PERRY JOHNSON LABORATORY ACCREDITATION, INC.

Certificate of Accreditation

Perry Johnson Laboratory Accreditation, Inc. has assessed the Laboratory of:

Metrología Especializada y Calibración S.A. de C.V.

Ignacio Aldama #32, Col. Los Reyes Ixtacala
Tlalnepantla, Estado de México, México. C.P. 54090

(Hereinafter called the Organization) and hereby declares that Organization is accredited in accordance with the recognized International Standard:

ISO/IEC 17025:2017

This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (as outlined by the joint ISO-ILAC-IAF Communiqué dated April 2017):

Dimensional, Electrical, Mechanical, Mass, Force and Weighing Devices and Thermodynamic Calibration
(As detailed in the supplement)

Accreditation claims for such testing and/or calibration services shall only be made from addresses referenced within this certificate. This Accreditation is granted subject to the system rules governing the Accreditation referred to above, and the Organization hereby covenants with the Accreditation body's duty to observe and comply with the said rules.

For PJLA:

Initial Accreditation Date:	*Issue Date:*	*Expiration Date:*
August 08, 2016	July 17, 2024	October 31, 2026

Accreditation No.:	*Certificate No.:*
77849	L24-565

Tracy Szerszen
President

Perry Johnson Laboratory
Accreditation, Inc. (PJLA)
755 W. Big Beaver, Suite 1325
Troy, Michigan 48084

The validity of this certificate is maintained through ongoing assessments based on a continuous accreditation cycle. The validity of this certificate should be confirmed through the PJLA website: www.pjlabs.com

Certificate of Accreditation: Supplement

Metrología Especializada y Calibración S.A. de C.V.

Ignacio Aldama #32, Col. Los Reyes Ixtacala
Tlalnepantla, Estado de México, México. C.P. 54090
Contact Name: Geraldine Vidal Mendoza   Phone: 555-384-5018

Accreditation is granted to the facility to perform the following calibrations:

Dimensional

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE (AND SPECIFICATION WHERE APPROPRIATE)	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED	CALIBRATION MEASUREMENT METHOD OR PROCEDURES USED
Caliper^{FO}	0.127 mm to 609.6 mm	(9.5 + 6 x 10^{-3}L) µm	Gage Blocks	NMX-CH-002-IMNC-2004 Clause: 4.2.1 NMX-CH-099-IMNC-2005 Clause: 6.11.1 NMX-CH-093-IMNC-2005 Clause: 6.8.1 JIS B 7544 Clause: 5 NMX-CH-141-IMNC-2005 Clause: 5.1
Depth Gage^{FO}	0.127 mm to 609.6 mm	(8 + 6 x 10^{-3}L) µm		
Micrometer^{FO}	0.127 mm to 508 mm	(2 + 1.1 x 10^{-2}L) µm		
Inside Micrometer^{FO}	0.127 mm to 609.6 mm	(1.2 + 4.4 x 10^{-2}L) µm		
Depth Micrometer^{FO}	0.127 mm to 304.8 mm	(3.2 + 7 x 10^{-3}L) µm		
Height Gage^{FO}	0.127 mm to 609.6 mm	(15 + 7 x 10^{-3}L) µm		
Thickness Gage^{FO}	0.127 mm to 25.4 mm	2.5 µm		
Micrometer Standards^{FO}	25 mm to 482.6 mm	(1.1 + 1.2 x 10^{-2}L) µm	Gage Blocks, High Accuracy Indicator Mitutoyo 524-521	NMX-CH-099-IMNC-2005 Clause: 6.10
Indicator^{F}	0.01 mm to 25.4 mm	7 µm	Dial Gage Tester Mitutoyo 170-102 M-2	NMX-CH-463-IMNC-2008 Clause: 5.1 NMX-CH-149-IMNC-2005 Clauses: 4.2.3 & 4.2.4
Test Indicator^{F}	0.01 mm to 1.6 mm	6 µm		
Tape Measure^{F}	Up to 50 m	(0.26 + 0.11L) mm	Standard Rule, Reticle Mitutoyo 183-131	NOM-046-SCFI-1999 Clauses: 5.1.1.1 & 5.2
Steel Rule^{F}	1 mm to 2 000 mm	(144 + 1 x 10^{-3}L) µm	Standard Rule, Shop Microscope Cole Parmer 03890-40	NMX-CH-148-IMNC-2018 Clause: 6.1.1

Electrical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE (AND SPECIFICATION WHERE APPROPRIATE)	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED	CALIBRATION MEASUREMENT METHOD OR PROCEDURES USED
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type J^{FO}	-200 °C to 0 °C	1.2 °C	Electrical Simulation of Thermocouple Output	CENAM Technical Guide
	0 °C to 1 200 °C	0.84 °C		
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type K^{FO}	-200 °C to 0 °C	1.4 °C	Electrical Simulation of Thermocouple Output	CENAM Technical Guide
	0 °C to 1 370 °C	1 °C		

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Contact Name: Geraldine Vidal Mendoza   Phone: 555-384-5018

Accreditation is granted to the facility to perform the following calibrations:

Electrical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE (AND SPECIFICATION WHERE APPROPRIATE)	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED	CALIBRATION MEASUREMENT METHOD OR PROCEDURES USED
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type T^{FO}	-200 °C to 0 °C	1.5 °C	Electrical Simulation of Thermocouple Output	CENAM Technical Guide
	0 °C to 400 °C	0.93 °C		
Temperature Calibration, Indication and Control Equipment used with RTD Type Pt 385 100Ω^{FO}	-200 °C to 50 °C	0.4 °C	Electrical Simulation of RTD Output	
	50 °C to 500 °C	0.56 °C		
	500 °C to 800 °C	0.66 °C		

Mechanical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE (AND SPECIFICATION WHERE APPROPRIATE)	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED	CALIBRATION MEASUREMENT METHOD OR PROCEDURES USED
Pressure Gauge^{FO}	3 psig to 100 psig	0.039 psig	Druck DPI-150	NOM-013-SCFI-2004 (Clauses: 4.2; 6.3.1; 6.3.2; 6.4.1)
	100 psig to 300 psig	0.063 psig	Druck DPI-150 300 psig	
	100 psig to 5 000 psig	3.4 psig	Crystal XP2I	
	40 psig to 2 000 psig	1.2 psig	Crystal XP2I	
	200 psig to 10 000 psig	7 psig		
Vacuum Gauge^{FO}	-10 psig to -1 psig	0.021 psig	Druck DPI-150	
Differential Pressure Gauge^{FO}	0.02 in H_2O to 0.5 in H_2O	0.003 3 in H_2O	Differential Pressure Gauge MENSOR DPG2400	
	0.5 in H_2O to 5 in H_2O	0.015 in H_2O	Differential Pressure Gauge MENSOR DPG2400	

Mass, Force and Weighing Devices

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE (AND SPECIFICATION WHERE APPROPRIATE)	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED	CALIBRATION MEASUREMENT METHOD OR PROCEDURES USED
Balances^{O}	1 mg to 50 g (Res.= 0.000 1 mg)	0.059 mg	Class OIML E2 Weights	CENAM Technical Guide NOM-010-SCFI-1994 (Clauses: 3.3.2.2, 3.3.2.3, 3.3.2.4, 3.3.2.5, 5.1.1, 5.2, 5.3.2, 5.3.3, 5.5.)

Accreditation is granted to the facility to perform the following calibrations:

Mass, Force and Weighing Devices

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE (AND SPECIFICATION WHERE APPROPRIATE)	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED	CALIBRATION MEASUREMENT METHOD OR PROCEDURES USED
Balances^{O}	1 g to 5 kg (Res.= 0.01 g)	0.018 g	Class OIML F1 Weights	CENAM Technical Guide NOM-010-SCFI-1994 (Clauses: 3.3.2.2, 3.3.2.3, 3.3.2.4, 3.3.2.5, 5.1.1, 5.2, 5.3.2, 5.3.3, 5.5.)
	1 g to 10 kg (Res.= 0.05 g)	0.074 g	Class OIML F1, F2 Weights	
Scales^{O}	1 g to 20 kg (Res.= 0.5 g)	0.78 g	Class OIML M1 Weights	
	1 g to 50 kg (Res.= 1 g)	1.8 g		
	2 g to 100 kg (Res.= 2 g)	3.6 g		
	5 g to 200 kg (Res.= 5 g)	7.8 g		
	10 g to 500 kg (Res.= 10 g)	18 g		
	20 g to 1 000 kg (Res.= 20 g)	36 g		

Thermodynamic

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE (AND SPECIFICATION WHERE APPROPRIATE)	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED	CALIBRATION MEASUREMENT METHOD OR PROCEDURES USED
Chart Recorder, Thermohygrometer, Humidity Meters, Humidity Sensor^{F}	10 % RH to 90 % RH	2 % RH	Hygrometer Vaisala MI70 / HMP76	CENAM Technical Guide
Glass Liquid Thermometers^{F}	-35 °C to 150 °C	0.076 °C	Thermometer Fluke 1524 / 5615	NOM-011-SCFI-2004 (Clause: 5.11)
	151 °C to 200 °C	0.16 °C		
	201 °C to 300 °C	0.28 °C		
	301 °C to 400 °C	0.31 °C		
Bimetallic Thermometer^{FO}	-35 °C to 150 °C	0.19 °C	Thermometer Fluke 1524 / 5615	NMX-CH-070-SCFI-1993 (Clause: 5.9)
	151 °C to 400 °C	0.22 °C		
Industrial Thermometer Indicator and Sensor type RTD, Thermistor, Thermocouple^{FO}	-35 °C to 150 °C	0.086 °C		
	151 °C to 200 °C	0.14 °C		

Accreditation is granted to the facility to perform the following calibrations:

Thermodynamic

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE (AND SPECIFICATION WHERE APPROPRIATE)	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED	CALIBRATION MEASUREMENT METHOD OR PROCEDURES USED
Industrial Thermometer Indicator and Sensor type RTD, Thermistor, Thermocouple^{FO}	201 °C to 300 °C	0.14 °C	Thermometer Fluke 1524 / 5615	NMX-CH-070-SCFI-1993 (Clause: 5.9)
	301 °C to 400 °C	0.14 °C		

1. The CMC (Calibration and Measurement Capability) stated for calibrations included on this scope of accreditation represents the smallest measurement uncertainty attainable by the laboratory when performing a more or less routine calibration of a nearly ideal device under nearly ideal conditions. It is typically expressed at a confidence level of 95 % using a coverage factor k (usually equal to 2). The actual measurement uncertainty associated with a specific calibration performed by the laboratory will typically be larger than the CMC for the same calibration since capability and performance of the device being calibrated and the conditions related to the calibration may reasonably be expected to deviate from ideal to some degree.
2. The laboratories range of calibration capability for all disciplines for which they are accredited is the interval from the smallest calibrated standard to the largest calibrated standard used in performing the calibration. The low end of this range must be an attainable value for which the laboratory has or has access to the standard referenced. Verification of an indicated value of zero in the absence of a standard is common practice in the procedure for many calibrations but by its definition it does not constitute calibration of zero capacity.
3. The presence of a superscript F means that the laboratory performs calibration of the indicated parameter at its fixed location. Example: Outside Micrometer^{F} would mean that the laboratory performs this calibration at its fixed location.
4. The presence of a superscript O means that the laboratory performs calibration of the indicated parameter onsite at customer locations. Example: Outside Micrometer^{O} would mean that the laboratory performs this calibration onsite at the customer's location.
5. The presence of a superscript FO means that the laboratory performs calibration of the indicated parameter both at its fixed location and onsite at customer locations. Example: Outside Micrometer^{FO} would mean that the laboratory performs this calibration at its fixed location and onsite at customer locations.

6. Measurement uncertainties obtained for calibrations performed at customer sites can be expected to be larger than the measurement uncertainties obtained at the laboratories fixed location for similar calibrations. This is due to the effects of transportation of the standards and equipment and upon environmental conditions at the customer site which are typically not controlled as closely as at the laboratories fixed location.
7. The term L represents length in inches or millimeters as appropriate to the uncertainty statement.