NANOCHEM® PuriFilter® Gas Purifier

Features and Benefits
- Purification for point-of-use applications
- **Highest Lifetimes**
- **Best Impurity Removal Efficiencies**
  - Removes critical contaminants to sub parts-per-billion level (< 0.1 ppb in inert gases)
- Patented **built-in poppet valves** at purifier inlet and outlet
  - Reduces / eliminates media exposure to atmospheric air during purifier installation
  - Reduces operator exposure to residual process gas during purifier removal
- Enhances manufacturing process economy and improves equipment performance
- Provides consistently high purity gas under fluctuating inlet impurity conditions
- Improves component lifetime and reduces particle generation by removing moisture and volatile metals from corrosive gases
- Compact size for ease of installation
- Does not require heating or cooling
- Low overall cost of ownership

Specifications
- Flow rates up to 3 slpm (0.2 NM/hr)
- All wetted parts, Type 316L stainless steel with Nickel 200 button gasket
- 0.003 µm PALL Ultramet-L® stainless steel particle filter with 99.9999999% retention
- Outer diameter of 1.5 inches (38.1 mm) and total length of 3.31 inches (84.07 mm) after installation of custom gaskets
- Internal surface finish < 10 µin Rₐ
- Maximum allowable working pressure of 1000 psig (7 MPa)
- Maximum operating temperature 70°C

Connections
- Male inlet and outlet ¼ inch, VCR®-compatible face seal fittings

Overview
The NANOCHEM® PuriFilter® is a compact purifier/filter combination designed for placement internal to the process tool, delivering the gas purity required in a sub-micron fabrication environment.

The PuriFilter® has a patented valve-in-gland seal that enables integrity of the media bed when the PuriFilter® is installed. The valve also reduces leakage of any residual hazardous gases when the purifier is removed.

PuriFilters® provide insurance against virtually all variables that cause contamination, including gas impurities introduced through the gas jungle. The PuriFilter® is a direct replacement for in-line particle filters and a typical location for this product would be directly before the process chamber or mass flow controller.
**NANOCHEM® PURIFILTER® PURIFIERS**

*Mechanical dimension for PuriFilter®*

*All dimensions are in inches (mm)*

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**Gas Type** | **ImpuritiesRemoved**
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Nitrogen (N₂), Argon (Ar), other inerts | < 0.1 ppb H₂O, O₂, CO₂ LDL<br> < 1 ppb CO*<br> < 0.1 ppb NMHC LDL<br> NOₓ, SOₓ, H₂S
Ammonia (NH₃) | < 0.1 ppb H₂O, O₂, CO₂ in inert gas LDL<br> < 45 ppb H₂O in ammonia LDL
Silane (SiH₄) | < 0.1 ppb H₂O, O₂, CO₂ LDL<br> < 1 ppb CO*<br> Chlorosilanes, disilane, siloxanes, arsine, phosphine
Hydrogen (H₂), Methane (CH₄), Ethane (C₂H₆), other HC | < 0.1 ppb H₂O, O₂, CO₂ LDL<br> < 1 ppb CO*<br> NOₓ, SOₓ, H₂S
Sulfur Hexafluoride (SF₆), Carbon Tetrafluoride (CF₄), other fluorocarbons | < 0.1 ppb H₂O, O₂, CO₂ in inert gas LDL<br> < 10 ppb O₂, H₂O in sulfur hexafluoride LDL
Oxygen (O₂), Carbon Dioxide (CO₂), Nitrous Oxide (N₂O) | < 10 ppb H₂O
Carbon Monoxide (CO) | Metal Carbonyls: Fe, Ni
Corrosives (HCl, HBr, Cl₂, SiHCl₃, SiHCl₄, BCl₃, HF) | < 1 ppb H₂O in inert gas<br> < 3 ppm H₂O in HF<br> < 100 ppb H₂O in HBr LDL<br> < 150 ppb H₂O in HCl<br> Volatile Metals: Fe, Mo, Cr, Ni, Mn, Ti

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*LDL – Lower Detection Limit by State-of-the-Art Analytical Instrumentation<br>NMHC – Non-methane Hydrocarbons<br>*NOTE: CO is removed efficiently by OMX & OMX-Plus™ media at low flow rates (recommend 1/10 of normal flow rate)

For a detailed list of purification media and impurities removed, refer to the Purification Media Table in NANOCHEM® Purification Solutions Brochure.