

# TheReporter

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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.

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# Three-Part Total Purification System for Gas Chromatography

R. Bartram

Supelco, Bellefonte, PA, USA

*Rather than purchasing costly certified gases for your GC analyses, consider using our three-part gas purification system. This system removes impurities from less expensive, less pure gases, and helps prevent damage to GC columns and instruments.*

Many laboratories purchase high-priced certified gases in an effort to ensure carrier gas purity, an important consideration for analytical accuracy. Certified gases can be a costly burden to a laboratory's operating budget.

Supelco has developed a purification system using three units: the Supelco™ High Capacity Gas Purifier, the OMI™ Indicating Purifier, and the Supelco Molecular Sieve 5A Moisture Trap. This three-part system eliminates critical impurities from inexpensive (99.995% pure) carrier gas — impurities that can damage your GC columns and detectors.

## Supelco High Capacity Gas Purifier

This purifier has an all-metal tube that is heated inside an oven. Oxygen and water in helium, nitrogen, argon, and methane-argon mixes chemically react with the gettering material inside which, rather than relying on surface adsorption, combines chemically to scavenge all traces of impurities. Trapped contaminants cannot return to the gas stream — even when the purifier oven is turned off or the trapping material becomes saturated. The High Purity Gas Purifier also removes CO and CO<sub>2</sub>. (Because it also reacts with H<sub>2</sub>, it should not be used to purify hydrogen.)

## OMI Indicating Purifier

This purifier irreversibly and simultaneously removes most gas impurities (oxygen, water, organo sulfur and halogen compounds, and oxides of carbon, sulfur, and nitrogen) to levels ranging from 10 to 100ppb. The resulting gas contains a lower percentage of impurities than most high quality (99.999% pure) carrier gases.

The OMI purifier removes at least 0.4g (500cc) of water vapor or 0.25g (190cc) of oxygen. It contains Nanochem® resin,\* which changes color in the presence of adsorbed compounds. Because the glass body is inert, you need not be concerned about unacceptable background levels common with plastic-bodied purifiers. Glass also prevents diffusion of ambient water or oxygen into your GC system. Potential problems caused by make-up gas contamination also are eliminated, increasing the life of your detector while maximizing its sensitivity.

We recommend using the High Capacity Purifier for bulk purification of one or more GCs, and installing the OMI purifier immediately before the gas enters your GC system — for final gas polishing and visual quality assurance.

## Supelco Molecular Sieve 5A Moisture Trap

For added economy, install this inexpensive drying tube upstream of the High Capacity Purifier. The Molecular Sieve 5A Moisture Trap reduces water contamination to less than 0.5ppm. When installed before the OMI purifier, it reduces water in electrolytically generated hydrogen to less than 0.5ppm for a full year. (This purified hydrogen is an excellent carrier gas substitute for helium.) Where compressed house air is used for flame detectors, the molecular sieve by itself will remove excessive moisture, as well as any heavy hydrocarbons.

While the OMI Indicating Purifier alone will remove critical impurities from your gas to levels superior to most certified gases, the addition of the High Capacity Heated Purifier and the Molecular Sieve Moisture Trap provides a cost-effective system specifically designed to ensure maximum gas purification with minimal maintenance. The high-quality gas provided by this three-part total purification system will enable you to attain ppt detection with ECD, Hall®, GC/MS, and GC/FTIR detectors.

## Ordering Information:

Description	Cat. No.
<b>High Capacity Gas Purifier, 110VAC</b>	
With 1/8" fittings	23800-U
With 1/4" fittings	23802
<b>High Capacity Gas Purifier, 220VAC</b>	
With 1/8" fittings	23801
With 1/4" fittings	23803
<b>OMI-2 Purifier</b>	
Tube	23906
Tube Holder (with 1/8" fittings)	23921
<b>OMI-4 Purifier (high capacity)</b>	
Tube	23909
Tube Holder (with 1/8" fittings)	23926
<b>Molecular Sieve 5A Moisture Traps</b>	
200cc, 1/8" fittings	20619
200cc, 1/4" fittings	20618
750cc, 1/4" fittings	23991
750cc, 1/2" fittings	23992

\* OMI purifier tubes contain Nanochem resin, licensed exclusively to Supelco for use in chromatographic applications. Nanochem is a registered trademark of Matheson Gas Products.

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