

EP Low-Oxygen Nitrogen (N₂) Analysis Report

Client Contact Information

AAL Number:
Received On:
Report Date:
PO Number:

Sample ID. : Nitrogen - Building #__, Room #__, Port # __
Sample ID. : Lot # _____, Received in 1L AAL Cylinder # _____

Sampled On:
Sampled By:

FT-IR Results

<u>Analysis</u>	<u>Result</u>	<u>D.L.</u>	<u>Specification</u>
Carbon Dioxide (CO ₂ , ppm v/v): -----	0.4	0.1	NMT 300
Carbon Monoxide (CO, ppm v/v): -----	0.2	0.1	NMT 5

Instrumentation: Nicolet Magna FT-IR 550 Series II S/N AD19503475, 10M IR Gas Cell.

Calibration: GTS NIST traceable standard cylinder # CC30614, 5.2 ppm v/v CO, 5.1 ppm v/v CO₂ in N₂, Exp. Date 12/11/09.

Reference: Ultra High Purity Nitrogen, Airgas UHPN₂ 99.999 % Cyl, S/N 4900259.

Procedure: SRM—6001.3-C-V – “The Analysis of Common Hetero-Atomic Species in Oxygen and Inert Gases by Gas Cell FT-IR, 08/14/2006.

Moisture Analysis

<u>Analysis</u>	<u>Result</u>	<u>D.L.</u>	<u>Specification</u>
Water Vapor (H ₂ O, ppm v/v): -----	11	1	NMT 67

Instrumentation: Panametrics Series 35 Moisture Monitor.

Calibration: Panametrics NIST traceable hygrometer probe S/N 340313-PR, Calibration Date 09/26/06, C/F 12 months.

Reference: None.

Procedure: SRM5002.3-C-V – “Analysis of Moisture Content in Gases Using Panametrics Series 35 Moisture Monitor Probe ” 01/23/2006.

Oxygen Analysis

<u>Analysis</u>	<u>Result</u>	<u>D.L.</u>	<u>Specification</u>
Oxygen (O ₂ , ppm v/v): -----	1.7	1.0	NMT 5.0

Instrumentation: Teledyne Trace Oxygen Analyzer, Mod # 3160 S/N 138427

Calibration: GTS certified standard cylinder # CC170337, 100 ppmv O₂ diluted to 5.0 ppmv O₂, Exp Date 8/29/08

Reference: GTS Ultra High Purity Nitrogen cylinder # W320736

Procedure: SRM 5006.0-C-V “The Analysis of ppm Oxygen in Inert Gases Using a Teledyne 3160 Trace Oxygen Analyzer,” (11-July-06).

Atlantic Analytical Laboratory, LLC

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Sample ID:

AAL Number:

GC/TCD Analysis

Analysis

Result

Specification

Assay (N₂, % v/v): -----

G.T. 99.5% 99.5% minimum

Identification Test A: The retention time of the principal peak in the chromatogram obtained with sample is the same as the retention time of the principal peak in the chromatogram obtained with the reference gas, both being eluted at 7.53 min.

Instrumentation: Hewlett Packard Model 5890 Gas Chromatograph S/N 2336A00552 w/ TCD.

Reference: Ultra High Purity Nitrogen, Lot #318502 Cyl. # TW02-557274.

Background: Ultra High Purity Helium, Lot #82-124065904 Cyl. # W458226

Procedure: SRM1003.3-M- "EP Nitrogen Assay by Gas Chromatography with TCD."
Rev. 3, 09/19/2006.

Identification

Analysis

Result

Specification

Identification Test A: -----

PASS Peak R.T. Match

Identification Test B: Following the procedure in the Official Monograph the flame of a burning splinter is immediately extinguished when inserted into a test tube filled with nitrogen.

Instrumentation: None.

Reference: None.

Background: None.

Procedure: Official Monograph. EP 5.0 N₂ 01/2005:1247

Units and Measures:

D.L. = report detection limit. **NMT** = not more than the amount indicated. **nd** = indicates the concentration is less than the report detection limit. **na** = not applicable. **np** = information not provided or available. **G.T.** = greater than amount specified. **L.T.** = less than the concentration indicated. **--** = test not performed. **%** = percent. **ppm** = parts per million. **ppb** = parts per billion. **v/v** = volume analyte/volume sample. **w/w** = weight analyte/weight sample. **Unit Conversions:** 0.0001% = 1 ppm.

Comment: Passes EP Specifications for Low-Oxygen Nitrogen

Approved by,

Data Reviewed by,

Richard Frisch
President

Date

John W. Leatherdale, PE
Director - Quality

Date

Attachments:

Addendum: Notebook Data, Raw Data, Calibrations and Certificates of Analysis on file

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