



MICRO  **TORR**®

Ambient Gas Purifiers

SAES Pure Gas, Inc.
we support your *innovation*

saes
getters



Proprietary Ambient Temperature Technology

SAES Pure Gas, the pioneer of heated getter technologies for gas purification, developed the MicroTorr product line as a “low cost of ownership” solution to improve process gas reliability and consistency.

Our ambient temperature purification technology combines state-of-the-art inorganic materials with optimized designs providing long lasting purification performances and an extensive range of flow-rate capabilities with reduced pressure drops.

Ongoing R&D efforts continually produce improved capabilities in existing materials and lead to new patented materials for various gas applications.

MEDIA PERFORMANCE

Media	Gases Purified	Impurities Removed	Outlet Performance	Purifier Regenerability
202	Ar, CDA, H ₂ , He, Kr, N ₂ , Ne, O ₂ , Xe	H ₂ O	< 1 ppb	YES
203	Ar, CDA, H ₂ , He, Kr, N ₂ , Ne, O ₂ , Xe	H ₂ O, CO ₂ , Acids, Bases, Organics, Refractory Compounds*	< 100 ppt < 10 ppt	YES
206	CO	H ₂ O	< 1 ppb	YES
302	B ₂ H ₆ , BCl ₃ , BF ₃ , CCl ₄ , Cl ₂ , CO ₂ , GeCl ₄ , GeH ₄ , H ₂ S, H ₂ Se, HBr, HCl, N ₂ O, NF ₃ , NO, SiCl ₄ , SiF ₄ , SiH ₂ C ₂ , SiHCl ₃ , SO ₂	H ₂ O	< 1 ppb	NO
402	AsH ₃	H ₂ O, O ₂	< 1 ppb	NO
403	CDA	Acids, Bases, Organics, Refractory Compounds*	< 1 ppb	NO
404	CO ₂ , C ₂ H ₂ (Acetylene)	NMHC	< 1 ppb	YES
502	PH ₃	H ₂ O, O ₂	< 1 ppb	NO
702	DMHz, NH ₃	H ₂ O, O ₂ , CO ₂	< 1 ppb	YES
902	Ar, He, Kr, N ₂ , Ne, Xe	H ₂ O, O ₂ , CO, CO ₂ , H ₂ NMHC	< 1 ppb	YES
903	Ar, He, Kr, N ₂ , Ne, Xe	O ₂ , H ₂ O, CO, CO ₂ , H ₂ , Acids, Bases, Organics, Refractory Compounds*	< 100 ppt < 10 ppt	YES
904	H ₂	H ₂ O, O ₂ , CO, CO ₂ , NMHC	< 1 ppb	YES
905	C ₂ F ₆ , C ₂ H ₆ , C ₂ F ₄ , C ₃ H ₈ , C ₃ F ₈ , C ₃ H ₂ , C ₄ F ₁₀ , C ₄ H ₁₀ , CCl ₄ , CF ₄ , CH ₄ , CHF ₃ , SF ₆	H ₂ O, O ₂ , CO, CO ₂ , H ₂ NMHC	< 1 ppb	YES
906	CDA, O ₂	H ₂ O, CO, CO ₂ , NMHC	< 1 ppb	YES

*Organic/NMHC compounds (C5-C30..) measured as Toluene
 Acid compounds (SO₂, NOx, H₂S..) measured as SO₂
 Base compounds (NH₃, amines..) measured as NH₃
 Silicon/Refractory compounds (HMDSA, HMDSO, TMS) measured as HMDSO

PART NUMBERING SYSTEM EXAMPLE

Model	Media	Filter	Valve	Part Number
MC1	903	F	V	MC1-903FV
MC190	202	F		MC190-202F

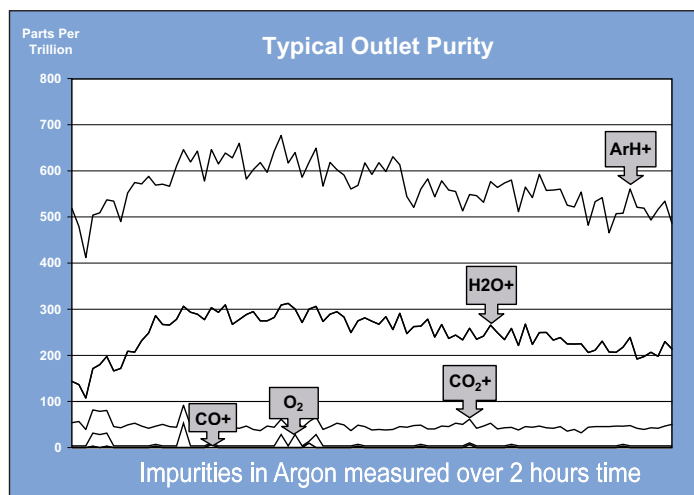


For maximum performance and absolute reliability



Competitive Advantages and Benefits

- Reliability.** Delivery of Ultra-High-Purity gas for uncompromised process consistency and yield improvement.
Inorganic active purification media means protection from hydrocarbon release.
- Environmentally Friendly.** Most MicroTorr media is factory regenerable, minimizing potentially hazardous waste generation.
- Flexibility.** Not sensitive to placement orientation.
- Quality.** Hardware assembly made of 316L stainless steel. All units are He leak checked, pressure tested, and shipped double-bagged with argon filling.
- Certified.** CE certification according to Pressure Equipment Directive (PED)
- Support.** Lifetime estimation and regeneration service available through the SAES Pure Gas Sales Global Support Network.



Need More Information?

Log on to our website to download technical information and obtain online selection assistance using our Purifier Product SelectTorr or call our one of our many sales offices or distributors.

Contact information for all locations can be found at:

<http://www.saespuregas.com>

Product Highlights

- Total flexibility in size and configuration
- Flow rates up to 1,000 slpm
- Pressure ratings up to 3,000 psig
- Regenerable models available
- Long lifetimes
- Can be configured to include valves and/or 0.003 μm particle filter
- Custom-tailored integration for complete subsystem solutions
- Minimal cost of ownership
- Low Pressure Drop

Regenerable,
environmentally
friendly solution

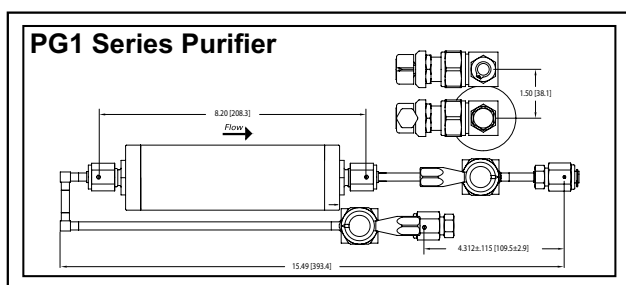
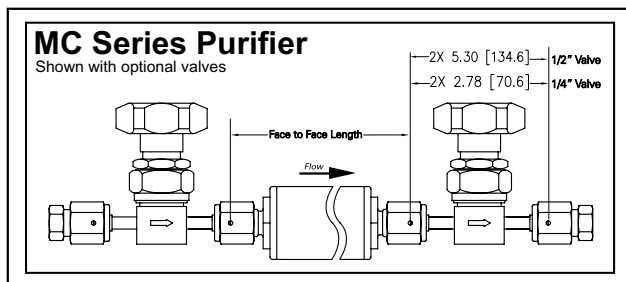
PURIFIER MODEL/DIMENSIONS

Model ^{1,2,3}	MC1-*F	MC50-*F	MC190-*F	MC200-*	FT400-902	MC400-*	MC450-*	MC500-*
Maximum Flow	5 slpm	10 slpm	50 slpm	50 slpm	75 slpm	60 slpm	75 slpm	100 slpm
Nominal Flow	0.5 slpm	1.5 slpm	5 slpm	5 slpm	10 slpm	9 slpm	10 slpm	12 slpm
Filter	.003 µm rating	.003 µm rating	.003 µm rating	2.0 micron outlet metal	2.0 micron outlet metal	2.0 micron outlet metal	2.0 micron outlet metal	2.0 micron outlet metal
Optional Valves	1/4" Manual	1/4" Manual	1/4" Manual	1/4" Manual	1/4" Manual	1/4" Manual	1/4" Manual	1/4" Manual
Max Operating Pressure	1000 psig (69 barg) @ 40°C	1000 psig (69 barg) @ 40°C	250 psig (17.3 barg) @ 40°C	250 psig (17.3 barg) @ 40°C	500 psig (34.5 barg) @ 40°C	250 psig (17.3 barg) @ 40°C	250 psig (17.3 barg) @ 40°C	250 psig (17.3 barg) @ 40°C
Inlet/Outlet	1/4" MVCR	1/4" MVCR	1/4" MVCR	1/4" MVCR	1/4" MVCR	1/4" MVCR	1/4" MVCR	1/4" MVCR
Length (Face to Face)**	3.31"±.03 [84.1mm±0.8]	5.00"±.03 [127.0mm±0.8]	8.20"±.03 [208.3mm±0.8]	6.30"±.03 [160mm±0.8]	7.94"±.03 [201.7mm±0.8]	8.20"±.03 [208.3mm±0.8]	7.94"±.03 [201.7mm±0.8]	12.50"±.03 [317.5mm±0.8]
Outside Diameter	1.50" [38.1mm]	1.50" [38.1mm]	2.00" [50.8mm]	2.00" [50.8mm]	3.00" [76.2mm]	3.00" [76.2mm]	3.00" [76.2mm]	2.00" [50.8mm]
Weight	0.7 lbs (0.3 kg)	0.9 lbs (0.4 kg)	1.6 lbs (0.7 kg)	1.8 lbs (0.8 kg)	4.1 lbs (1.8 kg)	4.9 lbs (2.2 kg)	4.1 lbs (1.8 kg)	3.3 lbs (1.5 kg)
Model ^{1,2,3}	MC1500-*	MC3000-*	MC4500-*	MC9000-*	PG1-*FV	SP70 - *F	SP300 - *F	SP600 - *F
Maximum Flow	250 slpm	500 slpm	1000 slpm	1,000 slpm	15 slpm	40 slpm	200 slpm	400 slpm
Nominal Flow	40 slpm	80 slpm	200 slpm	300 slpm	10 slpm	1.5 slpm	10 slpm	15 slpm
Filter	2.0 micron outlet metal	2.0 micron outlet metal	2.0 micron outlet metal	2.0 micron outlet metal	0.003 micron Metal	.003 micron metal	.003 micron metal	.003 micron metal
Optional Valves	1/2" Manual	1/2" Manual	1/2" Manual	1/2" Manual	1/4" Manual	NOT AVAILABLE	NOT AVAILABLE	NOT AVAILABLE
Max Operating Pressure	250 psig (17.3 barg) @ 40°C	250 psig (17.3 barg) @ 40°C	250 psig (17.3 barg) @ 40°C	250 psig (17.3 barg) @ 40°C	250 psig (17.3 barg) @ 40°C	3000 psig (206.8 barg) @ 40°C	3000 psig (206.8 barg) @ 40°C	3000 psig (206.8 barg) @ 40°C
Inlet/Outlet	1/2" MVCR	1/2" MVCR	1/2" MVCR, (with valves 1/2" MVCR)	1/2" MVCR	1/4" FVCR /1/4" MVCR	1/4" MVCR	1/4" MVCR	1/4" MVCR
Length (Face to Face)**	18.20"±.03 [462.3mm±0.8]	20.00"±.03 [508.0mm±0.8]	27.64" [702.6mm]	39.34" [99.97cm]	15.49"±.03 [393.4mm±0.8]	5.00"±.05 [127.0mm±1.3]	15.00"±.05 [381.0mm±1.3]	25.00"±.05 [635mm±1.3]
Outside Diameter	3.00" [76.2mm]	4.00" [101.6mm]	6.0" [152.4mm]	6.0" [152.4mm]	2.00"±.03 [50.8mm±.08]	2.00" [50.8mm]	2.00" [50.8mm]	2.00" [50.8mm]
Weight	12.1 lbs (5.5 kg)	12.8 lbs (5.8 kg)	43.1 lbs (19.5 kg)	60.4 lbs (27.4 kg)	5.1 lbs (2.3 kg)	< 2.3 lbs (< 1.0 kg)	6.6 lbs (3.0 kg)	11.0 lbs (5.0 kg)

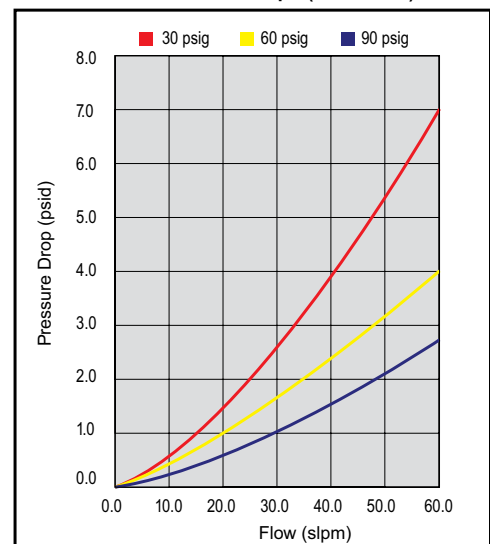
- 1) All models electropolished and helium leak tested
- 2) Max temperature rating for all models: 40°C (104°F)
- 3) All models manufactured using: 316L stainless steel

*Replace with media type

**With 1/4" valve option add 5.6" to face to face length
With 1/2" valve option add 10.6" to face to face length



Pressure Drop-(MC400)



A full range of
purification
solutions



MicroTorr® Product Features

MicroTorr series purifiers are the most complete and reliable solution for Point-of-Use (POU) gas purification. MicroTorr purifiers are designed with total application flexibility in mind and are available in a wide range of sizes to meet the most demanding flow and purity requirements. Optional valves and 0.003 μm particle filters are available as well as complete, custom subsystem configurations.

Combining model size with a selection of gas-specific purification media, MicroTorr purifiers can be tailored to many different customer applications, while maintaining impurity removal to parts-per-billion levels or better.

MicroTorr series purifiers are manufactured with the same superior quality our customers have grown to expect from all SAES® Pure Gas products. Detailed analytical testing is performed at the factory, utilizing state-of-the-art technologies to certify maximum performance and absolute reliability.

Applications

- Vapor Deposition Processes (MOCVD, PVD, CVD, Epitaxy)
- Photolithography
- Etching
- Diffusion and Oxidation processes
- Annealing
- Metrology
- Fiber Optics
- Carbon Nanotubes (CNT)
- Analytical applications
- Weld gas purification
- Gas cabinet applications
- Beverage Industry
- Direct replacement of existing in-line particle filter

Gases Purified

- N_2 , Ar, He, Xe, Ne, Kr, H_2 , CDA
- NH_3 , DMHz
- SF_6 , CH_4 , C_2H_6 , C_3H_8 , C_4H_{10} , CF_4 , C_2F_6 , CHF_3 , C_3F_8 , C_4F_8 , $\text{C}_2\text{F}_4\text{H}_2$, CCl_4 , C_2H_4 , C_2H_2
- AsH_3 , PH_3
- O_2 , NO, N_2O , CO_2 , SO_2
- BCl_3 , Cl_2 , SiH_2Cl_2 (DCS), SiHCl_3 (TCS), HBr, HCl, SiCl_4 , H_2Se , H_2S , SiF_4 , B_2H_6 , BF_3 , GeCl_4 , CClH_3 , SiH_4

New gases added regularly

Other products from SAES Pure Gas:

MonoTorr Point-of-Use Purifiers



Our MonoTorr heated-getter purifiers are ideal solutions for point-of-use purification where CH₄ and N₂ removal is required.

Gases purified include: Argon, Helium, Nitrogen, Hydrogen.
Flow rates to 150 slpm.

Microcontamination Inspection Service

The Microcontamination Inspection Service from SAES Pure Gas is an economical way to determine Molecular Contamination in Nitrogen and Compressed Dry Air.

The CollectTorr sampling manifold is shipped to the customer's site where samples are collected and, after a fixed time, the unit is returned to SAES Pure Gas factory for immediate analysis.

Contact us for more information or visit our website: www.saespuregas.com



Area and House Gas Purification

SAES Pure Gas offers an entire line of bulk gas purifiers designed for complete facility-level purification protection.



Gases purified include:

- Nitrogen
- Argon
- Helium
- Oxygen
- Compressed Dry Air
- Hydrogen

For more information visit the *Products* section at: www.saespuregas.com

**saes
getters**

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SAES Pure Gas manufacturing company is ISO9001 certified.

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