

# Gaskleen® 1 1/8" 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<sub>2</sub>, H<sub>2</sub>O, CO<sub>2</sub>, CO, NMHC, Ni(CO)<sub>4</sub> and Fe(CO)<sub>5</sub>
- 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 316L stainless steel process wetted internal components
- ≤ 0.13 μm / 5 μin R<sub>a</sub> internal surface finish

### Particle Removal Efficiency Rating

- 1 x 10<sup>9</sup> retention of particles ≥ 3 nm up to 15 slpm

### Connections

- C-seal, 1 1/8" 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 (NH3P, 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 97/23/EC 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<sup>1</sup>

### Packaging

- Double bagged  
Outer bag: aluminized mylar<sup>2</sup>  
Inner bag: polyethylene
- Product packaged in argon environment

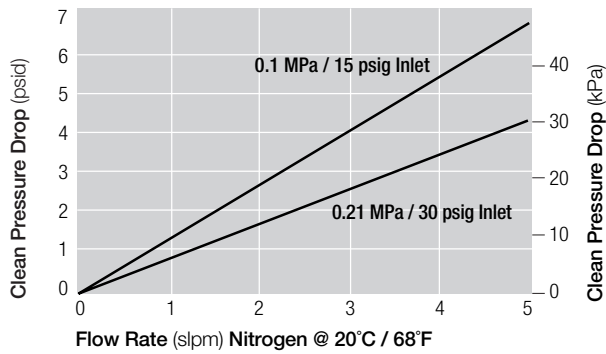
### Nominal Dimensions

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

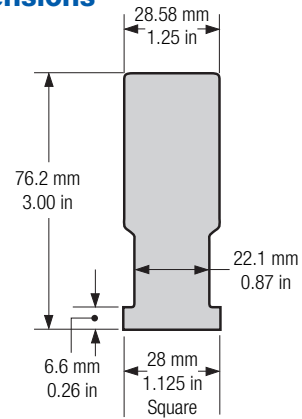
<sup>1</sup> Contact Pall Microelectronics for further information.

<sup>2</sup> Mylar is a registered trademark of Dupont Teijin Films, US Limited.

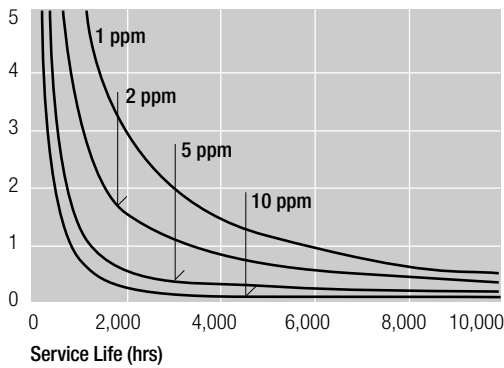
## Pressure Drop vs. Gas Flow Rate



## Nominal Dimensions

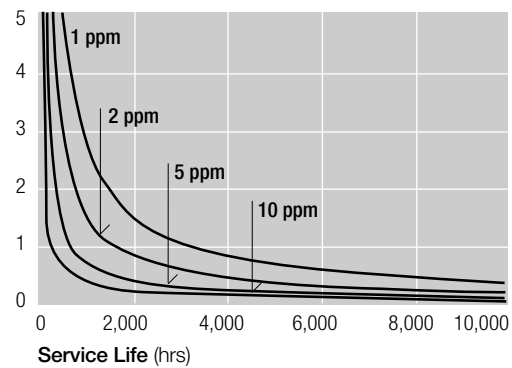


## Lifetime Calculations



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<sub>2</sub>O



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<sub>2</sub>

## Part Numbers / Ordering Information

Part Number	Specific Gas	Effluent Purity Specifications
GTMP3INPCC4	Inert gases: Nitrogen, argon, helium, xenon, krypton, neon	< 1 ppb H <sub>2</sub> O, CO <sub>2</sub> , O <sub>2</sub> , CO
GTMP3SIPCC4	Flammable gases: Silane, hydrogen, methane, ethane, cyclopropane, propane, dimethyl ether	< 1 ppb H <sub>2</sub> O, CO <sub>2</sub> , O <sub>2</sub> , CO
	Carbon monoxide	< 1 ppb H <sub>2</sub> O, O <sub>2</sub> , CO <sub>2</sub> , Ni(CO) <sub>4</sub> , Fe(CO) <sub>5</sub>
GTMP3NH3PCC4	Ammonia	< 1 ppb H <sub>2</sub> O, CO <sub>2</sub> , O <sub>2</sub> , CO
GTMP3FCPCC4	Fluoromethane, difluoromethane, trifluoromethane, tetrafluoroethane, pentafluoroethane, heptafluoropropane, carbon tetrafluoride, perfluoropropane, perfluorocyclobutane, hexafluoroethane	< 1 ppb H <sub>2</sub> O, CO <sub>2</sub> , O <sub>2</sub>
GTMP3GEH4PCC4	Germane	< 1 ppb H <sub>2</sub> O, CO <sub>2</sub> , O <sub>2</sub> , CO
GTMP3SF6PCC4	Sulfur hexafluoride	< 1 ppb H <sub>2</sub> O, CO <sub>2</sub> , O <sub>2</sub> , CO
GTMP3OXPC4	Oxygenated gases: Carbon dioxide, oxygen, nitrous oxide	< 10 ppb H <sub>2</sub> O
GTMP3CLXPCC4	Chlorinated gases: Boron trichloride, chlorine, trichlorosilane, dichlorosilane	< 100 ppb H <sub>2</sub> O
GTMP3HCLPCC4	Hydrogen chloride	< 15 ppb H <sub>2</sub> O
GTMP3HBRPCC4	Hydrogen bromide	< 50 ppb H <sub>2</sub> O
GTMP3CDAPCC4	Photolithography clean dry air	< 1 ppb H <sub>2</sub> O, < 300 ppt organics (as C <sub>4</sub> ), < 10 ppt acid gases (as SO <sub>2</sub> ), < 15 ppt basic gases (as NH <sub>3</sub> ), < 1 ppt refractory compounds (as HMDSO)

## 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 <sub>2</sub> O, CO <sub>2</sub> , O <sub>2</sub> , and CO as tested in argon and nitrogen using APIMS analyzer
Flammable gases: Silane, hydrogen, methane, ethane, cyclopropane, propane, dimethyl ether	< 1 ppb H <sub>2</sub> O, CO <sub>2</sub> , O <sub>2</sub> , and CO as tested in argon, nitrogen and hydrogen using APIMS analyzer < 1 ppb H <sub>2</sub> O as tested in carbon monoxide using trace moisture analyzer H <sub>2</sub> O and siloxanes removed to trace levels as tested in silane using APIMS
Carbon monoxide	< 1 ppb Ni(CO) <sub>4</sub> , and < 1 ppb Fe(CO) <sub>5</sub> as tested in carbon monoxide using GC-ECD analyzer
Ammonia	< 1 ppb H <sub>2</sub> O, CO <sub>2</sub> , and O <sub>2</sub> as tested in argon using APIMS < 12 ppb H <sub>2</sub> O as tested in ammonia using NIR-TDLAS Removal of O <sub>2</sub> and CO <sub>2</sub> to trace levels as tested in ammonia using GC-DID
Fluoromethane, difluoromethane, trifluoromethane, tetrafluoroethane, pentafluoroethane, heptafluoropropane, carbon tetrafluoride, perfluoropropane, perfluorocyclobutane, hexafluoroethane	< 1 ppb H <sub>2</sub> O, CO <sub>2</sub> , O <sub>2</sub> , and CO as tested in argon and nitrogen using APIMS analyzer < 1 ppb O <sub>2</sub> as tested in trifluoromethane using trace oxygen analyzer < 10 ppb H <sub>2</sub> O as tested in trifluoromethane using trace moisture analyzer and FTIR
Germane	< 1 ppb H <sub>2</sub> O, CO <sub>2</sub> , O <sub>2</sub> , and CO as tested in argon and nitrogen using APIMS analyzer
Sulfur hexafluoride	< 1 ppb H <sub>2</sub> O, CO <sub>2</sub> , and O <sub>2</sub> as tested in argon using APIMS
Oxygenated gases: Carbon dioxide, oxygen, nitrous oxide, clean dry air	< 10 ppb H <sub>2</sub> O < 1 ppb H <sub>2</sub> O, and CO <sub>2</sub> , as tested in argon using APIMS analyzer
Chlorinated gases: Boron trichloride, chlorine, trichlorosilane, dichlorosilane	< 100 ppb H <sub>2</sub> O < 1 ppb H <sub>2</sub> O, and CO <sub>2</sub> , as tested in argon using APIMS analyzer
Hydrogen chloride	< 15 ppb H <sub>2</sub> O as tested in hydrogen chloride using CRDS < 1 ppb H <sub>2</sub> O as tested in argon using APIMS analyzer
Hydrogen bromide	< 50 ppb H <sub>2</sub> O as tested in hydrogen bromide using CRDS < 1 ppb H <sub>2</sub> O as tested in argon using APIMS analyzer
Photolithography clean dry air	< 1 ppb H <sub>2</sub> O as tested in argon using APIMS analyzer < 300 ppt C <sub>4</sub> H <sub>8</sub> as tested in argon using APIMS Analyzer < 10 ppt SO <sub>2</sub> as tested in nitrogen using ion chromatograph < 15 ppt NH <sub>3</sub> 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



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