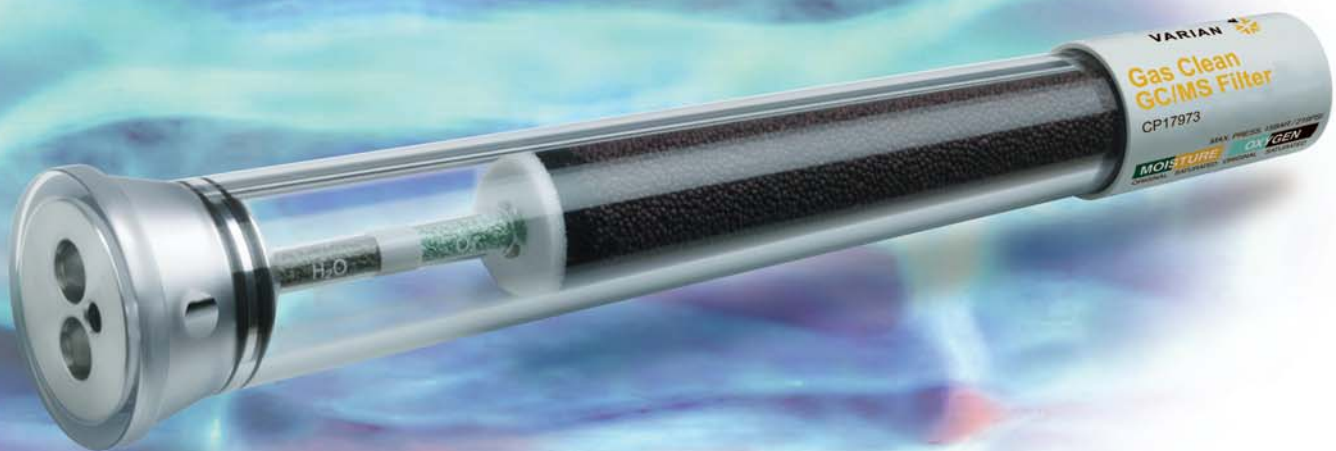


Gas Clean Filters



Delivering Clean Gases for GC and GC/MS Operation



VARIAN

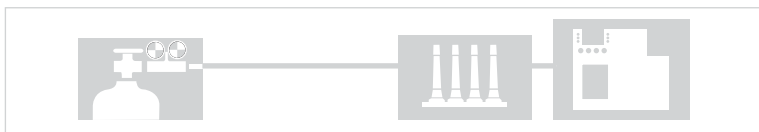
Gas Clean Filters



- Fast, leak-free filter replacement
- Highly visible sensitive indicators
- Economical— immediate pay back

Oxygen and moisture contamination in carrier gases can have a significant impact on your GC analyses. Loss of sensitivity, accuracy, and column damage can significantly increase instrument downtime. Glass wool in liners can become active and faster septa degradation can give high background signals and ghost peaks, leading to time-consuming trouble-shooting. Figure 1 shows the difference in bleed levels due to moisture exposure with and without a filter. Positioning Varian's Gas Clean Filter system immediately before the GC inlet (Figure 2), reduces impurities entering your detector, thus improving trace analysis. Impurities entering your column will also be reduced—critical for high temperature analysis and essential for longer column life. Varian Gas Clean Filters do not only guarantee that the gas entering your system is of the highest quality but it is also an indicator if leaks are present in the GC system. Varian Gas Clean Filters will warn you if you have a leak between the Gas Clean Filter system and GC system as the sensitive indicators will change from the bottom-up.

Figure 2



Fast, leak-free replacement—without tools!

Each Gas Clean Filter features a unique quick disconnect design which allows the easy replacement of filters in less than one minute! The connecting unit design allows the instrument to remain under pressure during filter replacement and prevents air from entering the system. Unlike competitor's in-line filters, changing a Varian filter requires no tools, or gas shut off. It simply doesn't get any easier.



Figure 1

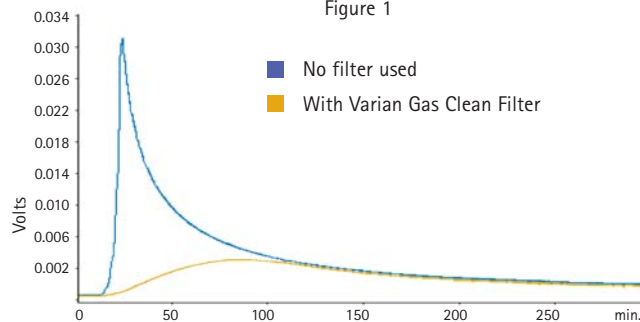


Figure 1 shows the difference in bleed levels with and without a filter when running a temperature program (50 °C to 350 °C, 20 °C/min.). When no filter is used, an extreme rise in the bleed profile is clearly visible due to moisture in the carrier gas. By using Varian's Gas Clean Filters, a normal bleed profile is achieved with the removal of all moisture in the carrier gas.

VARIAN GAS CLEAN FILTER SYSTEM

PROVIDES MAXIMUM PROTECTION AND MORE

Varian indicators are more sensitive than competitive filter indicators.

Replacing the filters at the appropriate time, when the filter has reached its absorption capacity, ensures maximum protection of GC columns and analytical setup. The easy to see, sensitive indicators change color, alerting you to replace the filter. In Figure 3, an open top glass tube is filled with Varian's moisture indicator (green) and a competitor's indicator (yellow) is placed on top, covering it. The glass tube is then placed at room temperature with an average moisture content. Although the Varian indicator is covered, it still reacts more rapidly to the presence of moisture (changing color from green to pale brown) than the competitor's yellow indicator. Varian's moisture indicator changes color at <math><0.1\text{ ppm}</math> of water. Varian Gas Clean Filters offer unsurpassed protection against moisture, and oxygen for your GC system.

Modular design—easy mounting.

The Varian Gas Clean Filter System is made of two key parts: the connecting unit and the filter. The connecting unit has inlet and outlet connectors



for the gas lines. The system can be easily wall mounted or simply placed on the bench. Connecting units come with a 1, 2, or 4 filter capacity and are available for 1/4" or 1/8" gas lines.

Economical—immediate pay back.

Varian Gas Clean Filter Systems allow you to use 99.995% (4.5) pure helium instead of the more expensive 99.999% (5.0) or 99.9999% (6.0) grade while still yielding high quality analytical results. Figure 4 compares the costs of carrier gas with the use of helium 4.5 and 5.0. The cost savings typically expected are 50%, which is significantly more than the cost of one replacement filter. The Varian Gas Clean Filter system in combination with 4.5 helium delivers the same quality gas to your GC and GC/MS as using 6.0 helium with respect to oxygen and water. This presents considerable savings over the usage of higher grade helium.

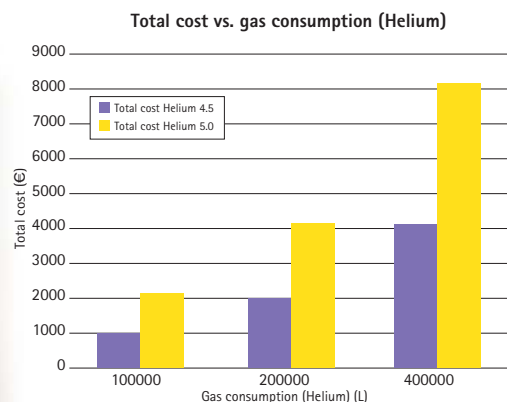
Figure 3



Competitor's indicator remains yellow even with moisture saturation.

Varian indicators are more sensitive to moisture and turn pale brown even before the competitor's indicator turns clear.

Figure 4



ACCURATE ANALYSIS FOR YOUR GC SYSTEM.

The right filter for every gas purification.

Four different filters are available. Each absorbent is packed in a transparent and unbreakable heavy-walled polycarbonate housing.

Oxygen filter: Oxygen removal prevents oxidation of the liquid stationary phase, septum, and glass wool.

Moisture filter: Water removal prevents hydrolyzation of the stationary phase, fused silica surface, glass wool, and septum.

Charcoal filter: Removes organic compounds, and ensures proper performance of FID detectors.

GC/MS filter: One filter unit with a combination of filters for removing oxygen, moisture, and hydrocarbons from carrier gas for MS application.

Varian FactorFour™ Columns

Combine quality gas delivery of Varian Gas Clean Filters with our FactorFour™ ultra-low bleed GC columns and you create the best combination for optimal GC and GC/MS performance.

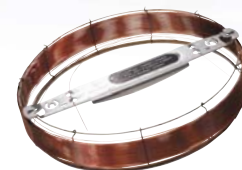


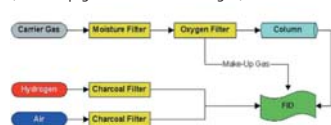
Table 1
Filters corresponding to your system

	Moisture Filter	Oxygen Filter	Charcoal Filter	GC/MS Filter
Carrier H ₂ , He, N ₂ , Ar	Yes	Yes	No	No
Air	No	No	Yes	No
Make-up FID when separate from carrier gas	No	No	Yes	No
Carrier He for GC/MS systems	No	No	No	Yes

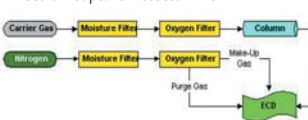
Table 2

Connection schemes for different GC detectors

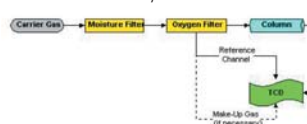
FID configuration
(Make-up gas same as carrier gas)



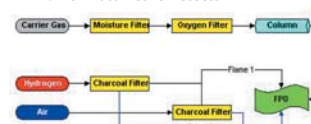
Electron Capture Detector—ECD



Thermal Conductivity Detector—TDC



Flame Photometric Detector—FPD



TECHNICAL SPECIFICATIONS

Table 3

	Oxygen Filter	Moisture Filter	Charcoal Filter	GC/MS Filter
	Packed with a special catalyst to remove oxygen and traces of sulfur and chlorine compounds.	Packed with molsieve to remove water, oil, and other foreign material.	Packed with high capacity activated carbon to remove all hydrocarbons (except methane) at room temperature.	Single combination filter, optimized to remove oxygen, moisture, and hydrocarbons from GC/MS carrier gas.
Capacity	150 ml oxygen	7.2 g water	depends on impurities	100 ml oxygen 1.0 g water
Capacity in number of 50 l gas cylinders of 5.0 gas quality Suitable for	He: 15 cylinders H ₂ : 15 cylinders N ₂ : 7.5 cylinders	He: 300 cylinders H ₂ : 300 cylinders N ₂ : 180 cylinders		He: 10 cylinders H ₂ : 10 cylinders N ₂ : 5 cylinders
Outlet concentration	H ₂ , He, N ₂ , Ar, CO, CO ₂	H ₂ , He, N ₂ , Ar, CO, CH ₄	H ₂ , He, N ₂ , Ar, Air, CO ₂	H ₂ , He, N ₂ , Ar, CO
Indicator color changes	< 50 ppb at 2 l/min (if C _{input} < 50 ppm)	< 0.1 ppm at 3 l/min (if C _{input} < 50 ppm)	< 0.1 ppm at 2 l/min (if C _{input} < 50 ppm)	same as for single packing filters
Max. pressure & flow	from green to grey at 0.1 ppm oxygen	from green to pale brown at 0.1 ppm moisture		same as for oxygen and moisture filter
Recommended flow	1500 kPa (219 psi) 15 l/min < 1000 ml/min	1500 kPa (219 psi) 15 l/min < 1000 ml/min	1500 kPa (219 psi) 15 l/min < 1500 ml/min	1500 kPa (219 psi) 15 l/min < 1000 ml/min

For optimal results we recommend one Gas Clean Filter System per GC system.



H₂O
CO₂

Higher sensitivity, increased accuracy and greater GC and GC/MS up-time.

- Varian Gas Clean Filters guarantee ultra-clean gas delivery to GC and GC/MS systems
- The removal of gas contaminants increases accuracy, instrument up-time, and column longevity
- A unique quick disconnect design allows fast filter replacement in less than one minute
- Sensitive indicators visually alert you to change the filter, preventing system contamination
- Every filter provides immediate payback, allowing the use of lower cost helium to produce high quality analytical results
- All filters are performance tested and assigned a specific serial number

Gas Clean Filters Ordering Information

Part Number	Description
Gas Clean Filters	
CP17970	Oxygen Filter
CP17971	Moisture Filter
CP17972	Charcoal Filter
CP17973	GC/MS Filter

Gas Clean Filter Kits	
CP17974	GC/MS (1/8") includes 1 GC/MS Filter, 1 connecting unit for 1 filter
CP17975	GC/MS (1/4") includes 1 GC/MS Filter, 1 connecting unit for 1 filter
CP17976	GC/MS (1/8") includes 2 GC/MS Filters, 1 connecting unit for 1 filter
CP17977	GC/MS (1/4") includes 2 GC/MS Filters, 1 connecting unit for 1 filter
CP17978	Installation Kit GC/MS (incl. CP17976, 1 m 1/8" copper tubing, 2 nuts & ferrules)
CP7995	FID 1/4" includes 2 Charcoal Filters, 1 Oxygen Filter, 1 Moisture Filter, 1 connecting unit for 4 filters
CP736530	FID 1/8" includes 2 Charcoal Filters, 1 Oxygen Filter, 1 Moisture Filter, 1 connecting unit for 4 filters
CP738408	TCD 1/8" includes 1 Oxygen, 1 Moisture Filter, 1 connecting unit for 2 filters

Connecting Units	
CP7980	For 1 Filter (1/4")
CP7988	For 1 Filter (1/8")
CP738406	For 2 Filters (1/4")
CP738407	For 2 Filtes (1/8")
CP7989	For 4 Filters (1/4")
CP736520	For 4 Filters (1/8")
CP7994	Filter—Gas Clean Unit w/ Gas Control (incl. 0–10 bar 1/4")
CP7998	Filter—Gas Clean Unit w/ Gas Control (incl. 0–10 bar 1/8")

Accessories	
CP7981	Wall Mounting Bracket/Single Connecting Unit
CP7983	Viton O-Rings Connecting Unit
CP7986	Male Connector 1/4" Brass w/ Dust Filter (pressure tight pipe thread G1/8)
CP7987	Flush-Head (to flush the gas line without filter)
CP728896	Filter Swivel (nut to connect filter with the baseplate)

Talk with a technical expert: Call your local sales office or email helpdesk.eu@varianinc.com

Application and technical information: Go to varianinc.com and click on Chromatography under Products & Services.

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