Gas Delivery
Gas Purifiers

How to Select Purifiers

Why use gas purifiers? Hydrocarbons in the carrier gas can lead to noisy baselines and irreproducible results. Moisture and oxygen can strip phase, creating excessive bleed, damaging the GC column and shortening lifetime. Purifiers help ensure the reliable and efficient performance of the GC instrument.

Our recommendation is to use individual purifiers to handle each of the typical contaminants. These contaminants (hydrocarbons moisture and oxygen) are present in different impurity levels in the gases. Seldom do you find a purifier that has the quantities of each adsorbent to match the contaminants in your gases. It is better to use separate purifiers for each contaminant and change on a need base.

Indicating Purifiers - These purifiers allow a continuous monitoring of the actual gas quality that reaches the GC instrument. They give an indication of a needed purifier change before an analytical problem is caused by insufficient gas purity. We strongly recommend these indicators to ensure a reliable delivery of pure carrier gas.

Moisture indicators (blue beads) - Most moisture purifiers that contain blue beads will show a color change at moisture levels above 50ppm. They can be regenerated under certain conditions.

Oxygen indicators - Purifiers such as the OMI line of purifiers indicate the presence of oxygen in your carrier gas. Oxygen indicators are designed for use primarily as an indicator. They are not designed for use as the main oxygen trap when purifying gas of low pu

Special Purpose Purifiers - These purifiers are designed for specific applications.

GC/MS Purifiers Purifiers such as the Supelco helium purifier and the UOP mat/sen are designed to produce high purity Helium carrier gas for use with GC/MS instruments. This results in greater sensitivity of the MS.

Carbon Dioxide Purifier - This purifier is used with techniques involving FTIR, IR, Total Organic Carbon (TOC) and other detectors sensitive to Carbon Dioxide (CO_2). We offer a purifier that removes CO_2 and shows a color change. The reaction of CO_2 with the absorbent forms moisture. We recommend the use of a moisture-removing purifier downstream of the CO_2 removing purifier.

More information is available in Supelco Bulletin 918 (T197918) on Selecting Purifiers for Gas Chromatography.

Gas Purifier Recommendations

HYDROCARBONS	MOISTURE	OXYGEN
CARRIER GAS (HELIUM, HYDROGEN OR NITROGEN)		
Single GC, Part time usage and low gas flows		
Supelcarb-HC 120 cc	Molecular Sieve 5A 200 cc	Supelpure-O 120 cc
GC usage and normal gas flows, up to 4 units		
Option 1: Supelcarb-HC 120 cc	High Capacity Gas Purifier[2] & OMI-2 [1,4]	High Capacity Gas Purifier[2] & OMI-2 [1,4]
Option 2: Supelpure-HC 120 cc	Molecular Sieve 5A 200 cc	Supelpure-O 120 cc
Multiple GC usage, 5 and more units		
Option 1: Supelcarb-HC 750 cc	High Capacity Gas Purifier[2] & OMI-2 [1,4]	High Capacity Gas Purifier[2] & OMI-2 [1,4]
Option 2: Supelcarb-HC 750 cc	Molecular Sieve 5A 750 cc	Supelpure-O 750 cc
GC/MS Usage		
Option 1: Supelco Helium Purifier[3]	Supelco Helium Purifier[3]	Supelco Helium Purifier[3]
Option 2: UOP mat/sen[3]	UOP mat/sen[3]	UOP mat/sen[3]
AIR		
Single GC usage, up to 4 units		
Supelcarb-HC 120 cc	Molecular Sieve 5A 200 cc	
Multiple GC usage, 5 and more units		
Supelcarb-HC 750 cc	Molecular Sieve 5A 750 cc	
HYDROGEN (AS A FUEL GAS)		
GC usage and normal gas flows, up to 4 units		
Supelcarb-HC 120 cc		
Multiple GC Usage, 5 and more units		
Supelcarb-HC 750 cc		

[1] One needed per GC
[2] Do not use with hydrogen
[3] Use with helium only
[4] Requires 4 ft. tubing between high-capacity gas purifier and OMI-2

Gas Purifiers for Hydrocarbon Removal

NAME OF PURIFER	CARRIER GASES PURIFED	CONTAMINANTS REMOVED	PRODUCT DESCRIPTION[2]	MAXIMUM FLOW & INLET PRESSURE (CC/MIN)	(PSIG/BAR)	CAPACITY (GRAMS HC X 75%) [3]	STATED LIFE (CYLINDERS)[1]
Supelcarb HC	He, H_2, N_2, Ar/CH_4, air	C3 and higher hydrocarbons	120cc tube 1/8" 24448 1/4" 24449	2000	250/17.2	18	16.5
			750cc tucbe 1/4" 24564 1/2" 24565	10,000	250/17.2	120	110
Supelpure HC	He, H_2, N_2, Ar/CH_4, air	C4 and higher hydrocarbons	120cc tube 1/8" 22445-U 1/4" 22446	2000	250/17.2	9	8.0
			750cc tube 1/4" 24518 1/2" 24519	10,000	250/17.2	60	55.0
UOP Inert Gas Purifier	He	O_2, H_2O, CO_2, CO halocarbons, hydrocarbons, sulfurs	364cc tube 1/8" 22680-U 1/4" 22681	500	250/17.2	7.5	6.9

Gas Purifiers for Moisture Removal

NAME OF PURIFER	CARRIER GASES PURIFED	CONTAMINANTS REMOVED	PRODUCT DESCRIPTION[2]	MAXIMUM FLOW & INLET PRESSURE (CC/MIN)	(PSIG/BAR)	CAPACITY (GRAMS H_2O X 75%)	STATED LIFE (CYLINDERS)[1]
Molecular Sieve 5A Trap	He, H_2, N_2, many others	H_2O	1/8" 20619 1/4" 20618	2000	250/17.2	15.6	68
			750cc tube 1/4" 23991 1/2" 23992	10,000	250/17.2	58.5 [6]	253
High Capacity Heated Purifier	He, N_2, Ar/CH_4 not compatible with air, O_2, H_2	O_2, H_2O, CO_2, CO	32cc tube[4] 1/8" 22396 1/4" 22398	1100	150/10.3	16.9	73
OMI	He, H_2, N_2, Ar/CH_4 not compatible with air or O_2	O_2, H_2O, CO_2, CO, NH_3, alkynes, halocarbons, halogens, hydrogen halides	OMI-2, 15cc tube[5] 1/8" 23906	1000	150/10.3	0.2	0.8
			OMI-4, 90cc tube[5] 1/8" 23909	1000	150/10.3	1.3	5.8
GateKeeper	He, H_2, Ni_2, Ar not compatible with air or O_2	O_2, H_2O, H_2, CO_2, CO, (removes H_2 as a contaminant, also can purify H_2 carrier gas)	35cc cartridge 24970	1000	200/13.8	0.1	0.5
			500cc cartridge 24971	60,000	200/13.8	1.4	6.0
Supelpure-O	He, H_2, N_2, Ar/CH_4 not compatible with air or O_2	O_2, H_2O, CO_2, CO, NH_3, alcohols, alkanes, alkenes, amines, aromatics, diethylether, halogens, sulfurs	120cc tube 1/8" 22449 1/4" 22450-U	250	100/6.9	1.5	6.5
			750cc tube 1/4" 503088 1/2" 503096	10,000	250/17.2	10.2[6]	44.3
UOP Inert Gas Purifier	He	O_2, H_2O, CO_2, CO, halocarbons, hydrocarbons, sulfurs	364cc tube 1/8" 22680-U 1/4" 22681	500	250/17.2	26.3	114

[1] Based on 9" X 51" cylinders (218 cubic feet) of carrier gas containing 50ppm of contaminants supplying 1 chromatograph with 2 c apillary columns. Ask our supplier for specifications for the cylinders you use. To correct for other volumes of gas per cylinder, multiply Stated Life (cylinders) by the number of cubic feet in your cylinders, then divide by 218.

[2] Quantity of adsorbent material – dimensions of fitting – catalog number.

[3] Expressed as medium weight (C8 – C20) hydrocarbons.

[4] Heat required (tube must be installed in a specially designed heater).

[5] Holder required.

[6] At a flow rate of 1000cc/min.

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Gas Purifiers for Oxygen Removal

NAME OF PURIFER	CARRIER GASES PURIFED	CONTAMINANTS REMOVED	PRODUCT DESCRIPTION[2]	MAXIMUM FLOW & INLET PRESSURE (CC/MIN)	(PSIG/BAR)	CAPACITY (O_2) (GRAMS X 75%)	STATED LIFE (CYLINDERS)[1]
OMI	He, H_2, N_2, Ar/CH_4 not compatible	O_2, H_2O, CO_2, CO, NH_3, alkynes,	OMI-2, 15cc tube[3] 1/8" 23906	1000	150/10.3	0.16	0.4
	with air or O_2	halocarbons, halogens, hydrogen halides	OMI-4, 90cc tube[3] 1/8" 23909	1000	150/10.3	1.19	2.9
High Capacity Heated Purifier	He, N_2, Ar/CH_4 not compatible with air, O_2, H_2	O_2, H_2O, CO_2, CO	32cc tube[4] 1/8" 22396 1/4" 22398	1100	150/10.3	15.0	36.5
Supelpure-O	He, H_2, N_2, Ar/CH_4 not compatible	O_2, H_2O, CO_2, CO, NH_3, alcohols,	120cc tube 1/8" 22449 1/4" 22450-U	250	100/6.9	0.45	1.1
	with air or O_2	alkanes, alkenes, amines, aromatics, diethylether, halogens, sulfurs	750cc tube 1/4" 503088 1/2" 503096	10,000	250/17.2	2.4[6]	5.8
GateKeeper	He, H_2, N_2, Ar not compatible	O_2, H_2O, H_2, CO_2, CO	35cc cartridge 24970	1000	200/13.8	0.77	1.9
	with air or O_2	(removes H_2 as a contaminant, also can purify H_2 carrier gas)	500cc cartridge 24971	60,000	200/13.8	9.56	23.3
Oxisorb	He, H_2, N_2, Ar/CH_4	O_2, H_2O, CO_2, CO	52cc cartridge[3] 20631	5000	90/6.2	NA[5]	1.0[5]
Oxiclear	He, H_2, N_2, Ar/CH_4	O_2, H_2O, CO_2, CO	180cc cartridge 1/8" 22992 1/4" 22993	3000	250/17.2	NA[5]	3.5[5]
UOP Inert Gas Purifier	He	O_2, H_2O, CO_2, CO, halocarbons, hydrocarbons, sulfurs	364cc tube 1/8" 22680-U 1/4" 22681	500	250/17.2	2.14	5.2

[1] Based on 9" X 51" cylinders (218 cubic feet) of carrier gas containing 50ppm of contaminants supplying 1 chromatograph with 2 c apillary columns. Ask your supplier for specifications for the cylinders you use. To correct for other volumes of gas per cylinder, multiply Stated Life (cylinders) by the number of cubic feet in your cylinders, then divide by 218.

[2] Quantity of adsorbent material - dimensions of fitting - catalog number.

[3] Holder required.

[4] Heat required (tube must be installed in a specially designed heater).

[5] Data for determining oxygen capacity was not available from the manufacturer. Stated life in cylinders in the manufacturer's r ecommendation.

[6] At a flow rate of 1000cc/min.

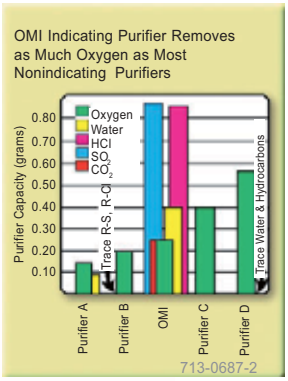
OMI Indicating Purifiers

- Simultaneously remove O_2, water vapor, CO, CO_2, most sulfur compounds, most halogen compounds, alcohols, phenols to less than 10ppb
- Purify helium, hydrogen, nitrogen, argon-methane
- Color change indicates purifier exhaustion
- Glass body does not diffuse air or off-gas
- Ideal for Hall, ECD, GC/MS detection systems
- OMI-4 purifier protects multiple instruments (three times the capacity of OMI-2 tubes)

Irreversibly remove contaminants from carrier gas. Install an OMI purifier downstream from your primary gas purifying device, and tell at a glance whether or not oxygen and water vapor are being effectively eliminated from your system. The OMI purifier will provide point-of-use gas polishing and final visual assurance of gas quality before the gas enters the GC. OMI purifier tubes contain Nanochem resin, developed for the demanding gas purity needs of the semiconductor manufacturing industry. As little as 1ppm of oxygen or water will change the indicating resin from black to brown.

Spent tubes are easily replaced. Simply unscrew the end assembly from the tube holder and replace the tube. The design prevents air from entering the new tube during installation.

Note: For optimum performance, we do not recommend storing OMI tubes for longer than 6 months.



23921

23906

Protect Your Column from Many Carrier Gas Contaminants

CONTAMINANT	OMI PURIFIER	INDICATING DEVICES	NON-INDICATING OXYGEN TRAPS
Oxygen	Yes	Yes[1]	Yes[1]
Water	Yes	No	Maybe
Carbon monoxide	Yes	No	Maybe
Carbon dioxide	Yes	No	No
Alcohols/Phenols	Yes	No	No
Sulfur-containing compounds	Yes	No	No[2]
Halogen-containing compounds	Yes	No	No[2]

[1] If incoming oxygen level does not exceed 10ppm.
[2] Corrosive compounds may poison some of these devices.

DESCRIPTION	CAT. NO.	PRICE
OMI-2 Purifier Tube[3]	23906	
OMI-2 Tube Holder, 1/8" fittings [3]	23921	
Seal Kit for OMI-2 Tube Holder (includes 2 Teflon seals and tool)	23917	
OMI-4 Purifier Tube[3]	23909	
OMI-4 Tube Holder, 1/8" fittings [3]	23926	
OMI-1 Replacement Tube[4] (includes 2 ferrules)	23900-U	
3/8" Ferrules (pk. of 10)	22311	
1/4" to 1/8" Swagelok SS Reducer	21517	

[3] First time users must order both purifier tube and corresponding holder. Holder is reusable.

[4] Will not fit OMI-2 tube holder – use with OMI-1 installation kit only (kit no longer available).

DIMENSIONS OF OMI PURIFIERS

OMI-2
Tube: 6"/15.2cm x 5/8"/1.6cm OD
Tube Holder: 10"/25.4cm x 1 1/2"/3.8cm OD
Endfittings: 2 1/2"/6.4cm
OMI-4
Tube: 12"/30.5cm x 1"/2.5cm OD
Tube Holder: 16"/40.6cm x 1 1/2"/3.8cm OD
Endfittings: 2 1/2"/6.4cm

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High Capacity Gas Purifier

No other purifier removesboth oxygen and water in such large quantities. To reliably protect your GC columns and detectors from oxygen and water vapor damage, you should use a gas purifier specifically designed to ensure maximum gas purity. The Supelco High Capacity Gas Purifier tube is heated inside an oven, and oxygen and water react with the gettering material in the tube. Unlike purifiers which remove contaminants by adsorption, chemical reaction with the gettering material prevents these contaminants from returning to the gas stream — even when the temperature changes or as the material approac saturation. The High Capacity Gas Purifier also removes carbon monoxide and carbon dioxide.

A single, replaceable High Capacity Gas Purifier tube can remov 14 liters of oxygen or 35 liters of water vapor (STP). It removes oxygen and water from at least 60 tanks of heavily contaminated gas — gas containing 100ppm of oxygen and/or water. It efficiently removes oxygen and water at gas flow rates up to 1100mL/minute, and you can use it with any common carrier gas except hydrogen.

The stainless steel converter tube is 10" x 1/2" OD. The split-sided heater is 10" long. An integral mounting bracket allows you to bolt the unit to a bench top or wall. The 90 watt power consumption makes the unit as economical to operate as a light bulb. Mount horizontally only.

2-year guarantee; elements guaranteed for 90 days.

SPECIFICATIONS	
Oven with 1/4" or 1/8" Tube	
Height:	5 1/4"/13.3cm
Width (with shields):	14 1/2"/36.8cm
Depth:	6"/15.2cm
Tube (1/8" or 1/4")	
Diameter:	1/2"/12.7mm
Length:	10"/25.4cm
Max. Inlet Pressure:	150psi
Max. Flow Rate:	1100mL/min.
Operating Temp.:	580°C

DESCRIPTION	CAT. NO.	PRICE
HIGH CAPACITY GAS PURIFIER		
110VAC, 1/8" Fittings[1]	23800-U	
110VAC, 1/4" Fittings[1]	23802	
220VAC, 1/8" Fittings[1]	23801	
220VAC, 1/4" Fittings[1]	23803	
REPLACEMENT PURIFIER TUBES		
1/8" Fittings	22396	
1/4" Fittings	22398	
REPLACEMENT ELEMENTS[2]		
Element for 110VAC Unit (2 required)	24975	
Top element for 220VAC Unit	24976	
Bottom element for 220VAC Unit	24977	

[1] CE approved.
[2] Modifications may be required on older purifiers.

Complete Pressure Gauge Kit

Use with our high capacity gas purifier, to indicate when the purifier tube should be replaced. Change purifier tube when pressure drop exceeds 10psi. 2"/5cm gauge (0-100psi), NPT to Swagelok adapter, 18"/1/2m of 1/8" copper line, 1/8" tee, installation instructions.

DESCRIPTION	CAT. NO.	PRICE
Pressure Gauge Kit	20392	

Supelcarb HC Hydrocarbon Traps

Remove organics from carrier gases, air, and hydrogen. We manufacture these traps in our own facilities, to ensure the cleanest material available and the best trapping ability per gram – Supelcarb HC adsorbent has twice the trapping ability of activated charcoal.

DESCRIPTION	CAT. NO.	PRICE
120cc, 1/8" Fittings	24448	
120cc, 1/4" Fittings	24449	
750cc, 1/4" Fittings	24564	
750cc, 1/2" Fittings	24565	
S-Trap, 1/8" Fittings	503134	
Supelcarb Refill, 300cc	24566	
Mounting Clip for 120cc Traps	23993	
Mounting Clip for 750cc Traps	24983	

Supelpure-HC Hydrocarbon Traps

Activated charcoal adsorbs hydrocarbons and other contaminants from carrier gases, air, and hydrogen. Operates efficiently for approximately six months when total hydrocarbons in the incoming gas average 10ppm.

DESCRIPTION	CAT. NO.	PRICE
120cc, 1/8" Fittings	22445-U	
120cc, 1/4" Fittings	22446	
750cc, 1/4" Fittings	24518	
750cc, 1/2" Fittings	24519	
S-Trap, 1/8" Fittings	503142	
Charcoal Refill for 400cc	22451	
Mounting Clip for 120cc Traps	23993	
Mounting Clip for 750cc Traps	24983	

Molecular Sieve 5A Water Vapor Traps

Remove water vapor and pump oils. Molecular Sieve 5A efficiently removes water and heavy hydrocarbons from compressed air, electrolytically produced hydrogen, house nitrogen, or other gases with high moisture or hydrocarbon content. 200cc traps are 26 1/4" x 1" (67 x 2.5cm), 750cc traps are 18 x 2 3/8" (45.7 x 6cm), S-trap is 1/2"/13mm OD x 5 9/16"/14.1cm wide x 7 1/2"/19cm long (total bed length: 19 3/4"/50.2cm) – the extended bed length ensures prolonged contact between the gas and the adsorbent and provides greater working capacity. Use the smaller traps with up to 5 GCs, the larger traps with 6-20 instruments.

DESCRIPTION	CAT. NO.	PRICE
200cc, 1/8" Fittings	20619	
200cc, 1/4" Fittings	20618	
750cc, 1/4" Fittings	23991	
750cc, 1/2" Fittings	23992	
S-Trap, 1/8" Fittings	503118	
Molecular Sieve 5A Refill, 1/2lb./0.22kg	20298	
Mounting Clip for 200cc Traps	503231	
Mounting Clip for 750cc Traps	24983	

Economy Water Vapor Traps

For air and actuator gases. These clear polycarbonate polymer tubes contain a mixture of Molecular Sieve 13X and Molecular Sieve 4A with indicating capability. Because some oxygen and water vapor will permeate through the polymer shell, these traps should not be used with carrier gases, but they are an excellent value for cleaning air and actuator gases to suitable purity. Dimensions: 2"/51mm OD x 17 1/2"/44.4cm long.

DESCRIPTION	CAT. NO.	PRICE
400cc, 1/8" Fittings	23987	
400cc, 1/4" Fittings	23988	
Molecular Sieve 13X/4A Refill, ~475cc	23989	
Mounting Clip for 400cc Traps	23990	

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Gas Purifiers

Supelpure-O Oxygen/Water Trap

The Supelpure-O trap reduces oxygen to less than 0.5ppm when the level in the incoming gas does not exceed 10ppm. It can extract contaminating oxygen at 10ppm from at least three 300ft (8.5m^3) cylinders. Because the oxygen-removing catalyst is coated on a molecular sieve, the trap also can remove significant amounts of water vapor (up to 1.5g for the 120cc trap; 10.2g for the 750cc trap).

DESCRIPTION	CAT. NO.	PRICE
SUPELPURE-O OXYGEN/WATER TRAP		
120cc, 1/8" Fittings	22449	
120cc, 1/4" Fittings	22450-U	
750cc, 1/4" Fittings	503088	
750cc, 1/2" Fittings	503096	
S-Trap, 1/8" Fittings	503126	
MOUNTING CLIP FOR SUPELPURE TRAPS		
for all 100cc Traps (each)	502936	
for all 120cc Traps (each)	23993	
for all 200cc Traps (each)	503231	
for all 250cc Traps (each)	23990	
for all 750cc Traps (each)	24983	

HELPFUL HINTS

Dimensions of Supelcarb and Supelpure Traps

120cc Traps: 1 3/8" OD (35mm) x 11 1/8" long (28.2cm)
750cc Traps: 2 5/16" OD (59mm) x 16 1/2" long (41.9cm)
S-Traps: 1/2" OD (13mm) x 5 9/16" wide (14.1cm) x 7 1/2" long (19cm) (total bed length: 19 3/4"/50.2cm)

Aeronex GateKeeper Purifiers

- Remove water, oxygen, CO_2, CO, and H_2 in bulk inert gases to less than 1ppb, at ambient temperature
- Stainless steel face seal fittings, for maximum sealing capability

High capacity + highly effective contaminant reduction = low cost per liter of purified gas. Using a proven, patented technology GateKeeper purifiers reduce contaminants in inert specialty gases to sub parts per billion levels (<1ppb), creating 99.9999999% pure gas from standard ultra high purity gas. In addition to being more effective than typical molecular sieve-type purifiers they last up to five times longer, providing a better return on your investment. The patented metallic purifying medium does not release trapped contaminants, and the units can be returned for recharging. The state of the art in inert gas purification.

SPECIFICATIONS

Construction: Model 35K: 304 SST
Model 400K: 304 SST
Model: 500K: 316L SST (internal electropolish)
Max. Inlet Pressure: 200psig (1380 kPa)
Maximum Flow: Model 35K: 1 liter/min
Model 400K: 3 liters/min
Model 500K: 60 liters/min
Operating Temp.: -40°C to 65°C
Dimensions: Model 35K: 3.31" x 1.5" OD (8.4 x 3.8cm)
Model 400K: 20.86" x 1.5" OD (52.4 x 3.8cm)
Model 500K: 7.94" x 3.0" OD (20.2 x 7.6cm)
Pure Gas Delivered (Estimated): Model 35K: 40,000 liters
Model 400K: 400,000 liters
Model 500K: 650,000 liters

DESCRIPTION	CAT. NO.	PRICE
Model 35K, 1/4" Face Seal Fittings	24970	
Model 500K, 1/4" Face Seal Fittings	24971	
Model 400K with Compression Fittings 1/4" Fittings	502987	

Supelco Helium Purifier

- Removes O_2, water vapor, hydrocarbons, CO_2, CO from helium
- Output gas is 99.99999% pure
- Cost per cubic foot of purified gas is 50% that for other broad-spectrum purifiers

This purifier incorporates multiple beds of highly effective, high capacity adsorbent materials to remove oxygen, water vapor, hydrocarbons, carbon dioxide, and carbon monoxide from helium gas streams. The volumes of the various adsorbents in the Supelco helium purifier were determined through rigorous evaluations, to ensure that breakthrough of the five major contaminant types is as close to simultaneous as possible. Because you no longer have to replace a broad-spectrum purifier that has exhausted its capacity for one contaminant, but still has much of its capacity for other contaminants, you can reduce instrument down time and save money. Relative to separate traps for oxygen, water vapor, and hydrocarbons, combining these functions into one unit also reduces the potential for leaks at connections.

One purifier will easily purify the contents of 13 ~200ft cylinders of 99.997% purity helium to a cumulative level of 100ppb of O_2, H_2O, CO_2, CO, and hydrocarbons, at flow rates up to 8 liters/minute – and comparative investigations indicate that a purifier will deliver this gas purity for virtually 50% of the cost per cubic foot of gas, compared to any competitor's broad-spectrum purifier.

Supelco helium purifiers are ideal for any GC or GC/MS application in which high purity helium is essential.

SPECIFICATIONS

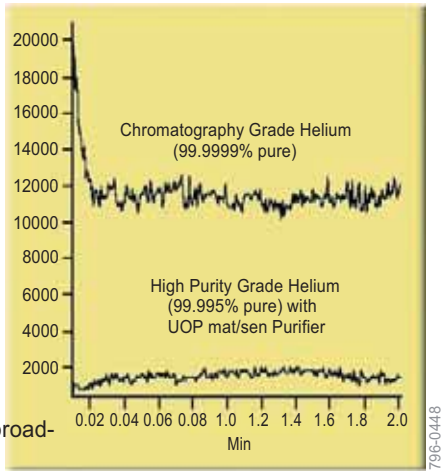
Contaminant Capacity[1]:	oxygen: 1.07L water vapor: 46g hydrocarbons[2]: 20g
Contaminant Removal Efficiency:	total: <100ppb oxygen: <2ppb water vapor: <20ppb hydrocarbons[2]: <30ppb CO_2: <20ppb CO: <20ppb
Output Gas Purity[3]:	99.99999%
Capacity:	>4000ft[3]
Maximum Flow Rate:	8L/min
Maximum Pressure:	500psig
Maximum Temperature:	100°C

[1] At standard temperature and pressure.

[2] As methane.

[3] 99.999% helium purified to 99.99999% helium, based on removal of 5 major contaminants.

DESCRIPTION	CAT. NO.	PRICE
1/8" Swagelok Stainless Steel Fittings	27600-U	
1/4" Swagelok Stainless Steel Fittings	27601-U	
Mounting Clip	24983	



UOP mat/sen Purifier

- Produces better than 99.9999% gas when supplied with 99.995% pure gas
- Original equipment in Finnigan, Hewlett-Packard, and Varian mass spectrometers
- Also used in Leco, Perkin-Elmer, and Shimadzu equipment

Assures mass spectrometer-suitable baselines from high purity (99.995%) gas. One of the most important factors in ensuring very sensitive detection in GC/MS analyses is the signal to noise ratio. Mass spectrometer manufacturers recommend that the signal be at least three times as large as the background noise to assure statistical significance. These UOP mat/sen purifier modules dramatically reduce levels of most contaminants, including oxygen, water, and hydrocarbons, from many parts per million to levels below detection. They adsorb a wider variety of contaminants than many commonly used adsorptive materials.

UOP mat/sen guarantees these purifiers produce gases that are at least a factor of ten higher in purity than 99.9999% "chromatography grade" gas when the purifier is supplied with 99.995% "high purity" gas. The cost difference between the two grades of gas will pay for the cost of the purifier several times over during the operating life of the purifier.

SPECIFICATIONS

Length:	21"/53.3cm
Diameter:	1.5"/3.8cm
Maximum Inlet Pressure:	250psig/1724 kPa
Maximum Flow:	500mL/min
Pressure Drop[1]:	<0.30 psig/2.1 kPa

[1] 120psig (827 kPa) inlet, 0 to 500mL/min

DESCRIPTION	CAT. NO.	PRICE
1/8" Compression Fittings	22680-U	
1/4" Compression Fittings	22681	

Gas Delivery
Gas Purifiers

P000333

Carbon Dioxide Traps

Designed to remove CO_2 from gases used in applications such as carbon-hydrogen determinations, analyses of respiratory gases, and especially in quantitative organic micro-analyses. The sodium hydroxide nonfibrous silicate trapping medium is universally accepted for its high absorptive capacity and indicating properties. Typically, this material will absorb 20-30% of its weight in carbon dioxide before replacement of the saturated material is required. As CO_2 is absorbed, the greenish-brown material turns white because of the formation of sodium carbonate. A water vapor trap should be installed downstream from this unit to absorb water evolved in the absorption of carbonic gases.

The trap body is constructed of borosilicate glass. The trap is available in two sizes, and with 1/8" and 1/4" fittings. Fittings are nickel plated and have sintered stainless steel frits. Exercise extreme caution when refilling the trap, due to the caustic nature of the absorbent.

DIMENSIONS	
100cc traps:	1 3/4"/44mm OD x 12 3/4/32.4cm long
250cc traps:	2"/51mm OD x 17 1/2"/44.4cm long

DESCRIPTION	CAT. NO.	PRICE
100cc, 1/8" Fittings	503185	
100cc, 1/4" Fittings	503193	
250cc, 1/8" Fittings	503207	
250cc, 1/4" Fittings	503215	
Absorbent Refill, 500cc	503223	
Mounting Clip for 100cc Traps	502936	
Mounting Clip for 250cc Traps	23990	

Purifiers For Less Demanding Applications

Gas purifiers listed below are economical, but cannot ensure output of chromatographic grade gas when impurity levels in the input gas exceed 10-15ppm.

P000334

Oxisorb Oxygen Scrubber reduces oxygen and water to less than 1ppm when incoming O_2 does not exceed 15ppm and H_2O does not exceed 10ppm. Use a new cartridge for each new cylinder of gas.

Dimensions: 2"/51mm OD (maximum) x 9 1/4" x 23.5cm long; replacement cartridge

DIMENSIONS	
Scrubber:	2"/51mm OD (maximum) x 9 1/4"/23.5cm long
Replacement Cartridge:	1 1/8"/29mm OD x 4 7/8"/12.4cm long

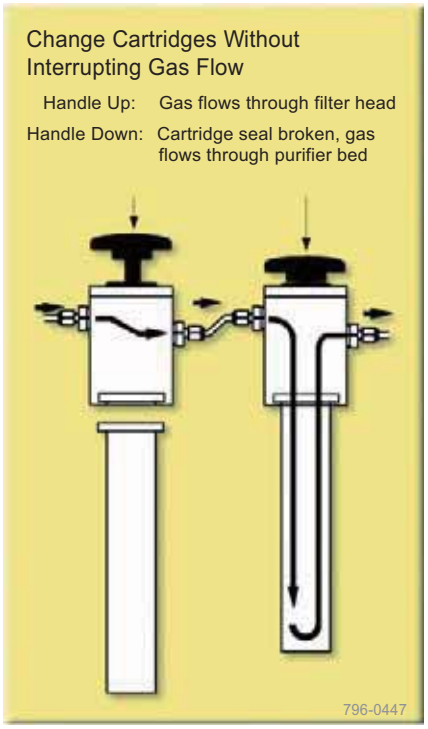
DESCRIPTION	CAT. NO.	PRICE
Oxisorb Oxygen Scrubber, 1/4" Fittings	20639-U	
Replacement Cartridge	20631	

P000232

Oxiclear Disposable Gas Purifier removes oxygen, trace water, and organic contaminants from three 300ft (8.5m³) cylinders of inert carrier gas. Output is less than 1ppm when incoming O_2 does not exceed 10ppm.

DIMENSIONS	
Purifier:	1 7/8"/48mm OD x 7 1/2"/19.0cm long

DESCRIPTION	CAT. NO.	PRICE
with 1/8" fittings	22992	
with 1/4" fittings	22993	



QC+ Point-of-Operation Panels

- Replace up to four cartridges in one minute or less, eliminate purge time

QC+ panels make cartridge replacement fast and easy. Rotate the valve handle(s) on the filter head(s) counterclockwise, to allow gas to pass through the head. Replace the cartridge, then rotate the valve handle clockwise, to puncture the seal on the new cartridge and restore gas flow through the purifier bed.

Replacement cartridges are designed to remove hydrocarbons, moisture and oxygen. The 3-Head QC+ Panel (P/N 23999) includes P/Ns 23997, 23996 and 23995. The 4-Head QC+ Panel (P/N 23998) includes P/Ns 23997, 23996, 23995 and 24987.

The SupelCarb cartridge (P/N 24567) has twice the capacity for hydrocarbons, relative to the activated charcoal in the standard hydrocarbon-removing cartridge.

The indicating water-removing cartridge (P/N 23996) contains a mixture of Molecular sieve 5A and Drierite. The color changes from blue to pink as the material becomes spent.

The indicating oxygen-removing cartridge (P/N 24987) contains a Manganese oxide. The color changes from green to brown as the material becomes spent.

DESCRIPTION	CAT. NO.	PRICE
3-Head QC+ Panel, 1/8" Fittings	23999	
4-Head QC+ Panel, 1/8" Fittings	23998	
Replacement Cartridges		
Hydrocarbon-Removing Cartridge (GC-3)	23997	
SupelCarb Cartridge	24567	
Water-Removing Cartridge (GC-2)	23996	
Indicating Water-Removing Cartridge (GC2-I)	503061	
Oxygen-Removing Cartridge (GC-1)	23995	
Indicating Oxygen-Removing Cartridge (GC-4)	24987	

SPECIFICATIONS

3-Head QC+ Panel: 9 x 11 1/2 x 5" (23 x 29 x 13cm) (H x W x D)
4-Head QC+ Panel: 11 x 15 1/4 x 5" (28 x 39 x 13cm)
Max. Pressure: 125psig
Cartridge: 1 1/4"/32cm OD x 6 1/4"/15.9cm long*

* Cat. Nos. 503061 and 24567 are 6 3/4"/17.1cm long.