NEW

ASX-II™ Purification Medium NANOCHEM® Arsine Gas Purifier

For III-V Compound Semiconductor Epitaxy

Overview

The increasing demands for higher yields and more consistent performance in the fabrication of III-V compound semiconductor devices dictate the need for more stringent contamination control. Nowhere is this more evident than in III-V compound semiconductor epitaxy processes. Gas contaminants, especially moisture and oxygen-containing species, adversely affect film quality and reduce yields. Since contamination sources cannot be entirely eliminated, the most effective solution is to purify arsine as close to the point-of-use as possible with an effective and efficient purification medium.

ASX-II™ is a new inorganic purification medium that removes H_2O and is expected to remove Oxy-acid impurities. ASX-II™ offers the highest lifetimes for the removal of moisture. ASX-II™ has a wide range of applications, including GaAs and InGaAsP MOCVD processes, and is available in a wide range of purifier sizes: from Point-of-Use to Proximate.

Features and Benefits

- Direct purification of AsH_3 used in ultra-high purity applications
- Ideal for GaAs and InGaAsP processes
- Highest moisture capacity
- No pressure build-up
- Best impurity removal efficiencies
- Removes: H_2O and is expected to remove other oxygenated species
- Minimizes fluctuations in volatile impurities as cylinder is depleted
- Minimizes cylinder-to-cylinder impurity variations
- Improves process yields & device quality
- Increased savings by using cylinder longer before change out
- No external power source required
- No heating or cooling required

Specifications

- < 75 ppb H_2O (LDL) in AsH_3 by MAH-2

Typical Performance

Impurities are typically removed to the detection limits of state-of-the-art analytical techniques:

Impurity/ Matrix	Efficiency (ppb)	Challenge (ppm)
H_2O in N_2	< 100 (LDL)	1,900
H_2O in AsH_3	< 75 (LDL)	660

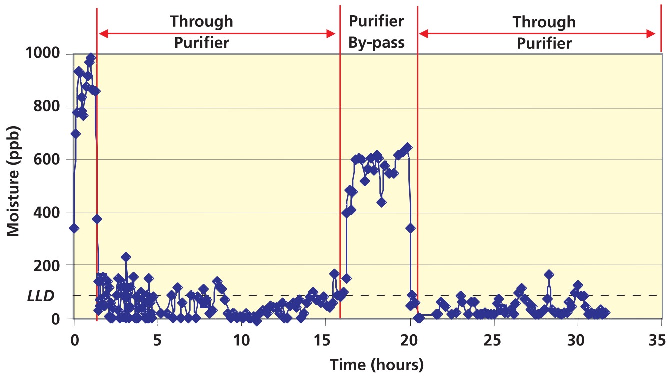
Capacity & Efficiency in AsH_3

ASX-II™ offers the highest lifetime and the best efficiency for the removal of moisture in arsine.

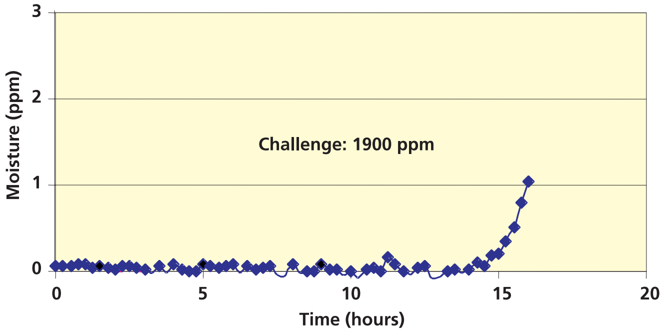
Reduced Cost of Operation

By increasing the amount of arsine that can be consumed in each cylinder before a changeout, ASX-II™ enables significant raw material savings.

Efficiency of ASX-II™ for Removal of Moisture in AsH_3
(0.4 slpm flow & 600 ppb challange)



Moisture Capacity in ASX-II™



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Purifier Models / Sizes

NANOCHEM® ASX-II™ purification medium is available in a wide variety of hardware configurations for point-of-use, distribution and source purification applications:

	Maximum Flow Rates in AsH_3 Service		Maximum Allowable Media Volume	Working Pressure	
Model	**slpm**	**(NM^3/hr)**	**Volume**	**psig**	**(MPa)**
L-Series*	8-150	(0.5-9)	60, 300, 500, 2000 ml	60	(0.43)
A-Series*	50	(3)	60, 300, 500, 2000 ml	60	(0.43)
C-Series, CL-Series	50-150	(3-9)	300, 500, 2000 ml	60	(0.43)
H-Series	50	(3)	300, 500 ml	60	(0.43)

*The most common hardware designs used are the L-60, L-300 and the A-300I.

Please contact your local Matheson Tri-Gas, Inc., Sales Engineer or call (215) 648-4000 to obtain a purifier lifetime estimate for your specific operating conditions.

Options

Standard: 0.003 µm Teflon® particle filter with 99.9999999% retention for arsine service.

End-Point Detection is not available

***** NOTE: A particulate filter is required for the removal of particulates in the gas.***

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