

# Gas Purification Solutions

*For the most complex process challenges in semiconductor manufacturing and adjacent markets*

Entegris is the world leader in gas purification technology. We offer a comprehensive end-to-end portfolio of gas purification solutions from small, point-of-use in-line purifiers to large bulk gas purifiers. From bulk to specialty gas applications, you can rely on our wide array of reliable gas purification technologies to improve gas purity.

## GateKeeper® GPU Purifiers

The GateKeeper® GPU ambient in-line purifiers are designed to improve purity consistency, lifetime, and final purity. Leveraging its expertise in material science, Entegris has developed a new generation of purification products that deliver unsurpassed value and performance.



### SPECIFICATIONS

GPU model	Maximum flow
GPUS 35	1 slpm
GPUS 70	5 slpm
GPUS 200	20 slpm
GPUS 300	50 slpm
GPUS 500	75 slpm
GPUS 700	120 slpm
GPUS 2500 4R	300 slpm
GPUS 10M 8R	1,000 slpm
GPUS 13M 12R	2,000 slpm
GPUS 17M 12R	2,000 slpm

### PERFORMANCE DATA

Process gas	Media	Contaminants removed
H <sub>2</sub> , N <sub>2</sub> , He, Ar	EX	H <sub>2</sub> O, CO <sub>2</sub> to <100 ppt, O <sub>2</sub> to <250 ppt, CO to <1 ppb, C <sub>x</sub> H <sub>y</sub> (45 – 100 amu) to <10 ppt, C <sub>x</sub> H <sub>y</sub> (>100 amu), refractory compounds (as HMDSO) to <1 ppt
H <sub>2</sub>	HX	H <sub>2</sub> O, O <sub>2</sub> , CO, CO <sub>2</sub> to <100 ppt
N <sub>2</sub> , He, Ar	IX	H <sub>2</sub> O, O <sub>2</sub> , CO, CO <sub>2</sub> , H <sub>2</sub> to <100 ppt
XCDA®, H <sub>2</sub> , N <sub>2</sub> , He, Ar CO <sub>2</sub>	WX	H <sub>2</sub> O to <100 ppt
CO <sub>2</sub>	DZ	H <sub>2</sub> O <1 ppb, O <sub>2</sub> to <200 ppt, volatile acids, volatile bases, refractories, condensable organics to <1 ppt
NH <sub>3</sub>	YX	H <sub>2</sub> O, O <sub>2</sub> , CO <sub>2</sub> , NMHCs, metals to <1 ppb
Corrosive gases	CR	H <sub>2</sub> O, metals to <1 ppb

## Palladium Hydrogen Purifiers

Palladium hydrogen purifiers produce the purest hydrogen on the planet. Only hydrogen is able to pass through the palladium membrane, while all other impurities travel out the bleed line. This patented micro-channel palladium membrane technology removes all impurities to below part-per-billion (ppb) levels.

### APPLICATIONS

- Ultrapure hydrogen from various sources
- Patented micro-channel palladium technology
- High flow capacity up to 2,170 slpm
- No regeneration or vessel replacement
- <1 ppb H<sub>2</sub>O, O<sub>2</sub>, CO<sub>2</sub>, CO, N<sub>2</sub>, THC, He, Ar
- Easy to verify performance with helium leak check



## GateKeeper HGU Point-of-Use Heated Getter Purifiers

GateKeeper HGU heated getter purifiers are ideal solutions for point-of-use purification where CH<sub>4</sub> or N<sub>2</sub> removal is required.

Getter technology allows irreversible chemical absorption of impurities to sub-ppb levels.

Five different sizes are available for flow rates from 1 sccm to 150 slpm.



### PERFORMANCE DATA

Gas	Impurities removed	Flow rates
Helium/argon/xenon	H <sub>2</sub> O, O <sub>2</sub> , CO, CO <sub>2</sub> , H <sub>2</sub> , N <sub>2</sub> , THC	0 – 100 slpm
Nitrogen	H <sub>2</sub> O, O <sub>2</sub> , CO, CO <sub>2</sub> , H <sub>2</sub> , THC	0 – 100 slpm
Hydrogen	H <sub>2</sub> O, O <sub>2</sub> , CO, CO <sub>2</sub> , N <sub>2</sub>	0 – 150 slpm

# MegaTorr Bulk Gas Purifiers

Entegris offers an entire line of bulk gas purifiers designed for complete facility-level purification.



## PERFORMANCE DATA

Gas	Model	Media	Impurities removed	Flowrates
Nitrogen/hydrogen	GPS8/GPS7-A	Adsorber	H <sub>2</sub> O, O <sub>2</sub> , CO, CO <sub>2</sub> , H <sub>2</sub>	0 – 50,000 Nm <sup>3</sup> /hr
Nitrogen	GPS9	Catalyst and adsorber	H <sub>2</sub> O, O <sub>2</sub> , CO, CO <sub>2</sub> , H <sub>2</sub> , CH <sub>4</sub>	0 – 12,000 Nm <sup>3</sup> /hr
Hydrogen	GPS7-H	Adsorber and getter	H <sub>2</sub> O, O <sub>2</sub> , CO, CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub>	0 – 200 Nm <sup>3</sup> /hr
Hydrogen	GPS7-CR	Cryogenic	H <sub>2</sub> O, O <sub>2</sub> , CO, CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> , Inert gases	0 – 1,000 Nm <sup>3</sup> /hr
Hydrogen	GPS7-PD	Palladium	H <sub>2</sub> O, O <sub>2</sub> , CO, CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> , Inert gases	0 – 140 Nm <sup>3</sup> /hr
Ammonia	GPS21	Adsorber	H <sub>2</sub> O, O <sub>2</sub> , CO <sub>2</sub> , NMHC	0 – 100 Nm <sup>3</sup> /hr
XCDA	GPS22	Adsorber	H <sub>2</sub> O, acids, bases, organics, refractory compounds	0 – 24,000 Nm <sup>3</sup> /hr
Helium/argon	GPS5	Getter	H <sub>2</sub> O, O <sub>2</sub> , CO, CO <sub>2</sub> , H <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub>	0 – 300 Nm <sup>3</sup> /hr
Oxygen	GPS6	Catalyst and adsorber	H <sub>2</sub> O, CO, CO <sub>2</sub> , H <sub>2</sub> , CH <sub>4</sub>	0 – 3,000 Nm <sup>3</sup> /hr
Carbon Dioxide	GPS31/GPS32/ GPS33	Catalyst and adsorber	H <sub>2</sub> O, O <sub>2</sub> , CO, H <sub>2</sub> , CH <sub>4</sub> , acids, bases, organics, refractory compounds	0 – 3,000 Nm <sup>3</sup> /hr

## Gas Analytical Service

The AMC sampling service is an economical way to determine molecular contamination in nitrogen, carbon dioxide, XCDA, or cleanroom air.

Detection limits are low part-per-trillion (pptV) for acids, bases, organics, or refractory compounds.

Two versions are available:

- Pressurized gases
- Ambient air/cleanroom air



#### FOR MORE INFORMATION

Please call your Regional Customer Service Center today to learn what Entegris can do for you. Visit [entegris.com](http://entegris.com) and select the [Contact Us](#) link to find the customer service center nearest you.

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