td>
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<tr>
<td>Supelpure™-HC Hydrocarbon Trap, 750cc</td>
<td>24518</td>
</tr>
<tr>
<td>1/4&quot; fittings</td>
<td>24519</td>
</tr>
<tr>
<td>Mounting Clip for 750cc Traps</td>
<td>24983</td>
</tr>
</tbody>
</table>

For particle filters, oil vapor coalescing filters, and oil vapor filters, refer to the Supelco catalog.

Also see our catalog for air, zero air, FTIR, TOC, nitrogen, and hydrogen generators.

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