



Mini Gaskleen® Gas Purifier



Description

Pall's Mini Gaskleen gas purifier is a true point-of use purifier. A unique combination of Pall's cutting-edge AresKleen™ purification material and Ultramet-L® stainless steel filter media, it is designed to remove contamination from many process gases. The purifier is capable of sub ppb level purification at designed flow rates of up to 1 slpm, while providing 3 nm 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
- Purifies a wide variety of gases
- 100% helium leak and pressure tested
- Compact size
- Not orientation sensitive
- 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 VAR PLUS stainless steel components
- ≤ 0.25 μm / 10 μin R_a internal surface finish

Particle Removal Efficiency Rating

- 1x10⁹ retention of particles ≥ 3 nm up to 2 slpm

Connections

- 1/4 in Gasket seal, male / male (VCR¹ compatible)

Operating Conditions

- Maximum operating pressure: 20.7 MPa / 3,000 psig
- Maximum operating temperature: 100°C / 212°F (INP, SIP, FCP, SF6P), 40°C / 104°F (GEH4P, OXP, CLXP, HCLP, HBRP, CDAP)
- EU pressure equipment directive: Assemblies have been evaluated and designed using SEP per the European Union's Pressure Equipment Directive 2014/68/EU and are not CE marked

Design Flow Rate

- 0-1 slpm @ 0.1 MPa / 15 psig
- Higher intermittent flow rates of up to 2 slpm can be accommodated, with reduced lifetime²

Packaging

- Double bagged
- Outer bag: aluminized Mylar³
- Inner bag: polyethylene
- End fittings capped with metal seals
- Product packaged in an argon environment

Nominal Dimensions

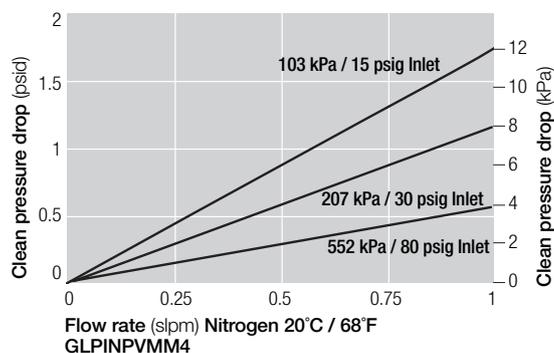
- Length: 84 mm / 3.31 in
- Diameter: 21.3 mm / 0.84 in

¹ VCR is a trademark of Swagelok Company

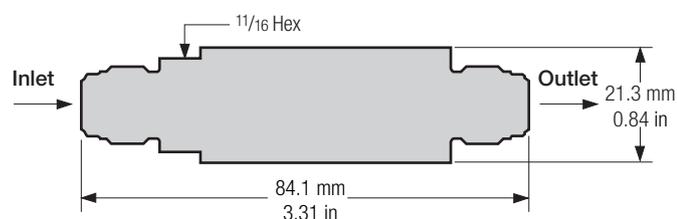
² Contact the Pall Microelectronics Group for further information.

³ Mylar is a registered trademark of Dupont Teijin Films.

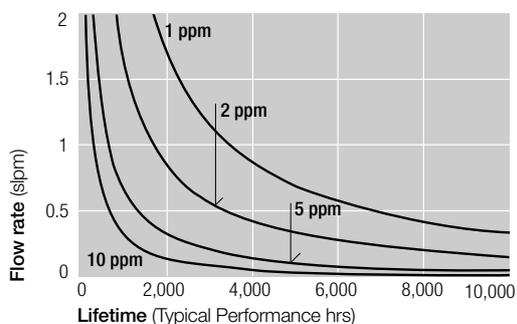
Pressure Drop vs. Gas Flow Rate



Nominal Dimensions

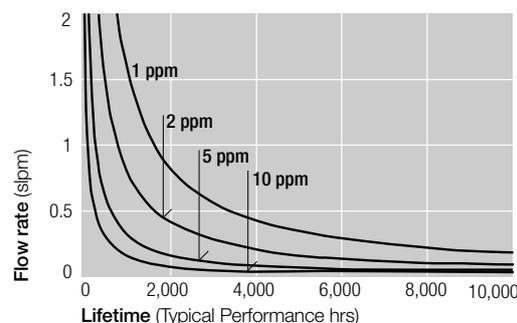


Lifetime Calculations



Pall AresKleen purification material: Inert gas service
Mini Gaskleen purifier assembly, part # GLPINPVMM4

Inlet pressure: 207 kPa (30 psig) contaminant challenge as H₂O



Pall AresKleen purification material: Inert gas service
Mini-Gaskleen purifier assembly, part # GLPINPVMM4

Inlet pressure: 207 kPa (30 psig) contaminant challenge as O₂

Part Numbers / Ordering Information

Part Number	Specific Gas	Effluent Purity Specifications
GLPINPVMM4	Inert gases: Nitrogen, argon, helium, xenon, krypton, neon	< 1 ppb H ₂ O, O ₂ , CO ₂ , CO
GLPSIPVMM4	Flammable gases: Silane, hydrogen, methane, ethane, cyclopropane, propane, dimethyl ether	< 1 ppb H ₂ O, CO ₂ , O ₂ , CO
	Carbon monoxide	< 1 ppb H ₂ O, O ₂ , CO ₂ , Ni(CO) ₄ , Fe(CO) ₅
GLPFCPVMM4	Fluoromethane, difluoromethane, trifluoromethane, tetrafluoroethane, pentafluoroethane, heptafluoropropane, carbon tetrafluoride, perfluoropropane, perfluorocyclobutane, hexafluoroethane	< 1 ppb H ₂ O, CO ₂ , O ₂
GLPGEH4PVMM4	Germane	< 1 ppb H ₂ O, CO ₂ , O ₂ , CO
GLPSF6PVMM4	Sulfur hexafluoride	< 1 ppb H ₂ O, CO ₂ , O ₂ , CO
GLPOXPVMM4	Oxygenated gases: Carbon dioxide, oxygen, nitrous oxide	< 10 ppb H ₂ O
GLPCLXPVMM4	Chlorinated gases: Boron trichloride, chlorine, trichlorosilane, dichlorosilane	< 100 ppb H ₂ O
GLPHCLPVMM4	Hydrogen chloride	< 15 ppb H ₂ O
GLPHBRPVMM4	Hydrogen bromide	< 50 ppb H ₂ O
GLPCDAPVMM4	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)

Unit conversion: 1 bar = 100 kilopascals

Technical Information

Impurity Removal as Tested in Specific Gases

Specific Gas	Impurity Removal Efficiency
Inert gases: 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
Flammable gases: 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
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
Oxygenated gases: 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
Chlorinated gases: 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