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CERTIFICATE OF ACCREDITATION

This is to attest

HONORES Y RAMIREZ INGENIEROS S.A.C.

CALLE SANTA ANGELICA 289
LIMA, 15314, PERU

Calibration Laboratory CL-315

has met the requirements of AC204, *IAS Accreditation Criteria for Calibration Laboratories*, and has demonstrated compliance with ISO/IEC Standard 17025:2017, *General requirements for the competence of testing and calibration laboratories.* This organization is accredited to provide the services specified in the scope of accreditation.

Expiration Date December 1, 2026
Effective Date November 21, 2025

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Accredited to ISO/IEC 17025:2017 *Effective Date November 21, 2025*

CALIBRATION AND MEASUREMENT CAPABILITY (CMC)*

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
Dimensional			
Rain gauge	2 mm to 10 mm	0.05 mm	MV-01 procedure for calibration of Rain Gauges with graduated reference burette
Mechanical			
Flowmeters: (Air sampler low vol / occupational bomb / rotameter / flow calibrator)	0.05 L/min to 0.4 L/min 0.4 L/min to 5 L/min 5 L/min to 10 L/min 10 L/min to 25 L/min	3.8 % 2.9 % 2.7 % 1.4 %	ME-009 Procedure for the calibration of gas flow meters
High volume particulate matter samplers (HI-Vol)	0.7 m^3/min to 1.8 m^3/min	0.02 m^3/min	MV-02 Procedure for the calibration of high-volume particulate matter sampler
Variable flow calibrator (Variflow)	50 m^3/h to 100 m^3/h	0.8 m^3/h	MV-03 Procedure for calibrating high-volume flow calibrators
Barometers	500 mbar to 1100 mbar	0.5 mbar	PC-024 calibration of measurement instruments absolute pressure. First edition 2018. INACAL
Manometers	0 psi to 30 psi	0.042 psi	ME-003 Procedure for the calibration of pressure gauges, vacuum gauges and manovacuometers
Liquid Column Manometer	0 inH_2O to 60 inH_2O	0.3 inH_2O	ME-021 procedure for the calibration of liquid columns (manometric & barometric).

** If information in this CMC is presented in non-SI units, the conversion factors stated in NIST Special Publication 811 "Guide for the Use of the International System of Units (SI)" apply.*

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
Isokinetic Sampler Dry Gas Meter	Y (factor): 1 ± 0.02 ΔH@:46.735 ± 6.4 mm H_2O	0.01 (dimensionless) 1 mmH_2O	MV-04 Procedure for the calibration of isokinetic samplers
Anemometer	0.5 m/s to 5 m/s 5 m/s to 20 m/s	0.12 m/s 0.27 m/s	MV-05 Procedure for anemometer calibration, with reference anemometer.
Thermal			
Thermo-hygrometer	20 %RH to 90 %RH 15 °C to 40 °C	3.1 %RH 0.5 °C	PC-026 procedure for the calibration of environmental meters and hygrometers, 2019. INACAL.
Thermometer	10 °C to 80 °C	0.094 °C	PC-017 procedure for the calibration of thermometers
Chemical/Gas			
Gas Analizer CO H2S SO2 NO NO2 O3	 0 to 2.0 x 10^{-5} mol/mol 0 to 1.0 x 10^{-6} mol/mol 0 to 1.0 x 10^{-6} mol/mol 0 to 1.0 x 10^{-6} mol/mol 0 to 1.0 x 10^{-6} mol/mol 0 to 4.0 x 10^{-7} mol/mol	 (7.6 x 10^{-3}[C] + 5.9 x 10^{-3}) x 10^{-6} mol/mol (1.3 x 10^{-2}[C] + 1.7) x 10^{-9} mol/mol (4.3 x 10^{-3}[C] + 9.3 x 10^{-1}) x 10^{-9} mol/mol (6.2 x 10^{-3}[C] + 1.4) x 10^{-9} mol/mol (6.5 x 10^{-3}[C] + 1.3) x 10^{-9} mol/mol (8.1 x 10^{-2} [C] - 2.2) x 10^{-9} mol/mol	MV-06 Procedure for the calibration of gas analyzers by dynamic dilution.
Gas detector CO NO SO2	 514 ppm 1005 ppm 208 ppm 1010 ppm 206.7 ppm 1000 ppm	 6.1 parts per 10^6 8.7 parts per 10^6 1.7 parts per 10^6 4.6 parts per 10^6 1.4 parts per 10^6 8.2 parts per 10^6	MV-07 Procedure for the calibration of gas analyzers by dynamic dilution.

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
NO2	197.2 ppm	1.9 parts per 10^6	
H2S	200 ppm	3.1 parts per 10^6	
O2	3.042 % 18.15 % 21.07 %	0.015 % 0.06 % 0.08 %	
C3H8	810 ppm	4.1 parts per 10^6	

[1]The uncertainty covered by the Calibration and Measurement Capability (CMC) is expressed as the expanded uncertainty having a coverage probability of approximately 95 %. It is the smallest measurement uncertainty that a laboratory can achieve within its scope of accreditation when performing calibrations of a best existing device. The measurement uncertainty reported on a calibration certificate may be greater than that provided in the CMC due to the behavior of the calibration item and other factors that may contribute to the uncertainty of a specific calibration.

[2]When uncertainty is stated in relative terms (such as percent, a multiplier expressed as a decimal fraction or in scientific notation), it is in relation to instrument reading or instrument output, as appropriate, unless otherwise indicated.

[3]Capability is suitable for the calibration of measuring devices in the stated ranges.

[4]Capability is suitable for the calibration of devices intended to generate the indicated quantity in the stated ranges.

Notes:
mol/mol – moles of gas per mole of mixture
ppm = parts per million