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 H_2O, O_2 ,CO_2, CO, SOx, NOx from inert gases, CH_4, C_2H_6, C_3H_8, and C_4H_{10}.
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

- Pharmacuetical, aerospace, medical, lighting, welding, cryogenics, scientific research, medical diagnostics and protective gas in industries to prevent unwanted chemical reactions.
- Compatible gases include Nitrogen (N_2), Helium (He), Neon (Ne), Argon (Ar), Krypton (Kr), Xenon (Xe), Hydrogen (H_2), Deuterium (D_2), Tetrafluoromethane (CF_4) and Methane (CH_4)

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-ofuse hydrocarbon removal offering:
  - **High Capacity**
  - **Long Lifetimes**
- **Best Impurity Removal Efficiencies**
- **Fiber Optic Endpoint Detection available**
- Removes oxygenated species H2O, O2, CO2, CO, SOx, NOx
- 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

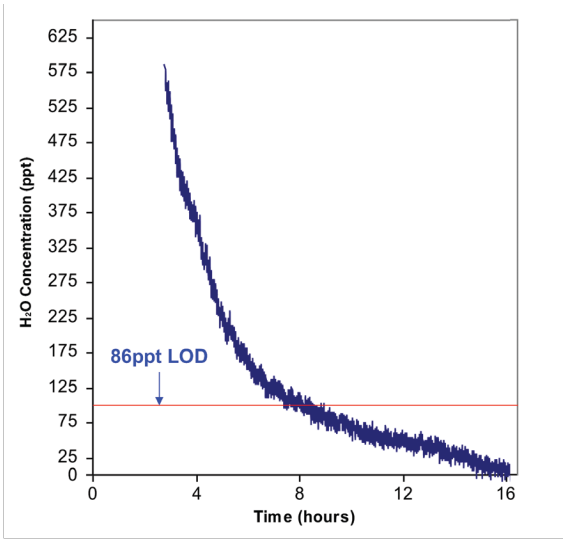
Impurities are typically removed to the detection limits of state-of-the-art analytical techniques.

Gas Type	Contaminants	Outlet Purity
Inerts - Nitrogen (N_2), Argon (Ar), other inerts	H_2O	< 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

H_2O Removal by NANOCHEM® INX 360 mL Purifier

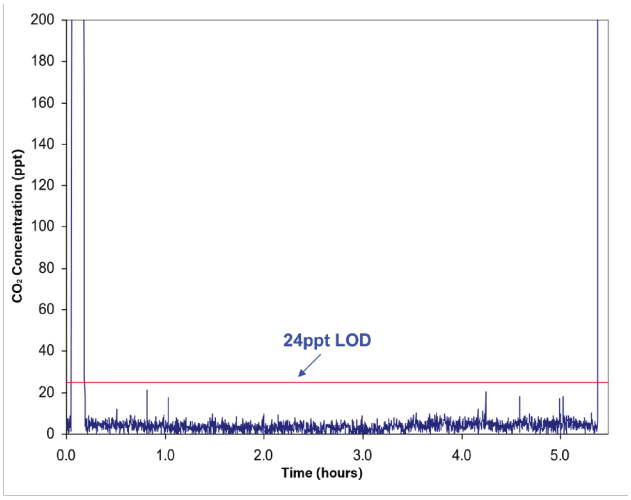
APIMS measurements indicated removal of H_2O to <86 ppt (Detection Limit of APIMS) at challenges as high as 1 ppm



Efficiency of INX purifier for H2O removal at challenge of 1ppm
APIMS (Atmospheric Pressure Ionization Mass Spectrometry)

CO_2 Removal by NANOCHEM® INX 360 mL Purifier

APIMS measurements indicated removal of CO_2 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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