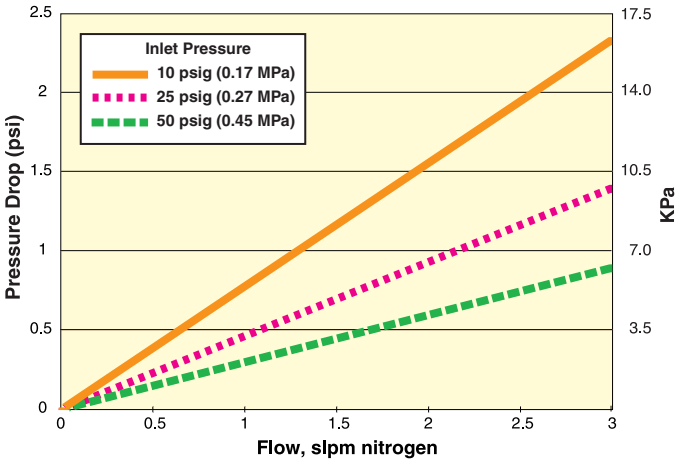
NANOCHEM® PuriFilter® Gas Purifier

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^3/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 R_a
- Maximum allowable working pressure of 1000 psig (7 MPa)
- Maximum operating temperature 70°C

Connections

- Male inlet and outlet 1/4 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.

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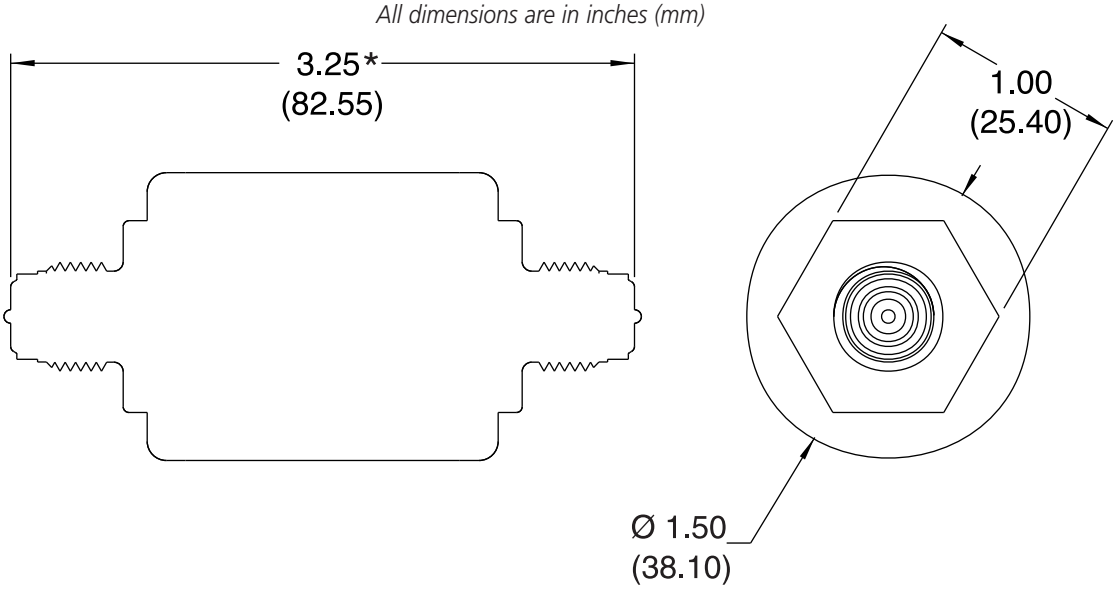
NANOCHEM® PURIFILTER® PURIFIERS

Mechanical dimension for PuriFilter®

All dimensions are in inches (mm)



*Note: Dimension will be 3.31" (84.07 mm) after installation of custom button gaskets shipped with PuriFilter®.

Gas Type	Impurities Removed
Nitrogen (N_2), Argon (Ar), other inerts	< 0.1 ppb H_2O, O_2, CO_2 LDL < 1 ppb CO* < 0.1 ppb NMHC LDL NO_x, SO_x, H_2S
Ammonia (NH_3)	< 0.1 ppb H_2O, O_2, CO_2 in inert gas LDL < 45 ppb H_2O in ammonia LDL
Silane (SiH_4)	< 0.1 ppb H_2O, O_2, CO_2 LDL < 1 ppb CO* Chlorosilanes, disilane, siloxanes, arsine, phosphine
Hydrogen (H_2), Methane CH_4), Ethane (C_2H_6), other HC	< 0.1 ppb H_2O, O_2, CO_2 LDL < 1 ppb CO* NO_x, SO_x, H_2S
Sulfur Hexafluoride (SF_6), Carbon Tetrafluoride (CF_4), other fluorocarbons	< 0.1 ppb H_2O, O_2, CO_2 in inert gas LDL < 10 ppb O_2, H_2O in sulfur hexafluoride LDL
Oxygen (O_2), Carbon Dioxide (CO_2), Nitrous Oxide (N_2O)	< 10 ppb H_2O
Carbon Monoxide (CO)	Metal Carbonyls: Fe, Ni
Corrosives (HCl, HBr, Cl_2, SiH_2Cl_2, $SiHCl_3$, BCl_3, HF)	< 1 ppb H_2O in inert gas < 3 ppm H_2O in HF < 100 ppb H_2O in HBr LDL < 150 ppb H_2O in HCl Volatile Metals: Fe, Mo, Cr, Ni, Mn, Ti

LDL – Lower Detection Limit by State-of-the-Art Analytical Instrumentation
NMHC – Non-methane Hydrocarbons
*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.

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Printed in USA PB023 R12/2021