

OMX-Plus™ Purification Medium

NANOCHEM® Inert and Flammable Gas Purifiers

The Next Generation Purifier for Inert & Flammable Gases

All the Benefits of NANOCHEM® OMX™ with Efficient Hydrocarbon Removal

NANOCHEM® OMX™ purification medium has long been the industry standard for purifying inert and flammable gases for a variety of semiconductor applications, including low temperature SiGe Epi. NANOCHEM® OMX-Plus™ offers all the benefits of NANOCHEM® OMX™ medium — the highest lifetimes and the best efficiencies for impurity removal as well as patented true endpoint detection to give advance warning of purifier depletion. OMX-Plus™ also offers removal of trace non-methane aliphatic and aromatic hydrocarbons from source gases and system component outgassing.

Features and Benefits

- Direct purification of inert and flammable gases used in ultra-high purity applications:

Inert Gases:

N₂ – Nitrogen
Ar – Argon
He – Helium
Xe – Xenon
Kr – Krypton
Ne – Neon
CF₄ – Carbon Tetrafluoride

Flammable Gases:

H₂ – Hydrogen
CH₄ – Methane
D₂ – Deuterium

- Highest Lifetimes
- Best Impurity Removal Efficiencies
- Patented Fiber-Optic End-Point Detection available
- Removes Oxygenated Species (H₂O, O₂, CO, CO₂, NO_x, SO_x, etc.) and non-Methane Hydrocarbons (NMHC)
- Improves and ensures gas purity for process consistency: higher yield / device quality
- No external power source required
- Does not require heating or cooling

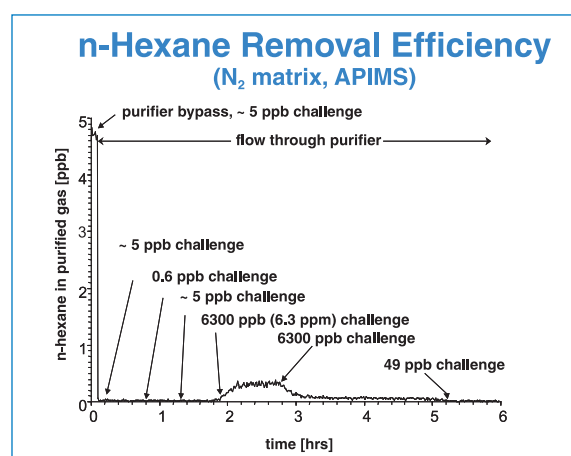
	Specification	Typical Performance
H ₂ O	< 100 ppt	< 100 ppt (APIMS)
O ₂	< 100 ppt	< 50 ppt (APIMS)
CO ₂	< 100 ppt	< 50 ppt (APIMS)
CO	< 1 ppb*	< 1 ppb (APIMS)*
NMHC	< 100 ppt	< 100 ppt (APIMS)*

* < 1 ppb CO is obtained at low flow rates and low CO challenge (< 1 ppm) only.

* NMHC – Non-Methane Hydrocarbons. Typical performance expressed for Butane.

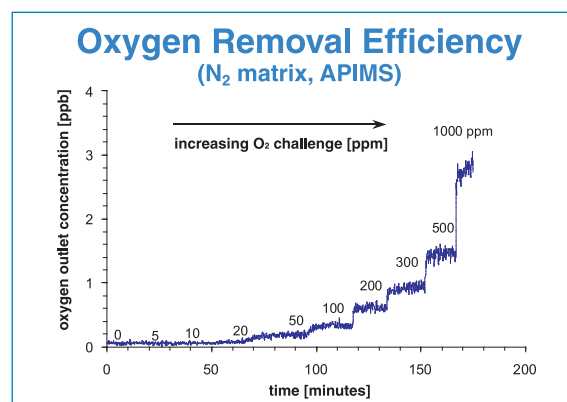
Remove Harmful Non-Methane Hydrocarbons

Typical performance of OMX-Plus™ Resin for the removal of NMHC, such as n-Hexane, is shown below:



Remove Killer Oxygenated Impurities

The removal efficiency of OMX-Plus™ for oxygen-containing impurities remains essentially unchanged from the efficiency expected with NANOCHEM® OMX™. Shown below is typical performance upon exposure to progressively increasing oxygen impurity concentration. Even with a 200 ppm O₂ challenge, the residual oxygen in the purified N₂ is < 1 ppb.

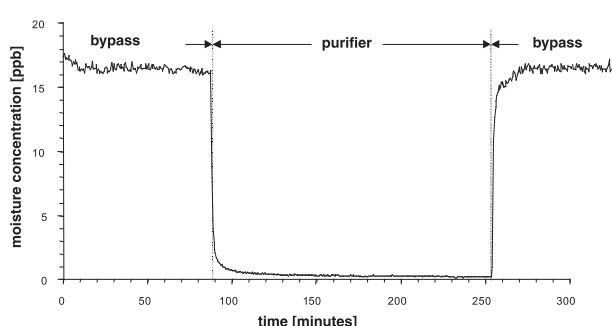


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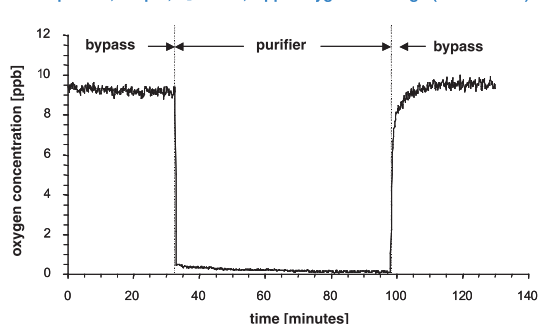
Pure "PPT" Performance (H₂O and O₂)

Removal of oxygen and moisture impurities is typically at the detection limits of APIMS, 30-100 ppt (parts per *trillion*) measured at the outlet of the purifier.

NANOCHEM® OMX™ - Efficiency for Removal of H₂O Impurity
L-60 purifier, 2 slpm, N₂ matrix, 16 ppb moisture challenge (APIMS Data)



NANOCHEM® OMX™ - Efficiency for Removal of O₂ Impurity
L-60 purifier, 2 slpm, N₂ matrix, 9 ppb oxygen challenge (APIMS Data)



Purifier Models / Sizes

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

Model	Maximum Recommended		Media Volume ml or liters	Maximum Allowable Operating Pressure	
	Flow Rate*** slpm	(NM ³ /hr)		With End-Point psig (MPa)	Without End-Point psig (MPa)
A-Series™*	50	(3)	300, 500, 2000 ml	150 (1.14)	500 (3.55)
L-Series™	50-150**	(3-9)**	300, 500, 2000 ml	150 (1.14)	500 (3.55)
H-Series™	50	(3)	300, 500 ml	150 (1.14)	500 (3.55)
HP-Series™	50	(3)	300, 500 ml	N/A	2,850 (19.8)
MS-Series™	1000	(60)	4, 8, 16, 32 liters	150 (1.14)	300 (2.17)
White Knight™ (WK-Series)*	60-300	(3.6-18)	500, 2500 ml	N/A	500 (3.55)
	1000	(60)	9 liters	N/A	350 (2.51)

*Drop-in replacements available for competing hardware designs.

** 150 slpm (9 NM³/hr) with "High flow" option.

***For higher flow rates, contact Matheson Tri-Gas, Inc.

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

Options

- Pneumatically-actuated Valves for all models.
- Bypass Module for L-Series™ & MS-Series™ with either manual valves or pneumatically-actuated valves.
- Inlet & Outlet Isolation Valves for White Knight™ Series
- "High Flow" Option for L-Series™ with upgraded particle filter
- End-Point Detection – DC powered. Not available for HP-Series™ & White Knight™ Series.
- 0.003 µm particle filter with 99.999999% 9-Log retention (standard on most models, optional for MS-Series™).

Equipment Technology Center

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Specifications are subject to change. Please check www.mathesongas.com for most current information.

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