

NANO CHEM[®]

OMX-Plus™ Purification Medium NANO CHEM[®] Inert and Flammable Gas Purifiers

The Next Generation Purifier for Inert & Flammable Gases All the Benefits of NANO CHEM[®] OMX™ with Efficient Hydrocarbon Removal

NANO CHEM[®] 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. NANO CHEM[®] OMXPlus™ offers all the benefits of NANO CHEM[®] 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)#

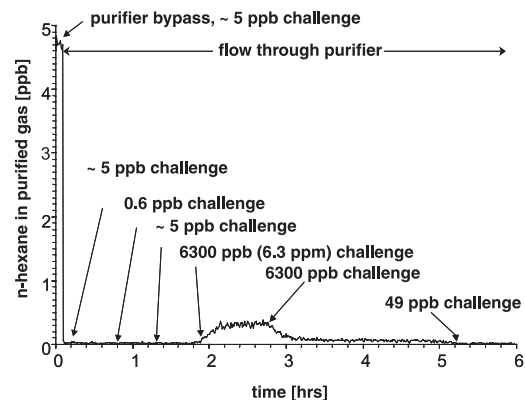
* < 1 ppb CO₂ is obtained at low flow rates and low CO challenge (< 1 ppm) only.

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:

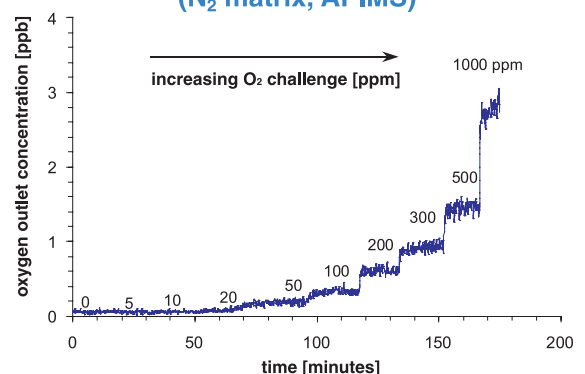
n-Hexane Removal Efficiency (N₂ matrix, APIMS)



Remove Killer Oxygenated Impurities

The removal efficiency of OMX-Plus™ for oxygencontaining impurities remains essentially unchanged from the efficiency expected with NANO CHEM[®] 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.

Oxygen Removal Efficiency (N₂ matrix, APIMS)

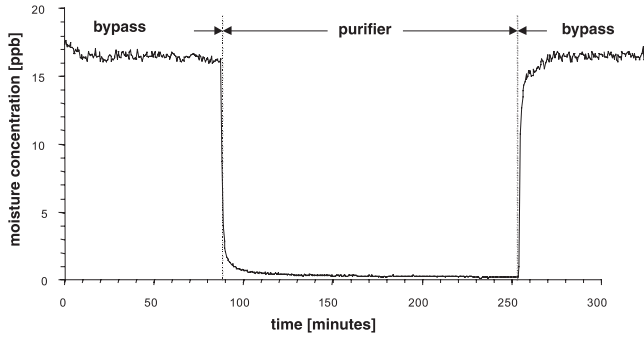


Pure “PPT” Performance (H₂O and O₂)

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.

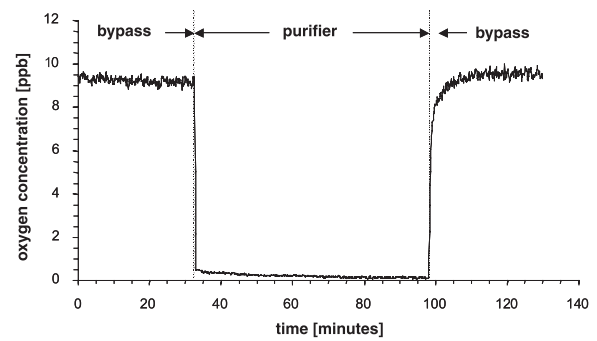
NANOCHEM® OMX™ - Efficiency for Removal of H₂O Impurity

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 Flow Rate		Media Volume ml or liters	Maximum Allowable Operating Pressure			
	slpm	(NM ₃ /hr)		With End-Point psig	(Mpa)	Without End-Point psig	(Mpa)
A-Series™*	50	(3)	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)	500 ml	150	(1.14)	500	(3.55)
HP-Series™	50	(3)	500 ml	N/A	N/A	2,850	(19.8)
MS-Series™	1000	(60)	4, 8, 16, 32 liters	150	(1.14)	300	(2.17)
WK-Series*	10	(0.6)	50, 55 ml	N/A	N/A	1000	(7)
	75-800	(4.5-48)	300, 500, 700, 2500, 5000 ml	N/A	N/A	500	(3.55)
	1000	(60)	9 liters	N/A	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 Nippon Sanso Matheson

Please contact your local Nippon Sanso 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 99.9999999% 9-Log retention (standard on most models, optional for MS-Series™).

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