

## Why you need pure Carbon Dioxide

To reduce batch contamination and product loss, effective purification of CO<sub>2</sub> is a must. Especially important in the food and beverage markets, pure CO<sub>2</sub> protects your products from the risk of contamination by sulfur compounds, aromatic hydrocarbons, aldehydes and potentially harmful submicron particle contamination and bacteria. These contaminants may cause off-flavors and spoilage problems that can quickly translate into product and dollar loss.

You may not now be adequately protected. Sophisticated quality testing equipment has shown that the commonly used activated carbon filters do not always effectively achieve the high quality gas as recommended in the ISBT CO<sub>2</sub> Guidelines.\*

However, you can achieve this high level of purity when using a *Sulfur Guard™* filter that incorporates a unique combination of adsorbents to remove the contaminants from CO<sub>2</sub> that most threaten food and beverage quality. The use of effective, economical filtration media specifically designed for CO<sub>2</sub> will help ensure that your product is protected from these contaminants.

## How MicroPure® does it better

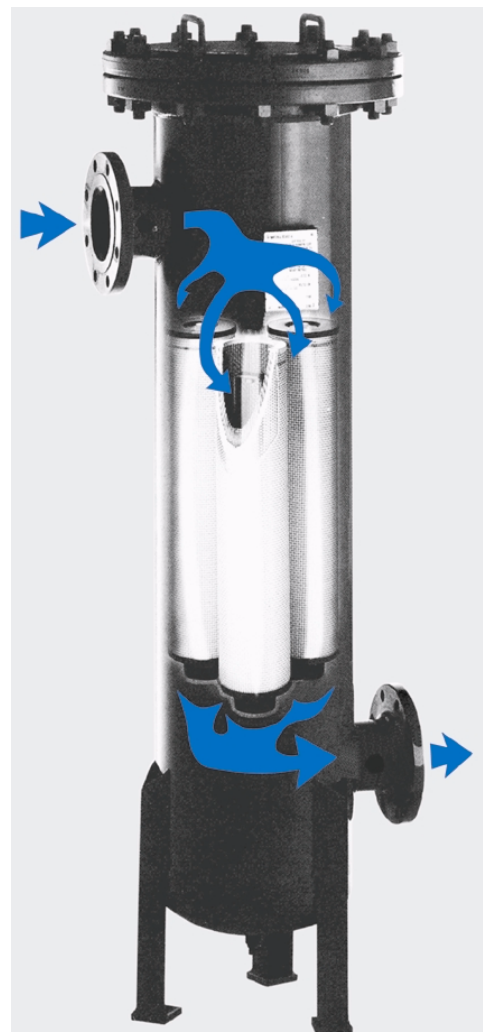
*Sulfur Guard™* by *MicroPure®* purifies CO<sub>2</sub> by removing sulfur compounds, aromatic hydrocarbons, and aldehydes plus other potential contaminants through chemical adsorption. *Sulfur Guard™* has been designed specifically to adsorb the sulfur compounds, Hydrogen Sulfide (H<sub>2</sub>S) and the particularly troublesome Carbonyl Sulfide (COS) that can be unpredictably present in CO<sub>2</sub>. This special design also removes benzene, hexane, volatile oxygenated hydrocarbons, and some aldehydes more efficiently than traditional activated carbon filters. Under typical levels of contamination, the filter cartridges should be changed every six months.

The *Sulfur Guard™* filtration mechanism is irreversible. Its formulation of filter adsorbents has special properties that when combined with activated carbon chemically converts H<sub>2</sub>S and COS into a stable form. This ensures that the adsorbed contaminants will not de-sorb back into the pure CO<sub>2</sub> stream. Extensive testing both in the laboratory and in the field has shown that this technology is extremely effective.\*\*

The adsorption filter is only part of the *Sulfur Guard™* CO<sub>2</sub> purification system. In addition to the sulfur-adsorbing filter stage there are other filter stages that include upstream coalescing filters to remove liquid water and oils and if desired, an additional activated carbon filter can be added upstream of the special *Sulfur Guard™* stage to remove high levels of aromatic hydrocarbons. A final stage particulate filter will remove particles and bacteria down to the 0.01-micron level.

## No other filter offers this combination of features:

- **Large Capacity Filter Element**
  - removes Carbonyl Sulfide and Hydrogen Sulfide
  - also removes aromatic and volatile oxygenated hydrocarbons
  - allows high CO<sub>2</sub> flows at low pressure drop
  - permits a much smaller sized filter when compared to traditional carbon filters
  - filter media is completely contained in filter element - no loose carbon
- **Filter Housing Flexibility and Durability**
  - housing accommodates Coalescing, Activated Carbon, and *Sulfur Guard™* stages
  - all stainless steel, corrosion free design
  - high strength ASME vessel
- **Filter Designed for Easy Maintenance**
  - easy top loading access to filter element for quick change
  - no messy carbon to change
  - lowest total maintenance costs

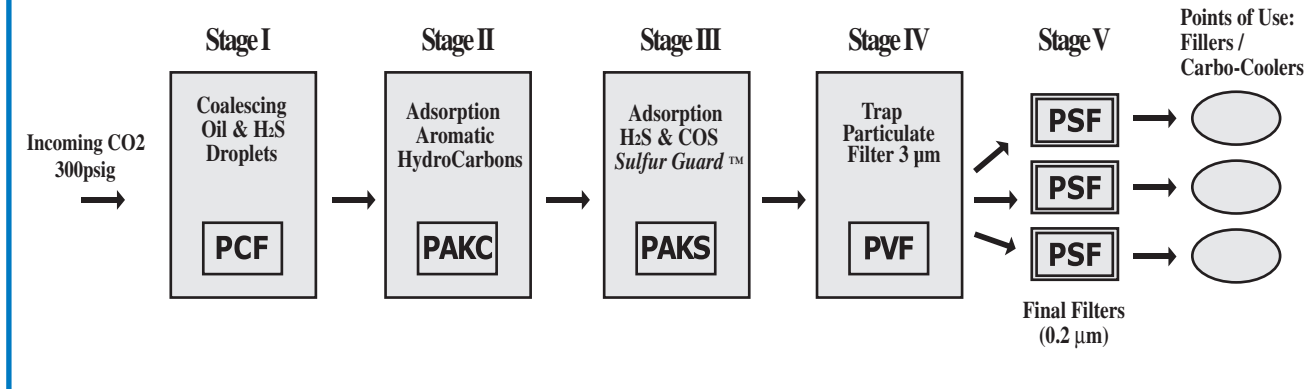


***Sulfur Guard™* High-Flow Filter**

\*ISBT Carbon Dioxide Guidelines, 1999, International Society of Beverage Technologists

\*\*Evaluation of Filtration Material for Removal of COS & H<sub>2</sub>S from CO<sub>2</sub>, 2000, AJE Testing & Research

## Sulfur Guard™ CO<sub>2</sub> Purification System Typical Beverage Plant



### Filter Stages

- Stage I - removes liquid water and oils
- Stage II - removes aromatic hydrocarbons
- Stage III - removes sulfur compounds, oxygenated aromatic hydrocarbons, and aldehydes
- Stage IV - may be needed to remove carbon fines where traditional carbon bed filters are in use
- Stage V - removes ultra fine particles including potentially harmful bacteria

### Technical Data

|                                  |   |
|----------------------------------|---|
| Maximum Operating Pressure       | 325 psig / 22.4 barg                    |
| Maximum Operating Temperature    | 120 F / 49 C°                           |
| Maximum Intermittent Temperature | 250 F / 121 C°                          |
| Maximum Relative Humidity        | 50%                                     |
| Materials of Construction:       |   |
| Filter Housing -                 | 304 SS                                  |
| Filter Element -                 | Galvanized Carbon Steel & Polypropylene |
| Gaskets -                        | Fluoroelastomer                         |

### Typical Applications

- Soft Drink Production Plant
- Beer Production Plant
- Soda Fountain or Beer Retail Points - of - Use

### Ordering Reference

Please refer to order sheet for appropriate filter housing and filter element selection or contact your authorized MicroPure Distributor.

**MICROPURE® FILTRATION**

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