



CERTIFICATE OF ACCREDITATION

This is to attest that

Q CALIBRATION SERVICES, LLC

2082 MICHELSON DRIVE SUITE 100
IRVINE, CALIFORNIA 92612 U.S.A.

Calibration Laboratory CL-285

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.

Effective Date June 17, 2024

Expiration Date July 1, 2025



A handwritten signature in black ink, reading "Raj Nathan".

President

SCOPE OF ACCREDITATION

International Accreditation Service, Inc.

3060 Saturn Street, Suite 100, Brea, California 92821, U.S.A. | www.iasonline.org

Q CALIBRATION SERVICES, LLC

www.qcalservices.com

Contact Name Oscar Quito

Contact Phone 949 242-9175

Accredited to ISO/IEC 17025:2017

Effective Date June 17, 2024

CALIBRATION AND MEASUREMENT CAPABILITY (CMC)*

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY ^{1,2} (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
<i>Mechanical</i>			
Force ⁵ – Calibration of Testing Machines – Tension / Compression	0.5 lbf to 100 lbf	0.031 lbf	ASTM E4, IP-720-003 Dead Weights
Force ⁵ – Calibration of Testing Machines – Tension	10 lbf to 1000 lbf	0.23 lbf	ASTM E4, ISO 7500-1 IP-720-003 Load Cells
	>1000 lbf to 10000 Lbf	4.8 lbf	
	>10000 lbf to 30000 lbf	14 lbf	
	>30000 lbf to 60000 lbf	35 lbf	
	>60000 lbf to 120000 lbf	210 lbf	
Force ⁵ – Calibration of Testing Machines – Compression	10 lbf to 1000 lbf	0.23 lbf	ASTM E4, ISO 7500-1 IP-720-003 Load Cells
	>1000 lbf to 10000 lbf	4.7 lbf	
	>10000 lbf to 30000 lbf	14 lbf	
	>30000 lbf to 60000 lbf	35 lbf	
	>60000 lbf to 500000 lbf	120 lbf	
Calibration of Extensometer ⁵	0 in to 2 in	0.00013 in	ASTM E83, ISO 9513, IP-720-004, -005, -006 Linear calibrator / Height gage
	>2 in to 20 in	0.0023 in	
Calibration of Crosshead Displacement ⁵	0 in to 2 in	0.00014 in	ASTM E2309, IP-720-008 Digital Indicator / Height gage
	>2 in to 20 in	0.0023 in	
On-site calibration of Crosshead Speed ⁵	0.05 in/min to 2 in/min	0.12 %	ASTM E2658, IP-720-009 Digital Indicator / Stopwatch
	>2 in/min to 10 in/min	0.12 %	
Calibration of Load rate ⁵	50 lbf/min to 30000 lbf/min	0.18 %	ASTM E2309, E2658, IP-720-011 Load Cells / Stopwatch
Calibration of Strain rate ⁵	0.002 in/in/min to 0.01 in/in/min	0.17 %	ASTM E2309, E2658, IP-720-010 Extensometers / Stopwatch

* 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.

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Calibration of Testing Machine - Static Alignment ⁵	1.0 % to 100 % (Bending)	2.4 % (Bending)	ASTM E1012, IP-720-015 Using DMM
Calibration of Indirect verification of Rockwell Hardness Scales ⁵			ASTM E18, IP-720-012 NIST traceable blocks
	HRA		
High	(80 to 84) HRA	0.16 HRA	
Medium	(70 to 78) HRA	0.31 HRA	
Low	(20 to 65) HRA	0.41 HRA	
	HRBW		
High	(80 to 100) HRBW	0.39 HRBW	
Medium	(60 to 79) HRBW	0.36 HRBW	
Low	(40 to 59) HRBW	0.32 HRBW	
	HRC		
High	(60 to 65) HRC	0.32 HRC	
Medium	(35 to 55) HRC	0.33 HRC	
Low	(20 to 30) HRC	0.47 HRC	
	HRHW		
High	(96 to 105) HRHW	0.44 HRHW	
Medium	(60 to 94) HRHW	0.46 HRHW	
	HR15N		
High	(90 to 92) HR15N	0.53 HR15N	
Medium	(78 to 88) HR15N	0.22 HR15N	
Low	(70 to 77) HR15N	0.45 HR15N	
	HR30N		
High	(77 to 82) HR30N	0.32 HR30N	
Medium	(55 to 73) HR30N	0.33 HR30N	
Low	(42 to 50) HR30N	0.24 HR30N	
	HR45N		
High	(50 to 72) HR45N	0.23 HR45N	
Medium	(30 to 49) HR45N	0.53 HR45N	
Low	(20 to 29) HR45N	0.52 HR45N	
	HR15TW		
High	(87 to 93) HR15TW	0.30 HR15TW	
Medium	(81 to 86) HR15TW	0.29 HR15TW	
Low	(74 to 80) HR15TW	0.42 HR15TW	
	HR30TW		
High	(70 to 83) HR30TW	0.30 HR30TW	
Medium	(57 to 69) HR30TW	0.32 HR30TW	

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Low	(43 to 56) HR30TW	0.67 HR30TW	
High	HR45TW	0.40 HR45TW	
Low	(53 to 73) HR45TW (13 to 32) HR45TW	0.69 HR45TW	
Thermal			
Calibration of Furnaces, Ovens, Presses	-100 °F to 900 °F	2.9 °F	ASTM E145, IP-720-007 Using DMM
Electrical – DC/LF			
Calibration of DC Voltage ⁵ – Measure ⁴ DC Voltage ratio	0.1 mV/V to 2 mV/V	0.028 %	IP-720-002 Comparison to transducer simulator / DMM
Optical Radiation			
Calibration of Optical Comparators ⁵			IP-720-013
Angularity	90 °	0.0018 °	Square
X-Y Linearity	0.1 in to 4 in	0.00031 in	Gauge Blocks
Magnification	10X (0.0625 in, 0.250 in, 0.625 in, 1.000 in)	0.00047 in	Glass Master
	20X (0.0625 in, 0.250 in, 0.1875 in, 0.625 in)	0.00047 in	
	31.25X (0.0625 in, 0.1875 in, 0.250 in)	0.00047 in	
	50X (0.0625 in, 0.1875 in, 0.250 in)	0.00047 in	
	62.5X (0.0625 in, 0.1875 in)	0.00047 in	

¹The 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.

²When 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.

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

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

⁵On-site, field calibration services.