

VARI-PURE FILTERS CONTAINING SPECIALTY SORBENTS

Application Guide

Vari-Pure Lite Acid Gas (Type AGAG)

The Vari-Pure Lite Acid Gas filter should be used for those applications where Hydrogen Sulfide (H_2S), Sulfur Dioxide (SO_2), Hydrogen Chloride (HCl), Chlorine (Cl_2), or other acid gases are present. Typical applications include sewage treatment plants, petrochemical facilities, processing and manufacturing plants, pulp and paper mills, as well as many others.

Vari-Pure Lite Formaldehyde (Formaguard)

The Vari-Pure Lite Formaldehyde filter uses a specially treated activated carbon for removal of this extremely light hydrocarbon (HCOH). This filter should be used where the off-gassing of formaldehyde from building materials and furnishings is present. Consider use of the Vari-Pure Lite Formaldehyde filter whenever new construction or remodeling is being done. It may also be used in laboratories, funeral homes, and hospitals.

Vari-Pure Lite Ammonia (Ammonaguard)

The Vari-Pure Lite Ammonia filter uses a specially treated activated carbon for removal of this odorous inorganic compound (NH_3). Applications include areas where there is heavy cleaning using ammonia compounds and especially in blue print facilities. Ammonia is used to cure the blue prints to the paper. The Vari-Pure Lite Ammonia filter can be retrofitted in the existing HVAC system to remedy this problem.

Vari-Pure Lite Potassium Permanaganate

The Vari-Pure Lite Potassium Permanaganate ($KMnO_4$) uses zeolite treated with $KMnO_4$ for removal of acid gases, formaldehyde and ammonia. This filter can be used in any of the applications mentioned above. Many times this material is specified and must be used to meet the specification.

Vari-Pure Lite All Guard (Type ALG)

The Vari-Pure Lite All Guard filter uses a specially treated activated carbon that is effective on a wide variety of odors and gases, including diesel fumes, food, hospital odors, paint, acid gases and very light gases, such as formaldehyde (HCOH), ammonia (NH_3), hydrogen sulfide (H_2S), sulfur dioxide (SO_2) and hydrogen chloride (HCl). It is recommended for use where multiple contaminants are present.

NOTE: Vari-Pure filters containing specialty sorbents work equally well in recirculation applications or with outside air. Prefilters should always be used to prevent blinding the carbon pore structure.

VARI-PURE APPLICATION GUIDE

VARI-PURE MODEL	EFFECTIVE ON COMPOUNDS	TYPICAL APPLICATIONS
Vari-Pure Vari-Pure Lite (60% Activity Carbon)	Wide range of odors, including diesel odors, food, hospital odors, paint, perfume. Contact factory for complete list.	Commercial, industrial, institutional buildings.
Vari-Pure Lite Acid Gas (Type AGAG)	Hydrogen Sulfide (H ₂ S) Sulfur Dioxide (SO ₂) Hydrogen Chloride (HCl) Chlorine (Cl ₂) Acid Gases	Sewage treatment plants. Petrochemical processing. Pulp and paper mills.
Vari-Pure Lite Formaldehyde (Formaguard)	Formaldehyde (HCOH)	Presence of building materials and furnishings. Labs, funeral homes, hospitals.
Vari-Pure Lite Ammonia (Ammonaguard)	Ammonia (NH ₃)	Heavy cleaning using ammonia compounds. Blueprint facilities.
Vari-Pure Lite Potassium Permanganate	Acid gases Formaldehyde Ammonia	Sewage treatment plants. Pulp and paper. Presence of building materials. Cleaning compounds.
Vari-Pure Lite 50/50 Blend Activated Carbon (Type CSC) and potassium permanganate	Wide range of odors, including diesel fumes, food, hospital odors. Additional removal of acid gases, formaldehyde and ammonia.	Office buildings, airports, pharmaceutical facilities, and where specifications call for the 50/50 blend.
Vari-Pure Lite All Guard (Type ALG)	Wide range of compounds, including all those listed above.	Recommended where a wide variety of gaseous contaminants are present.

Notes:

1. Vari-Pure and Vari-Pure Lite filters containing standard activated carbon are recommended for recirculation applications only.
2. Vari-Pure Lite filters containing specialty sorbents perform equally well in recirculation applications or with outside air.
3. Prefilters should be used to prevent blinding the carbon pore structure.
4. After filters (such as the Vari-Sock) are highly recommended during start up to prevent carbon dusting down stream.

POTASSIUM PERMANGANATE FOR GAS AND ODOR CONTROL

Potassium permanganate (KMnO_4) is used to control acid gases, nitrogen compounds, sulfur compounds and light molecular weight gases (See table below for a list of gases which can be effectively removed with potassium permanganate).

Typical installations where these gases are present include waste water treatment plants, pulp and paper mills, airports, chemical plants, refineries, air dryers, scrubber tanks and compressor intake systems.

Potassium permanganate uses a chemical process (oxidation) to eliminate gases, not adsorption as does carbon. Therefore, this product can be used in high heat and high humidity applications where carbon would be of limited effectiveness.

Potassium permanganate does not work well on heavy VOC's or aromatics. If an application contains both acid gases and VOC's, a 50/50 blend of potassium permanganate and activated carbon is recommended.

Compounds Effectively Removed By Potassium Permanganate

High Reactivity	Reactive	Low Reactivity
Ethyl Mercaptans Ethylene Formaldehyde Hydrazine Hydrogen Cyanide Hydrogen Sulfide Heavy Mercaptans Methyl Mercaptans Nitric Oxide Nitrogen Dioxide Phosphine Silane Sulfur Oxides (SOx)	Aldehydes Ammonia Inorganic Acids Light VOC's Nitrogen Oxides (NOx) Organic Acids Short-Chain Alcohols	Aromatics Chlorinated Hydrocarbons Heavy VOC's Ketones Long-Chain Alcohols Paraffins