



# PERRY JOHNSON LABORATORY ACCREDITATION INC.

## Certificate of Accreditation

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

**ZWICKROELL, S.A. de C.V.**

**Av. Santa Fe # 170, Col. Lomas de Santa Fe  
Alcaldía Alvaro Obregón, Ciudad de México, México. C.P. 01210**

*(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):

**Mass, Force, and Weighing Devices, Dimensional, and Mechanical 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:

Tracy Szerszen  
President

*Initial Accreditation Date*

December 05, 2014

*Issue Date*

April 06, 2019

*Expiration Date:*

May 31, 2021

*Revision Date:*

September 01, 2020

*Accreditation No.:*

80306

*Certificate No.:*

L19-198-R2

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.pjilabs.com](http://www.pjilabs.com)*



# Certificate of Accreditation: Supplement

## ZWICKROELL, S.A. de C.V.

Av. Santa Fe # 170, Col. Lomas de Santa Fe  
 Alcaldia Alvaro Obregón, Ciudad de México, México. C.P. 01210  
 Contact Name: Horacio Rodriguez Phone: 555-292-4326

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

### Mass, Force, and Weighing Devices

MEASURED INSTRUMENT QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY ( $\pm$ )	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Material Testing Machines and Force Instruments – Tensile <sup>O</sup>	0.01 N to 200 N	0.13 % of reading	Dead Weights, Kern & Son NMX-CH-7500-1-IMNC ASTM E4
	0.025 kN to 0.25 kN	0.14 % of reading	Load Cell GTM/ZWICK Model: KTN-P NMX-CH-7500-1-IMNC ASTM E4
	0.25 kN to 2.5 kN	0.18 % of reading	
	0.5 kN to 5 kN	0.12 % of reading	
	5 kN to 50 kN	0.12 % of reading	
	2.5 kN to 25 kN	0.14 % of reading	
	25 kN to 250 kN	0.15 % of reading	
60 kN to 600 kN	0.13 % of reading		
Material Testing Machines and Force Instruments – Compression <sup>F</sup>	0.01 N to 200 N	0.13 % of reading	Dead Weights, Kern & Son NMX-CH-7500-1-IMNC ASTM E4
	0.025 kN to 0.25 kN	0.14 % of reading	Load Cell GTM/ZWICK Model: KTN-P NMX-CH-7500-1-IMNC ASTM E4
	0.25 kN to 2.5 kN	0.15 % of reading	
	0.5 kN to 5 kN	0.12 % of reading	
	5 kN to 50 kN	0.12 % of reading	
	2.5 kN to 25 kN	0.15 % of reading	
	25 kN to 250 kN	0.13 % of reading	
60 kN to 600 kN	0.12 % of reading		

### Dimensional

MEASURED INSTRUMENT QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY ( $\pm$ )	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Extensometers and Crosshead Travel <sup>F</sup>	0.002 mm to 12 mm	0.5 $\mu$ m	Linear Encoder Heidenhain Epsilon 3590VHR ISO 9513 ASTM E83, ASTM E2309
	0.003 mm to 60 mm	0.86 $\mu$ m	

### Mechanical

MEASURED INSTRUMENT QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY ( $\pm$ )	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Indirect Verification of Rockwell Hardness Testers HRA <sup>F</sup>	20 HRA to 40 HRA	0.39 HRA	Hardness Test Blocks Indentec Hardness Testing Machines Ltd ISO 6508-2, ASTM E18
	41 HRA to 75 HRA	0.34 HRA	
	76 HRA to 88 HRA	0.34 HRA	



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### Mechanical

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Indirect Verification of Rockwell Hardness Testers HRBW <sup>F</sup>	20 HRBW to 50 HRBW	1.4 HRBW	Hardness Test Blocks Indented Hardness Testing Machines Ltd ISO 6508-2 ASTM E18
	51 HRBW to 80 HRBW	0.87 HRBW	
	81 HRBW to 100 HRBW	0.51 HRBW	
Indirect Verification of Rockwell Hardness Testers HRC <sup>F</sup>	20 HRC to 30 HRC	0.38 HRC	
	31 HRC to 55 HRC	0.36 HRC	
	56 HRC to 70 HRC	0.33 HRC	
Indirect Verification of Rockwell Hardness Testers HRD <sup>F</sup>	40 HRD to 47 HRD	0.37 HRD	
	48 HRD to 63 HRD	0.36 HRD	
	64 HRD to 77 HRD	0.34 HRD	
Indirect Verification of Rockwell Hardness Testers HRFW <sup>F</sup>	60 HRFW to 75 HRFW	0.9 HRFW	
	76 HRFW to 90 HRFW	0.87 HRFW	
	91 HRFW to 100 HRFW	0.52 HRFW	
Indirect Verification of Rockwell Hardness Testers HR15N <sup>F</sup>	70 HR15N to 77 HR15N	0.43 HR15N	
	78 HR15N to 88 HR15N	0.44 HR15N	
	89 HR15N to 91 HR15N	0.43 HR15N	
Indirect Verification of Rockwell Hardness Testers HR30N <sup>F</sup>	42 HR30N to 54 HR30N	0.69 HR30N	
	55 HR30N to 73 HR30N	0.44 HR30N	
	74 HR30N to 80 HR30N	0.43 HR30N	
Indirect Verification of Rockwell Hardness Testers HR45N <sup>F</sup>	20 HR45N to 31 HR45N	0.62 HR45N	
	32 HR45N to 61 HR45N	0.58 HR45N	
	62 HR45N to 70 HR45N	0.44 HR45N	
Indirect Verification of Rockwell Hardness Testers HR15TW <sup>F</sup>	73 HR15TW to 80 HR15TW	0.82 HR15TW	
	81 HR15TW to 87 HR15TW	0.82 HR15TW	
	88 HR15TW to 93 HR15TW	0.82 HR15TW	
Indirect Verification of Rockwell Hardness Testers HR30TW <sup>F</sup>	43 HR30TW to 56 HR30TW	0.93 HR30TW	
	57 HR30TW to 69 HR30TW	0.81 HR30TW	
	70 HR30TW to 82 HR30TW	0.81 HR30TW	
Indirect Verification of Rockwell Hardness Testers HR45TW <sup>F</sup>	12 HR45TW to 33 HR45TW	0.91 HR45TW	
	34 HR45TW to 54 HR45TW	0.96 HR45TW	
	55 HR45TW to 72 HR45TW	0.81 HR45TW	
Indirect Verification of Brinell Hardness Tester HBW 1/10 <sup>F</sup>	10 HBW to 100 HBW	1.8 HBW	Hardness Test Blocks Indented Hardness Testing Machines Ltd ISO 6506-2
	100 HBW to 200 HBW	2 HBW	
	200 HBW to 400 HBW	2.4 HBW	



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Indirect Verification of Brinell Hardness Tester HBW 1/30 <sup>F</sup>	95 HBW to 250 HBW	2.4 HBW	Hardness Test Blocks Indented Hardness Testing Machines Ltd ISO 6506-2
	250 HBW to 450 HBW	4.5 HBW	
	450 HBW to 650 HBW	5.6 HBW	
Indirect Verification of Brinell Hardness Tester HBW 2.5/31.25 <sup>F</sup>	10 HBW to 70 HBW	1.1 HBW	
	70 HBW to 100 HBW	1.1 HBW	
	100 HBW to 200 HBW	1.1 HBW	
Indirect Verification of Brinell Hardness Tester HBW 2.5/62.5 <sup>F</sup>	10 HBW to 100 HBW	1.1 HBW	
	100 HBW to 200 HBW	1.7 HBW	
	200 HBW to 400 HBW	2.4 HBW	
Indirect Verification of Brinell Hardness Tester HBW 2.5/187.5 <sup>F</sup>	95 HBW to 250 HBW	2.3 HBW	
	250 HBW to 450 HBW	5.1 HBW	
	450 HBW to 650 HBW	6.7 HBW	
Indirect Verification of Brinell Hardness Tester HBW 5/250 <sup>F</sup>	10 HBW to 100 HBW	1.2 HBW	
	100 HBW to 200 HBW	1.7 HBW	
	200 HBW to 400 HBW	2.8 HBW	
Indirect Verification of Brinell Hardness Tester HBW 5/750 <sup>F</sup>	95 HBW to 250 HBW	2.6 HBW	
	250 HBW to 450 HBW	4.8 HBW	
	450 HBW to 650 HBW	5.6 HBW	
Indirect Verification of Brinell Hardness Tester HBW 10/3 000 <sup>F</sup>	95 HBW to 250 HBW	2.7 HBW	
	250 HBW to 450 HBW	3.7 HBW	
	450 HBW to 650 HBW	4.3 HBW	
Indirect Verification of Micro Hardness Tester Vickers HV/0.025 <sup>F</sup>	50 HV to 225 HV	8.1 HV	Hardness Test Blocks Indented Hardness Testing Machines Ltd ISO 6507-2
	226 HV to 600 HV	35 HV	
	601 HV to 1 500 HV	150 HV	
Indirect Verification of Micro Hardness Tester Vickers HV/0.05 <sup>F</sup>	50 HV to 225 HV	24 HV	
	226 HV to 600 HV	50 HV	
	601 HV to 1 500 HV	50 HV	
Indirect Verification of Micro Hardness Tester Vickers HV/0.1 <sup>F</sup>	50 HV to 225 HV	25 HV	
	226 HV to 600 HV	50 HV	
	601 HV to 1 500 HV	48 HV	



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### Mechanical

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Indirect Verification of Micro Hardness Tester Vickers HV/0.2 <sup>F</sup>	50 HV to 225 HV	18 HV	Hardness Test Blocks Indented Hardness Testing Machines Ltd ISO 6507-2
	226 HV to 600 HV	38 HV	
	601 HV to 1 500 HV	77 HV	
Indirect Verification of Micro Hardness Tester Vickers HV/0.3 <sup>F</sup>	50 HV to 225 HV	8.1 HV	
	226 HV to 600 HV	32 HV	
	601 HV to 1 500 HV	63 HV	
Indirect Verification of Micro Hardness Tester Vickers HV/0.5 <sup>F</sup>	50 HV to 225 HV	12 HV	
	226 HV to 600 HV	25 HV	
	601 HV to 1 500 HV	50 HV	
Indirect Verification of Micro Hardness Tester Vickers HV/1 <sup>F</sup>	50 HV to 225 HV	4.6 HV	
	226 HV to 600 HV	18 HV	
	601 HV to 1 500 HV	36 HV	
Indirect Verification of Micro Hardness Tester Vickers HV/5 <sup>F</sup>	50 HV to 225 HV	3.6 HV	
	226 HV to 600 HV	12 HV	
	601 HV to 1 500 HV	17 HV	
Indirect Verification of Micro Hardness Tester Vickers HV/10 <sup>F</sup>	50 HV to 225 HV	1.9 HV	
	226 HV to 600 HV	8.2 HV	
	601 HV to 1 500 HV	17 HV	
Indirect Verification of Micro Hardness Tester Vickers HV/30 <sup>F</sup>	50 HV to 225 HV	1.6 HV	
	226 HV to 600 HV	5.3 HV	
	601 HV to 1 500 HV	8 HV	
Indirect Verification of Micro Hardness Tester Vickers HV/50 <sup>F</sup>	50 HV to 225 HV	1.1 HV	
	226 HV to 600 HV	6.6 HV	
	601 HV to 1 500 HV	4.5 HV	
Indirect Verification of Micro Hardness Tester Knoop HK/0.1 <sup>F</sup>	100 HK to 250 HK	15 HK	Hardness Test Blocks Indented Hardness Testing Machines Ltd ISO 4545-2
	250 HK to 650 HK	36 HK	
	650 HK to 800 HK	53 HK	
Indirect Verification of Micro Hardness Tester Knoop HK/0.2 <sup>F</sup>	100 HK to 250 HK	7.9 HK	
	250 HK to 650 HK	23 HK	
	650 HK to 840 HK	35 HK	



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Indirect Verification of Micro Hardness Tester Knoop HK/0.3 <sup>F</sup>	100 HK to 250 HK	35 HK	Hardness Test Blocks Indented Hardness Testing Machines Ltd ISO 4545-2
	250 HK to 650 HK	8.2 HK	
	650 HK to 840 HK	11 HK	
Indirect Verification of Micro Hardness Tester Knoop HK/0.5 <sup>F</sup>	100 HK to 250 HK	31 HK	
	250 HK to 650 HK	5.8 HK	
	650 HK to 840 HK	18 HK	
Indirect Verification for Impact Tests Machines for Metallic Materials <sup>O</sup>	2 J to 88 J	0.16 J	ASTM E-23 16 ISO 148-2 SRM 2092 (NIST) Low Energy Level SRM 2096 (NIST) High Energy Level 1
	88 J to 750 J	0.39 J	
Direct Verification for Impact Tests Machines for Plastic Materials Time <sup>O</sup>	0.15 s to 60 s	0.05 s	Stopwatch Hanhart ASTM D256 ASTM D6110 ISO 179 / ISO 180
Direct Verification for Impact Tests Machines for Plastic Materials Force <sup>O</sup>	1 N to 100 N	0.02 N	Load Cell ACD100N ASTM D256 ASTM D6110 ISO 179 / ISO 180
Direct Verification for Impact Tests Machines for Plastic Materials Angle <sup>O</sup>	1° to 150°	0.08°	Digital Angle Gauge Wyler ASTM D256 ASTM D6110 ISO 179 / ISO 180
Verification of the Speed of the Crosshead in Testing Machines <sup>O</sup>	0.01 mm/min to 200 mm/min	0.032 mm/min	Digital Length Gauge Stopwatch ASTM E2658
Verification of Flow Index Machines – Force <sup>O</sup>	0.325 kg to 21.6 kg	3 g	Weight Scale ASTM D1238
	2.55 kg to 50 kg	0.15 % of reading	Load Cell ASTM D1238
Verification of Flow Index Machines - Temperature	21 °C to 400 °C	0.09 °C	RTD PT100 ASTM D1238
Flow Index Displacement <sup>O</sup>	0.003 mm to 60 mm	1 $\mu$ m	Digital Length Gauge ASTM D1238
	1.1 mm to 100 mm	2 $\mu$ m	Gauge Length Blocks ASTM D1238



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

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<sup>F</sup> 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<sup>O</sup> would mean that the laboratory performs this calibration onsite at the customer's location.
5. 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.