

NANOCHEM[®]

INX Purification Medium

Removal of Oxygenated Impurities

NANOCHEM[®] INX is an inorganic medium that provides high capacities and efficiencies and offers resistance to air intrusions. NANOCHEM[®] INX removes H₂O, O₂, CO₂, CO, SO_x, NO_x from inert gases, CH₄, C₂H₆, C₃H₈, and C₄H₁₀.

Byproducts upon accidental exposure of air to the purifier are limited to easily removable compounds, such as carbon dioxide, moisture, and trace methane which do not condense in process lines and can be purged from the system.

NANOCHEM[®] INX is available in a wide range of purifier sizes from compact point-of-use to bulk purifiers capable of handling up to 5000 slpm and 3000 psi.

Applications

- Pharmaceutical, aerospace, medical, lighting, welding, cryogenics, scientific research, medical diagnostics and protective gas in industries to prevent unwanted chemical reactions.
- Compatible gases include Nitrogen (N₂), Helium (He), Neon (Ne), Argon (Ar), Krypton (Kr), Xenon (Xe), Hydrogen (H₂), Deuterium (D₂), Tetrafluoromethane (CF₄) and Methane (CH₄)

Specifications

- < 0.1 ppb O₂, H₂O, CO₂, CO in inert gases measured by state-of-the-art methodologies
- Maximum operating temperature of 40°C (104°F)

Features and Benefits

- Purification of inert gases, methane, ethane, propane, and butane used in ultra-high purity applications
- Ideal for SiGe Epi, GaN and SiN processes
- Custom-designed adsorbent material for point-of-use hydrocarbon removal offering:
 - **High Capacity**
 - **Long Lifetimes**
- **Best Impurity Removal Efficiencies**
- **Fiber Optic Endpoint Detection available**
- Removes oxygenated species H₂O, O₂, CO₂, CO, SO_x, NO_x
- Improves and ensures gas purity for process consistency
- Demonstrated improvements in process yield and device quality
- No hydrocarbon breakdown with air intrusions
- Does not require heating and cooling
- No external power source required, except for fiber optic sensor
- 0.003µm particle filter with 99.9999999% retention
- Patented technology



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ANALYTICAL PERFORMANCE

Typical Analytical Performance

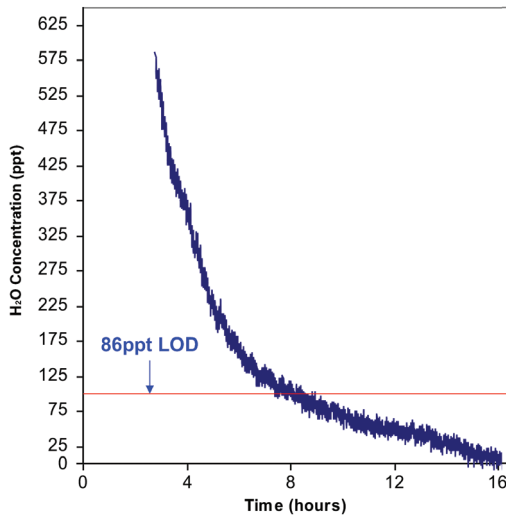
Impurities are typically removed to the detection limits of state-of-the-art analytical techniques.

Gas Type	Contaminants	Outlet Purity
Inerts - Nitrogen (N ₂), Argon (Ar), other inerts	H ₂ O	< 86 ppt
	O ₂	< 50 ppt
	CO	< 100 ppt
	CO ₂	< 24 ppt
	H ₂	< 1 ppb

Impurity removal depends on purifier material and incoming gas specification

H₂O Removal by NANOCHEM® INX 360 mL Purifier

APIMS measurements indicated removal of H₂O to <86 ppt (Detection Limit of APIMS) at challenges as high as 1 ppm

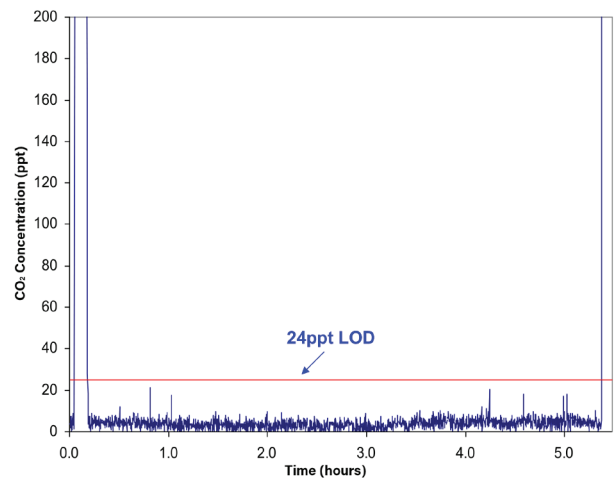


Efficiency of INX purifier for H₂O removal at challenge of 1ppm

APIMS (Atmospheric Pressure Ionization Mass Spectrometry)

CO₂ Removal by NANOCHEM® INX 360 mL Purifier

APIMS measurements indicated removal of CO₂ to <24 ppt (Detection Limit of APIMS) at challenges as high as 1 ppm



Efficiency of INX purifier for CO₂ removal at challenge of 1ppm

APIMS (Atmospheric Pressure Ionization Mass Spectrometry)

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MATHESON
The Gas Professionals

www.mathesongas.com

Tel: 800-416-2505

Email: Info@mathesongas.com