

Gaskleen® II Purifier



Description

A unique combination of Pall's leading edge AresKleen™ purification material combined with Ultramet-L® stainless steel filter media creating the industry's most advanced true point-of-use purifier.

The Gaskleen® II Purifier assembly is designed to remove contamination from most process gases. Sub ppb level purification is achieved at designed flow rates of up to 3 slpm while providing 0.003 µm filtration.

- Controls and reduces impurities such as O₂, H₂O, CO₂, CO, NMHC, Ni(CO)₄ and Fe(CO)₅
- One-for-one dimensional replacement of conventional in-line particle filter assemblies
- Assembly hardware is made of 316 L stainless steel
- High efficiency diffusion barrier ensures integrity of reactive material during installation
- Superior pressure drop characteristics
- Wide variety of gases purified
- 100% helium leak and pressure tested
- Compact size
- Not orientation sensitive¹
- Does not generate hazardous waste when used in non-hazardous gas service
- Will not release hydrocarbons
- No detectable metal contribution above background in HCl gas with HCLP material
- No detectable metal contribution above background in HBr gas with HBRP material

Specifications

Materials

- Electropolished 316 L stainless steel components
- ≤ 10 µin / 0.25 µm R_a internal surface finish

Particle Removal Efficiency Rating

- 1x10⁹ retention of particles ≥ 0.003 µm up to 5 slpm

Connections

- ¼" Gasket Seal, Male/Male (VCR² compatible)

Operating Conditions

- Maximum Operating Pressure: 1000 psig / 69 bar
- Maximum operating temperature: 100°C / 212°F (INP, SIP, FCP, SF6P), 40°C / 104°F (NH3P, GEH4P, OXP, CLXP, HCLP, HBRP, CDAP)
- EU Pressure Equipment Directive: Assemblies have been evaluated and are CE marked per the European Union's Pressure Equipment Directive 97/23/EC

Design Flow Rate

- 0-3 slpm @ 15 psig / 1 bar
- Higher intermittent flow rates of up to 5 slpm can be accommodated with reduced lifetime³

Packaging

- Double bagged
- Outer bag: aluminized mylar⁴
- Inner bag: polyethylene
- End fittings capped with metal seals
- Product packaged in an argon environment

Nominal Dimensions

- Length: 3.31" / 84 mm
- Diameter: 1.36" / 34.5 mm

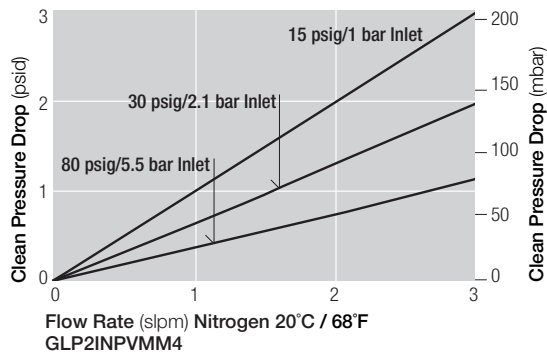
¹ Vertical installation recommended for NH3P.

² VCR is a trademark of Swagelok Co.

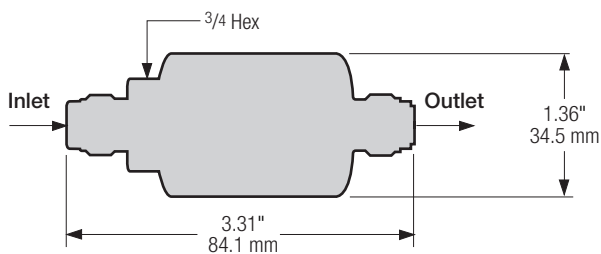
³ Contact the Pall Microelectronics Group for further information.

⁴ Mylar is a registered trademark of Dupont Teijin Films.

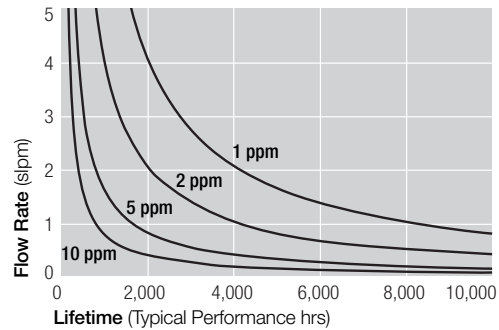
Pressure Drop vs. Gas Flow Rate



Nominal Dimensions

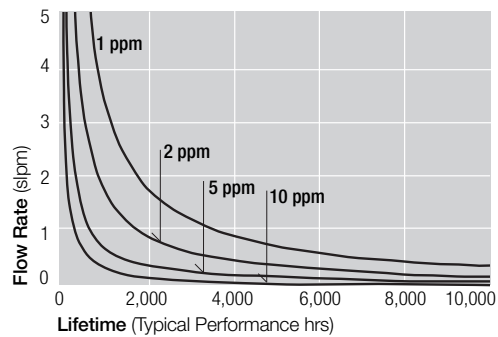


Lifetime Calculations



Pall AresKleen Purification Material: Inert Gas Service Gaskleen II Purifier Assembly, Part # GLP2INPVMM4

Inlet Pressure: 30 psig (2.1 bar) Contaminant Challenge as H₂O



Pall AresKleen Purification Material: Inert Gas Service Gaskleen II Purifier Assembly, Part # GLP2INPVMM4

Inlet Pressure: 30 psig (2.1 bar) Contaminant Challenge as O₂

Part Numbers / Ordering Information

Part Number	Specific Gas	Effluent Purity Specifications
GLP2INPVMM4	<i>Inert Gases:</i> Nitrogen, Argon, Helium, Xenon, Krypton, Neon	< 1 ppb H ₂ O, O ₂ , CO ₂ , CO
GLP2SIPVMM4	<i>Flammable Gases:</i> Silane, Hydrogen, Methane, Ethane, Cyclopropane, Propane, Dimethyl Ether Carbon Monoxide	< 1 ppb H ₂ O, CO ₂ , O ₂ , CO < 1 ppb H ₂ O, O ₂ , CO ₂ , Ni(CO) ₄ , Fe(CO) ₅
GLP2NH3PVMM4	Ammonia	< 1 ppb H ₂ O, CO ₂ , O ₂ , CO
GLP2FCPVMM4	Fluoromethane, Difluoromethane, Trifluoromethane, Tetrafluoroethane, Pentafluoroethane, Heptafluoropropane, Carbon Tetrafluoride, Perfluoropropane, Perfluorocyclobutane, Hexafluoroethane	< 1 ppb H ₂ O, CO ₂ , O ₂
GLP2GEH4PVMM4	Germane	< 1 ppb H ₂ O, CO ₂ , O ₂ , CO
GLP2SF6PVMM4	Sulfur Hexafluoride	< 1 ppb H ₂ O, CO ₂ , O ₂ , CO
GLP2OXPVMM4	<i>Oxygenated Gases:</i> Carbon Dioxide, Oxygen, Nitrous Oxide	< 10 ppb H ₂ O
GLP2CLXPVMM4	<i>Chlorinated Gases:</i> Boron Trichloride, Chlorine, Trichlorosilane, Dichlorosilane	< 100 ppb H ₂ O
GLP2HCLPVMM4	Hydrogen Chloride	< 15 ppb H ₂ O
GLP2HBRPVMM4	Hydrogen Bromide	< 50 ppb H ₂ O
GLP2CDAPVMM4	Photolithography clean dry air	< 1 ppb H ₂ O, < 300 ppt organics (as C ₄), < 10 ppt acid gases (as SO ₂), < 15 ppt basic gases (as NH ₃), < 1 ppt refractory compounds (as HMDSO)

Technical Information

Impurity Removal as Tested in Specific Gases

Specific Gas	Impurity Removal Efficiency
<i>Inert Gases:</i> Nitrogen, Argon, Helium, Xenon, Krypton, Neon	< 1 ppb H ₂ O, CO ₂ , O ₂ , and CO as tested in argon and nitrogen using APIMS analyzer
<i>Flammable Gases:</i> Silane, Hydrogen, Methane, Ethane, Cyclopropane, Propane, Dimethyl Ether	< 1 ppb H ₂ O, CO ₂ , O ₂ , and CO as tested in argon, nitrogen and hydrogen using APIMS analyzer < 1 ppb H ₂ O as tested in carbon monoxide using trace moisture analyzer H ₂ O and siloxanes removed to trace levels as tested in silane using APIMS
Carbon Monoxide	< 1 ppb Ni(CO) ₄ , and < 1 ppb Fe(CO) ₅ as tested in carbon monoxide using GC-ECD analyzer
Ammonia	< 1 ppb H ₂ O, CO ₂ , and O ₂ as tested in argon using APIMS < 12 ppb H ₂ O as tested in ammonia using NIR-TDLAS Removal of O ₂ and CO ₂ to trace levels as tested in ammonia using GC-DID
Fluoromethane, Difluoromethane, Trifluoromethane, Tetrafluoroethane, Pentafluoroethane, Heptafluoropropane, Carbon Tetrafluoride, Perfluoropropane, Perfluorocyclobutane, Hexafluoroethane	< 1 ppb H ₂ O, CO ₂ , O ₂ , and CO as tested in argon and nitrogen using APIMS analyzer < 1 ppb O ₂ as tested in trifluoromethane using trace oxygen analyzer < 10 ppb H ₂ O as tested in trifluoromethane using trace moisture analyzer and FTIR
Germane	< 1 ppb H ₂ O, CO ₂ , O ₂ , and CO as tested in argon and nitrogen using APIMS analyzer
Sulfur Hexafluoride	< 1 ppb H ₂ O, CO ₂ , and O ₂ as tested in argon using APIMS
<i>Oxygenated Gases:</i> Carbon Dioxide, Oxygen, Nitrous Oxide, Clean Dry Air	< 10 ppb H ₂ O < 1 ppb H ₂ O, and CO ₂ , as tested in argon using APIMS analyzer
<i>Chlorinated Gases:</i> Boron Trichloride, Chlorine, Trichlorosilane, Dichlorosilane	< 100 ppb H ₂ O < 1 ppb H ₂ O, and CO ₂ , as tested in argon using APIMS analyzer
Hydrogen chloride	< 15 ppb H ₂ O as tested in hydrogen chloride using CRDS < 1 ppb H ₂ O as tested in argon using APIMS analyzer
Hydrogen Bromide	< 50 ppb H ₂ O as tested in hydrogen bromide using CRDS < 1 ppb H ₂ O as tested in argon using APIMS analyzer
Photolithography clean dry air	< 1 ppb H ₂ O as tested in argon using APIMS analyzer < 300 ppt C ₄ H ₈ as tested in argon using APIMS Analyzer < 10 ppt SO ₂ as tested in nitrogen using ion chromatograph < 15 ppt NH ₃ as tested in nitrogen using ion chromatograph < 1 ppt HMDSO as tested in argon using APIMS analyzer and baseline subtraction

Unit conversion: 1 bar = 100 kilopascals



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