Gaskleen® 1⅛" C-Seal Gas Purifier

Description

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

The Gaskleen top mount purifier assembly is designed to remove homogeneous contamination from process gases to sub ppb levels, while providing 3 nm filtration.

- Controls and reduces impurities such as O_2, H_2O, CO_2, CO, NMHC, $Ni(CO)_4$ and $Fe(CO)_5$
- Assembly hardware is made of 316 L stainless steel
- High efficiency diffusion barrier insures integrity of reactive material until in service and upon removal
- Superior pressure drop characteristics
- Wide variety of gasses purified
- 100% helium leak and pressure tested
- Will not release hydrocarbons
- Not orientation sensitive
- 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 process wetted internal components
- ≤ 0.13 µm / 5 µin R_a internal surface finish

Particle Removal Efficiency Rating

- 1 x 10^9 retention of particles ≥ 3 nm up to 15 slpm

Connections

- C-seal, 1⅛˝ Interface

Operating Conditions

- Maximum operating pressure: 3.5 MPa @ 100°C / 500 psig @ 212°F
- 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

- 0-3 slpm @ 0.21 MPa / 30 psig
- Intermittent flow rates up to 15 slpm can be accommodated[1]

Packaging

- Double bagged
  Outer bag: aluminized mylar[2]
  Inner bag: polyethylene
- Product packaged in argon environment

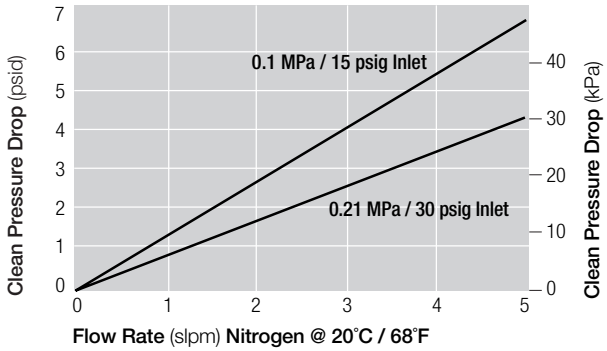
Nominal Dimensions

- Height: 76.2 mm / 3.0 in
- Base width: 28 mm /1.125 in
- Shell diameter: 28 mm / 1.125 in

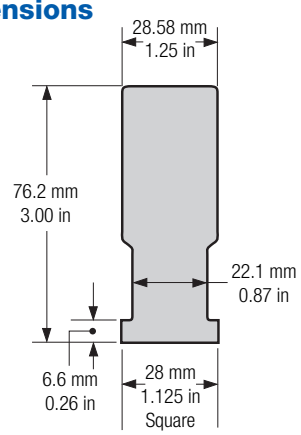
[1] Contact Pall Microelectronics for further information.

[2] Mylar is a registered trademark of Dupont Teijin Films, US Limited.

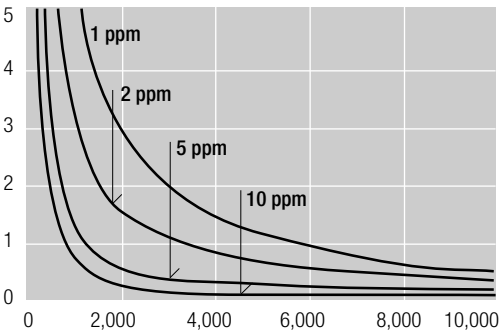
Pressure Drop vs. Gas Flow Rate



Nominal Dimensions

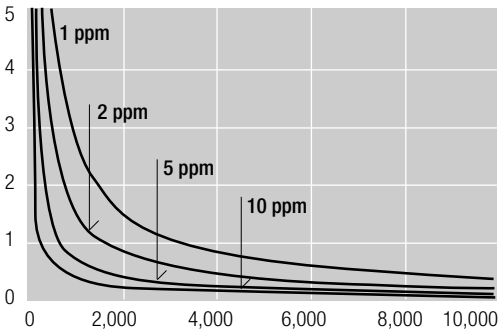


Lifetime Calculations



Pall AresKleen purification material: Inert gas service
Gaskleen 1.125 in C-Seal Base Top Mount purifier assembly, Part # GTMP3INPCC4

Inlet pressure: 0.21 MPa (30 psig) contaminant challenge as H_2O



Pall AresKleen purification material: Inert gas service
Gaskleen 1.125 in C-Seal Base Top Mount purifier assembly, Part # GTMP3INPCC4

Inlet Pressure: 0.21 MPa (30 psig) contaminant challenge as O_2

Part Numbers / Ordering Information

Part Number	Specific Gas	Effluent Purity Specifications
GTMP3INPCC4	Inert gases: Nitrogen, argon, helium, xenon, krypton, neon	< 1 ppb H_2O, CO_2, O_2, CO
GTMP3SIPCC4	Flammable gases: Silane, hydrogen, methane, ethane, cyclopropane, propane, dimethyl ether	< 1 ppb H_2O, CO_2, O_2, CO
	Carbon monoxide	< 1 ppb H_2O, O_2, CO_2, $Ni(CO)_4$, $Fe(CO)_5$
GTMP3FCPCC4	Fluoromethane, difluoromethane, trifluoromethane, tetrafluoroethane, pentafluoroethane, heptafluoropropane, carbon tetrafluoride, perfluoropropane, perfluorocyclobutane, hexafluoroethane	< 1 ppb H_2O, CO_2, O_2
GTMP3GEH4PCC4	Germane	< 1 ppb H_2O, CO_2, O_2, CO
GTMP3SF6PCC4	Sulfur hexafluoride	< 1 ppb H_2O, CO_2, O_2, CO
GTMP3OXPCC4	Oxygenated gases: Carbon dioxide, oxygen, nitrous oxide	< 10 ppb H_2O
GTMP3CLXPCC4	Chlorinated gases: Boron trichloride, chlorine, trichlorosilane, dichlorosilane	< 100 ppb H_2O
GTMP3HCLPCC4	Hydrogen chloride	< 15 ppb H_2O
GTMP3HBRPCC4	Hydrogen bromide	< 50 ppb H_2O
GTMP3CDAPCC4	Photolithography clean dry air	< 1 ppb H_2O, < 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_2O, 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_2O, CO_2, O_2, and CO as tested in argon, nitrogen and hydrogen using APIMS analyzer < 1 ppb H_2O as tested in carbon monoxide using trace moisture analyzer H_2O 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_2O, 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_2O as tested in trifluoromethane using trace moisture analyzer and FTIR
Germane	< 1 ppb H_2O, CO_2, O_2, and CO as tested in argon and nitrogen using APIMS analyzer
Sulfur hexafluoride	< 1 ppb H_2O, CO_2, and O_2 as tested in argon using APIMS
Oxygenated gases: Carbon dioxide, oxygen, nitrous oxide, clean dry air	< 10 ppb H_2O < 1 ppb H_2O, and CO_2, as tested in argon using APIMS analyzer
Chlorinated gases: Boron trichloride, chlorine, trichlorosilane, dichlorosilane	< 100 ppb H_2O < 1 ppb H_2O, and CO_2, as tested in argon using APIMS analyzer
Hydrogen chloride	< 15 ppb H_2O as tested in hydrogen chloride using CRDS < 1 ppb H_2O as tested in argon using APIMS analyzer
Hydrogen bromide	< 50 ppb H_2O as tested in hydrogen bromide using CRDS < 1 ppb H_2O as tested in argon using APIMS analyzer
Photolithography clean dry air	< 1 ppb H_2O as tested in argon using APIMS analyzer < 300 ppt C_4H_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: 100 kilopascals = 1 bar