

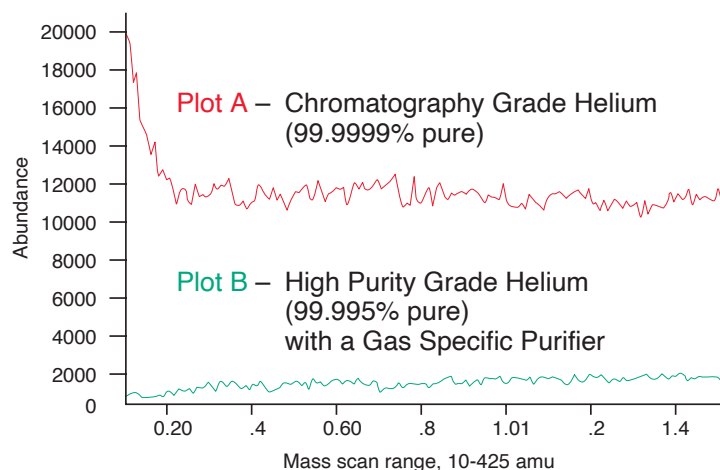
# VICI® METRONICS GAS SPECIFIC PURIFIERS AND GAS TRAPS

## DESCRIPTION

Several types of contaminants are detrimental to GC performance – notably moisture, hydrocarbons, and oxygen.

VICI® Metronics gas-specific purifier modules are designed to be placed in-line with the GC carrier or detector gas supply to remove these contaminants from the analytical gases prior to entering the GC. The modules dramatically reduce contaminant levels and absorb a greater variety of contaminants than other products.

Performance is optimized by a multiple bed format. Each bed functions at a lower contaminant concentration, resulting in a series of contaminant concentration gradients across the length of the module. Advanced materials and design features guarantee that the modules will produce gases that are at least a factor of ten higher than a 99.9999% “chromatography grade” cylinder of gas when the purifier is supplied by a 99.995% cylinder. The cost difference between the two grades of gas will pay for the cost of the purifier several times over during its operating life.



## BENEFITS

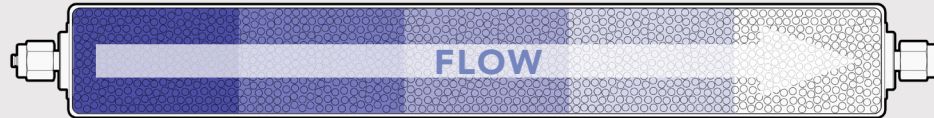
Reduce gas impurities from high PPM to low PPB levels | Decrease baseline noise and increase GC/MS sensitivity | Replace three traps with one purifier

## ▶ OUR SUCCESSIVE BED FORMAT ACHIEVES THE HIGHEST PURITY GAS COMMERCIALLY AVAILABLE

**1** - Two very high capacity hydrocarbon and moisture sorbents at the inlet for effective contaminant removal

**2** - Unique proprietary broad spectrum sorbent material for multiple contaminant removal

**3** - Oxygen scavenging material for both high capacity and high efficiency O<sub>2</sub> removal



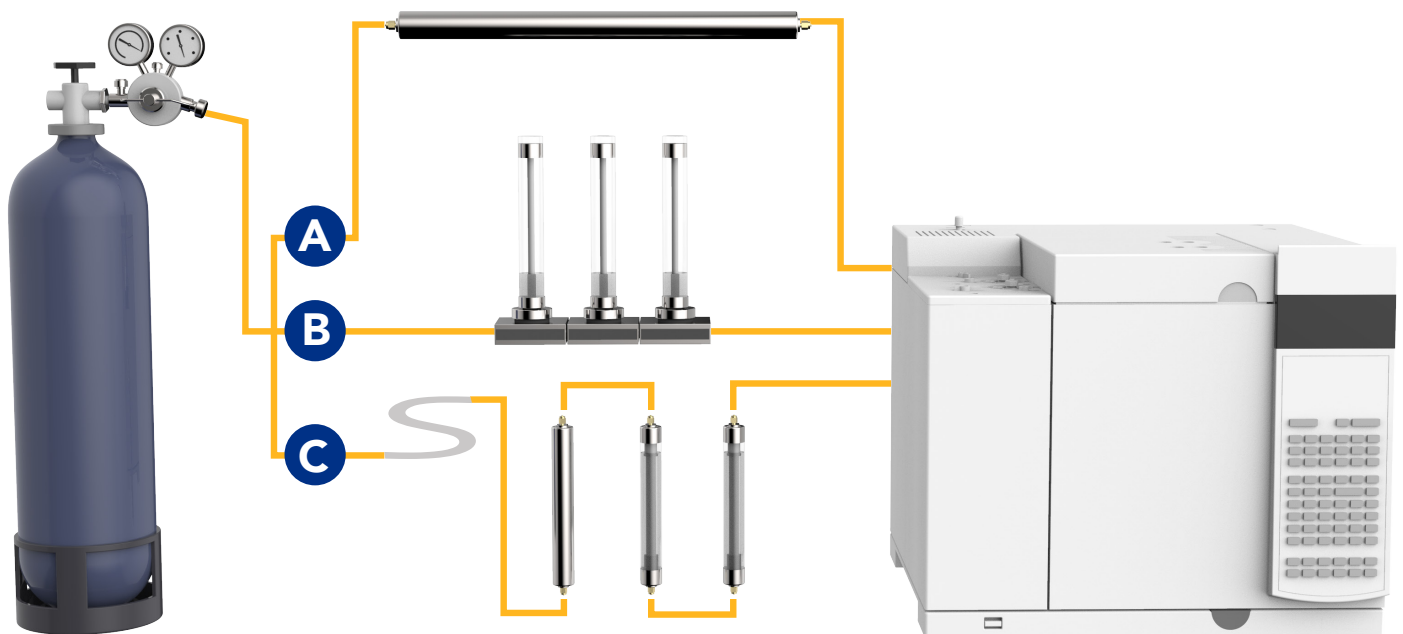
**4** - Multiple bed format to allow several step reduction in contaminants

**5** - Removal of H<sub>2</sub>O, O<sub>2</sub>, halocarbons, hydrocarbons, CO, CO<sub>2</sub>, and sulfur containing compounds with a single purifier

**6** - Very high efficiency sorbents at the outlet for trace contaminant removal

### FITTINGS: THE FEWER THE BETTER

Every connection in your gas delivery system has the potential for leaks; the more fittings you have, the greater the potential. In the illustration below, several gas purification options are depicted:



- A** The VICI Metronics Gas Specific Purifier minimizes the number of fittings. **Total: 2 fittings**
- B** The "Manifold System" has two compression fittings for the system and one organic O-ring seal for each cartridge. **Total: at least 5 fittings**
- C** A typical "Gas Trap" configuration has several components. Before the gas supply even enters the GC, there are at least 4 modules. **Total: at least 8 fittings**

## NEW LIQUID CO<sub>2</sub> PURIFICATION TECHNOLOGIES

In applications such as environmental testing, food analysis, and pigment analysis, the unique solvating properties of CO<sub>2</sub> at its triple point (super-critical stage) are exploited in the extraction of compounds from difficult matrices. Since any contaminants that may be present in the CO<sub>2</sub> will be concentrated in the sample, only ultra-pure CO<sub>2</sub> is acceptable for this type of work.

VICI Metronics has recently developed a new CO<sub>2</sub> purification technology (patent pending) which can take Coleman grade CO<sub>2</sub> and produce SFC/SFE grade CO<sub>2</sub> at the point of use, resulting in significant cost savings. Removal of oxygen, moisture, sulfur compounds, halocarbons, and most hydrocarbons are all accomplished with this unified CO<sub>2</sub> purification technology.

Applications from analytical instrument point of use to process scale are presently being developed in the labs of VICI Metronics. For more information or to discuss the particulars of your application contact VICI Metronics at [info@vici-metronics.com](mailto:info@vici-metronics.com).



### BENEFITS

Produce SFC/SFE grade CO<sub>2</sub> from Coleman grade CO<sub>2</sub> | Remove oxygen, moisture, sulfur compounds, halocarbons, and most hydrocarbons

## SILICON WAFERS CLEANED WITH SUPERCritical CO<sub>2</sub>



Before Purification



After Purification

## SPECIFICATIONS

|  |                                 |
|--|---------------------------------|
| Length   | 12" or 22.5"                    |
| Diameter   | 3.8 cm (1.5 in)                 |
| Maximum operating pressure   | 6895 kPa (1000 psi)             |
| Recommended flow   | 500 mL/min                      |
| Pressure drop, 827 kPa (120 psi) inlet, at a flow of 0 to 500 mL/min | < 0.2 psi                       |
| Compression end fittings   | 1/8" or 1/4"                    |
| Shipping weight  | 750 or 1300 g (1.65 or 3.04 lb) |

| PRODUCT DESCRIPTION              | PRODUCT NUMBER | FITTING | PPB AT OUTLET, BASED ON 50 PPM NOMINAL INLET CONCENTRATION LEVEL |                 |                |                  |                  |       |
|----------------------------------|----------------|---------|--|-----------------|----------------|------------------|------------------|-------|
|                                  |                |         | CO   | CO <sub>2</sub> | O <sub>2</sub> | H <sub>2</sub> O | SULFUR COMPOUNDS | NMHC* |
| Helium purifier                  | P-100-1        | 1/8"    | <1   | <1              | <1             | <1               | <1               | <3    |
|                                  | P-100-2        | 1/4"    |  |                 |                |                  |                  |       |
| Hydrogen purifier                | P-200-1        | 1/8"    | <1   | <1              | <1             | <1               | <1               | <3    |
|                                  | P-200-2        | 1/4"    |  |                 |                |                  |                  |       |
| Nitrogen purifier                | P-300-1        | 1/8"    | <1   | <1              | <1             | <1               | <1               | <3    |
|                                  | P-300-2        | 1/4"    |  |                 |                |                  |                  |       |
| Nitrogen purifier for LC/MS apps | P-310-1        | 1/8"    |  |                 |                | <25              | <25              | <25   |
|                                  | P-310-2        | 1/4"    |  |                 |                |                  |                  |       |
| Purifier for nitrogen generators | P-350-1        | 1/8"    |  |                 |                | <25              | <25              | <25   |
|                                  | P-350-2        | 1/4"    |  |                 |                |                  |                  |       |
| Air purifier                     | P-400-1        | 1/8"    |  |                 |                | <1               |                  | <3    |
|                                  | P-400-2        | 1/4"    |  |                 |                |                  |                  |       |
| Moisture trap                    | T-100-1        | 1/8"    |  |                 |                | <1               |                  |       |
|                                  | T-100-2        | 1/4"    |  |                 |                |                  |                  |       |
| Hydrocarbon trap                 | T-200-1        | 1/8"    |  |                 |                |                  |                  | <3    |
|                                  | T-200-2        | 1/4"    |  |                 |                |                  |                  |       |
| Oxygen trap                      | T-300-1        | 1/8"    |  |                 | <1             | <1               |                  |       |
|                                  | T-300-2        | 1/4"    |  |                 |                |                  |                  |       |
| Sulfur trap 12" L                | T-400-1        | 1/8"    |  |                 |                | <1               | <1               |       |
|                                  | T-400-2        | 1/4"    |  |                 |                |                  |                  |       |
| Sulfur trap 22.5" L              | T-401-1        | 1/8"    |  |                 |                | <1               | <1               |       |
|                                  | T-401-2        | 1/4"    |  |                 |                |                  |                  |       |
| Methane purifier (12" L)         | P-500-1        | 1/8"    | <1   | <1              | <1             | <1               | <1               | <3    |
|                                  | P-500-2        | 1/4"    |  |                 |                |                  |                  |       |
| Carbon dioxide                   | P-600-1        | 1/8"    | <1   |                 | <1             | <1               | <1               | <3    |
|                                  | P-600-2        | 1/4"    |  |                 |                |                  |                  |       |

\*Non-methane hydrocarbons