Analytical Gases
Soluciones integrales

AG17463

CERTIFICADO DE ANALISIS/Certificate of Analysis

CLIENTE/Customer: CDA DEL VALLE

CIUDAD/City: Cali(Valle del Cauca)

FECHA/Date: Junio 16 de 2026

PRODUCTO/Product: Mezcla especial

NUMERO DE CILINDRO / Cylinder Number	LOTE No / Lot number	TIPO DE CILINDRO / Cylinders type	CONEXIÓN VALVULA SALIDA / Valve Outlet Connection	PRESION APROX. / Approx.Pressure
FF35559	22034	32	CGA-350	2175 psi

COMPONENTES Components		ESPECIFICACION Order	ANALISIS Analysis result	INCERTIDUMBRE EXPANDIDA Abs. Expanded Uncertainty Abs.
PROPANO / Propane	C3H8	300 PPM	301 PPM	+/- 6 PPM
MONOXIDO DE CARBONO / Carbon monoxide	CO	1 %	1.11 %	+/- 0.02%
DIOXIDO DE CARBONO / Carbon dioxide	CO2	6 %	6.16 %	+/- 0.09%
NITROGENO / Nitrogen	N2	Balance	Balance	-

TRAZABLE A PATRON DE REFERENCIA No / Traceable to reference standard No:	UM1448.
METODO ANALITICO/ Analytical method:	CROMATOGRAFIA DE GASES
METODO DE PREPARACION / Preparation method:	GRAVIMETRICO
NIVEL DE CONFIANZA / Confidence level:	95%; k=2
TEMPERATURA RECOMENDADA DE ALMACENAMIENTO Y USO / Recomended storage and usage temperature:	0 ° C a / to 45° C
PRESION MINIMA DE USO / Minimun pressure of use	3 Bar / 43.5 psi
FECHA DE LLENADO / Filling date:	16/06/2026
FECHA DE ANALISIS / Date of analysis:	16/06/2026
FECHA DE EXPIRACION / Expiration date:	15/06/2028
CONVENCIONES / Conventions:	PPM: Partes por millon - Volumen a volumen
Lugar de produccion / Producction site:	Planta Boyle.
Lugar de analisis / Analysis place	Laboratorio Planta Boyle. Analytical Gases

ANALYTICAL GASES
Laboratorio Gases Especiales
Planta Boyle

Certificado por / certified by

Ing. Jaime Villanueva
Gases especiales.

GLOBAL CALIBRATION GASES LLC
ISO/IEC 17025:2017

Certificate of Analysis

NIST Traceable

Primary Standard

Customer:	Analytical Gases	Reference #:	062624SY-B
CGA:	350	Certification Date:	08/01/2024
Customer PO #:	150524-1	Expiration Date:	08/01/2028
Cylinder #:	UM1448	Pressure, psig:	2000
Cylinder Size:	AL30		

Components	Requested Concentration	Certified Concentration	Expanded Uncertainty (rel)
Carbon Monoxide	1%	0.99%	2.0%
Carbon Dioxide	6%	6.06%	0.8%
Propane	300ppm	302ppm	1.3%
Nitrogen	Balance	Balance	-

Instrument/ Model	Serial Number	Last Date Calibrated	Analytical Method
Micro GC/ Agilent Quad	US020002031	8/1/2024	Thermal Conductivity
Micro GC/ Agilent 990	CN2240950Z	8/1/2024	Thermal Conductivity

This mixture was prepared gravimetrically using a high load high sensitivity electronic scale. Prior to filling, the scale is verified for accuracy throughout the target mass range against applicable NIST traceable weights, referenced by serial # 7210-1, certificate # 23001130

The calibration results published in this certificate were obtained using equipment capable of producing results that are traceable to National Institute of Standards and Technology (NIST). The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from the calibration facility.

This report states accurately the results of the investigation made upon the material submitted to the analytical laboratory. Every effort has been made to determine objectively the information requested. However, in connection with this report, Global Calibration Gases LLC shall have no liability in excess of the established charge for this service.

Analyst: Signature on file

Approved for release: 8/1/2024

Analytical Gases
Soluciones integrales

AG17460

CERTIFICADO DE ANALISIS/Certificate of Analysis

CLIENTE/Customer: CDA DEL VALLE

CIUDAD/City: Cali(Valle del Cauca)

FECHA/Date: Junio 16 de 2026

PRODUCTO/Product: Mezcla especial

NUMERO DE CILINDRO / Cylinder Number	LOTE No / Lot number	TIPO DE CILINDRO / Cylinders type	CONEXIÓN VALVULA SALIDA / Valve Outlet Connection	PRESION APROX. / Approx.Pressure
FF35560	22033	32	CGA-350	2175 psi

COMPONENTES Components		ESPECIFICACION Order	ANALISIS Analysis result	INCERTIDUMBRE EXPANDIDA Abs. Expanded Uncertainty Abs.
PROPANO / Propane	C3H8	1200 PPM	1211 PPM	+/- 20 PPM
MONOXIDO DE CARBONO / Carbon monoxide	CO	4 %	4.04 %	+/- 0.07 %
DIOXIDO DE CARBONO / Carbon dioxide	CO2	12 %	12.09 %	+/- 0.17%
NITROGENO / Nitrogen	N2	Balance	Balance	-

TRAZABLE A PATRON DE REFERENCIA No / Traceable to reference standard No:	UM1191.
METODO ANALITICO/ Analytical method:	CROMATOGRAFIA DE GASES
METODO DE PREPARACION / Preparation method:	GRAVIMETRICO
NIVEL DE CONFIANZA / Confidence level:	95%; k=2
TEMPERATURA RECOMENDADA DE ALMACENAMIENTO Y USO / Recomended storage and usage temperature:	0 ° C a / to 45° C
PRESION MINIMA DE USO / Minimun pressure of use	3 Bar / 43.5 psi
FECHA DE LLENADO / Filling date:	16/06/2026
FECHA DE ANALISIS / Date of analysis:	16/06/2026
FECHA DE EXPIRACION / Expiration date:	15/06/2028
CONVENCIONES / Conventions:	PPM: Partes por millon - Volumen a volumen
Lugar de produccion / Producction site:	Planta Boyle.
Lugar de analisis / Analysis place	Laboratorio Planta Boyle. Analytical Gases

ANALYTICAL GASES
Laboratorio Gases Especiales
Planta Boyle

Certificado por / certified by

Ing. Jaime Villanueva.
Gases especiales.

GLOBAL CALIBRATION GASES LLC
ISO/IEC 17025:2017

Certificate of Analysis

NIST Traceable

Primary Standard

Customer:	Analytical Gases	Reference #:	062624SY-E
CGA:	350	Certification Date:	08/02/2024
Customer PO #:	150524-1	Expiration Date:	08/02/2028
Cylinder #:	UM1191	Pressure, psig:	2000
Cylinder Size:	AL30		

Components	Requested Concentration	Certified Concentration	Expanded Uncertainty (rel)
Carbon Monoxide	4%	3.98%	1.2%
Carbon Dioxide	12%	12.04%	0.6%
Propane	1200ppm	1199ppm	1.0%
Nitrogen	Balance	Balance	-

Instrument/ Model	Serial Number	Last Date Calibrated	Analytical Method
Micro GC/ Agilent Quad	US020002031	8/2/2024	Thermal Conductivity
Micro GC/ Agilent 990	CN2240950Z	8/2/2024	Thermal Conductivity

This mixture was prepared gravimetrically using a high load high sensitivity electronic scale. Prior to filling, the scale is verified for accuracy throughout the target mass range against applicable NIST traceable weights, referenced by serial # 7210-1, certificate # 23001130

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Analyst: Signature on file

Approved for release: 8/2/2024

Analytical Gases
Soluciones integrales

AG17481

CERTIFICADO DE ANALISIS/Certificate of Analysis

CLIENTE/Customer: CDA DEL VALLE

CIUDAD/City: Cali (Valle del Cauca)

FECHA/Date: Junio 18 de 2026

PRODUCTO/Product: Mezcla especial

NUMERO DE CILINDRO / Cylinder Number	LOTE No / Lot number	TIPO DE CILINDRO / Cylinders type	CONEXIÓN VALVULA SALIDA / Valve Outlet Connection	PRESION APROX. / Approx.Pressure
FF35556	22039	32	CGA-350	2175 psi

COMPONENTES Components		ESPECIFICACION Order	ANALISIS Analysis result	INCERTIDUMBRE EXPANDIDA Abs. Expanded Uncertainty Abs.
PROPANO / Propane	C3H8	3200 PPM	3234 PPM	+/- 52 PPM
MONOXIDO DE CARBONO / Carbon monoxide	CO	8 %	8.07 %	+/- 0.14 %
DIOXIDO DE CARBONO / Carbon dioxide	CO2	12 %	12.03 %	+/- 0.17%
NITROGENO / Nitrogen	N2	Balance	Balance	-

TRAZABLE A PATRON DE REFERENCIA No / Traceable to reference standard No: UM1223.
METODO ANALITICO/ Analytical method: CROMATOGRAFIA DE GASES
METODO DE PREPARACION / Preparation method: GRAVIMETRICO
NIVEL DE CONFIANZA / Confidence level: 95%; k=2
TEMPERATURA RECOMENDADA DE ALMACENAMIENTO Y USO / Recomended storage and usage temperature: 0 ° C a / to 45° C
PRESION MINIMA DE USO / Minimun pressure of use: 3 Bar / 43.5 psi
FECHA DE LLENADO / Filling date: 18/06/2026
FECHA DE ANALISIS / Date of analysis: 18/06/2026
FECHA DE EXPIRACION / Expiration date: 17/06/2028
CONVENCIONES / Conventions: PPM: Partes por millon - Volumen a volumen

Lugar de produccion / Producction site: Planta Boyle.
Lugar de analisis / Analysis place: Laboratorio Planta Boyle. Analytical Gases

ANALYTICAL GASES
Laboratorio Gases Especiales
Planta Boyle

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GLOBAL CALIBRATION GASES LLC
ISO/IEC 17025:2017

Certificate of Analysis

NIST Traceable

Primary Standard

Customer:	Analytical Gases	Reference #:	062624SY-G
CGA:	350	Certification Date:	08/02/2024
Customer PO #:	150524-1	Expiration Date:	08/02/2028
Cylinder #:	UM1223	Pressure, psig:	2000
Cylinder Size:	AL30		

Components	Requested Concentration	Certified Concentration	Expanded Uncertainty (rel)
Carbon Monoxide	8%	8.03%	1.2%
Carbon Dioxide	12%	12.12%	0.6%
Propane	3200ppm	3260ppm	1.0%
Nitrogen	Balance	Balance	-

Instrument/ Model	Serial Number	Last Date Calibrated	Analytical Method
Micro GC/ Agilent Quad	US020002031	8/2/2024	Thermal Conductivity
Micro GC/ Agilent 990	CN2240950Z	8/2/2024	Thermal Conductivity

This mixture was prepared gravimetrically using a high load high sensitivity electronic scale. Prior to filling, the scale is verified for accuracy throughout the target mass range against applicable NIST traceable weights, referenced by serial # 7210-1, certificate # 23001130

The calibration results published in this certificate were obtained using equipment capable of producing results that are traceable to National Institute of Standards and Technology (NIST). The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from the calibration facility.

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Analyst: Signature on file

Approved for release: 8/2/2024