National Accreditation Board for Testing and Calibration Laboratories

CERTIFICATE OF ACCREDITATION

ZWICKROELL CALIBRATION LABORATORY

has been assessed and accredited in accordance with the standard

ISO/IEC 17025:2017

"General Requirements for the Competence of Testing & Calibration Laboratories"

for its facilities at

SKCL ICON, 3RD FLOOR, C - 42 & 43, SIDCO INDUSTRIAL ESTATE, GUINDY, CHENNAI, TAMIL NADU, INDIA

in the field of

CALIBRATION

Certificate Number: CC-2081

Issue Date: 13/01/2024 **Valid Until:** 12/01/2026

This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the relevant requirements of NABL.
(To see the scope of accreditation of thislaboratory, you may also visit NABL website www.nabl-india.org)

Name of Legal Entity: ZWICKROELL PRIVATE LIMITED

Signed for and on behalf of NABL

N. Venkateswaran
Chief Executive Officer

National Accreditation Board for Testing and Calibration Laboratories

SCOPE OF ACCREDITATION

Laboratory Name : ZWICKROELL CALIBRATION LABORATORY, SKCL ICON, 3RD FLOOR, C - 42 & 43, SIDCO INDUSTRIAL ESTATE, GUINDY, CHENNAI, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

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S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
Site Facility					
1	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Verification of Displacement, Strain, Extension Measuring System used in Material Testing Machine Type - A, B, C, E, F	Using Extensometer / Displacement Calibrator and Incremental Sensor by Comparison Method as per ISO 9513:2012, ASTM E83-23, ASTM E2309	0 to 1000 mm	0.22%
2	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Verification of Extensometer used in Uniaxial Testing Machine Type - A, B, C, E, F	Using Extensometer / Displacement Calibrator by Comparison Method as per ISO 9513:2012, ASTM E83-23, ASTM E2309	0.01 mm to 0.1 mm	0.84µm
3	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Verification of Extensometer used in Uniaxial Testing Machine Type - A, B, C, E, F	Using Extensometer / Displacement Calibrator by Comparison Method as per ISO 9513:2012, ASTM E83-23, ASTM E2309	0.1 mm to 1 mm	1.8µm
4	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Verification of Extensometer used in Uniaxial Testing Machine Type - A, B, C, E, F	Using Extensometer / Displacement Calibrator by Comparison Method as per ISO 9513:2012, ASTM E83-23, ASTM E2309	1 mm to 50 mm	7.45µm

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5	MECHANICAL-HARDNESS TESTING MACHINES	Verification of Brinell Hardness Tester Machine	Using Reference Hardness Test Blocks by Indirect Method as per IS 1500-2 : 2021, ISO 6506-2 : 2017, ASTM E 10: 2018	HBW 1/30	1.23%
6	MECHANICAL-HARDNESS TESTING MACHINES	Verification of Brinell Hardness Tester Machine	Using Reference Hardness Test Blocks by Indirect Method as per IS 1500-2 : 2021, ISO 6506-2 : 2017, ASTM E 10: 2018	HBW 2.5/187.5	1.82%
7	MECHANICAL-HARDNESS TESTING MACHINES	Verification of Brinell Hardness Tester Machine	Using Reference Hardness Test Blocks by Indirect Method as per IS 1500-2 : 2021, ISO 6506-2 : 2017, ASTM E 10: 2018	HBW 2.5/62.5	1.33%
8	MECHANICAL-HARDNESS TESTING MACHINES	Verification of Brinell Hardness Tester Machine	Using Reference Hardness Test Blocks by Indirect Method as per IS 1500-2 : 2021, ISO 6506-2 : 2017, ASTM E 10: 2018	HBW 5/250	2.48%

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9	MECHANICAL-HARDNESS TESTING MACHINES	Verification of Rockwell Hardness Testing Machine	Using Reference Hardness Test blocks by Indirect Method as per IS 1586 : 2018, ISO 6508-2 : 2015, ASTM E 18: 2022	HR15N	0.5HR15N
10	MECHANICAL-HARDNESS TESTING MACHINES	Verification of Rockwell Hardness Testing Machine	Using Reference Hardness Test blocks by Indirect Method as per IS 1586 : 2018, ISO 6508-2 : 2015, ASTM E 18: 2022	HR15TW	1.3HR15TW
11	MECHANICAL-HARDNESS TESTING MACHINES	Verification of Rockwell Hardness Testing Machine	Using Reference Hardness Test blocks by Indirect Method as per IS 1586 : 2018, ISO 6508-2 : 2015, ASTM E 18: 2022	HR30N	0.5HR30N
12	MECHANICAL-HARDNESS TESTING MACHINES	Verification of Rockwell Hardness Testing Machine	Using Reference Hardness Test blocks by Indirect Method as per IS 1586 : 2018, ISO 6508-2 : 2015, ASTM E 18: 2022	HR30TW	1.3HR30TW

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13	MECHANICAL-HARDNESS TESTING MACHINES	Verification of Rockwell Hardness Testing Machine	Using Reference Hardness Test blocks by Indirect Method as per IS 1586 : 2018, ISO 6508-2 : 2015, ASTM E 18: 2022	HR45N	0.5HR45N
14	MECHANICAL-HARDNESS TESTING MACHINES	Verification of Rockwell Hardness Testing Machine	Using Reference Hardness Test blocks by Indirect Method as per IS 1586 : 2018, ISO 6508-2 : 2015, ASTM E 18: 2022	HR45TW	1.3HR45TW
15	MECHANICAL-HARDNESS TESTING MACHINES	Verification of Rockwell Hardness Testing Machine	Using Reference Hardness Test blocks by Indirect Method as per IS 1586 : 2018, ISO 6508-2 : 2015, ASTM E 18: 2022	HRA	0.5 HRA
16	MECHANICAL-HARDNESS TESTING MACHINES	Verification of Rockwell Hardness Testing Machine	Using Reference Hardness Test blocks by Indirect Method as per IS 1586 : 2018, ISO 6508-2 : 2015, ASTM E 18: 2022	HRBW	1.3HRBW

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17	MECHANICAL-HARDNESS TESTING MACHINES	Verification of Rockwell Hardness Testing Machine	Using Reference Hardness Test blocks by Indirect Method as per IS 1586 : 2018, ISO 6508-2 : 2015, ASTM E 18: 2022	HRC	0.5HRC
18	MECHANICAL-HARDNESS TESTING MACHINES	Verification of Vickers Hardness Testing Machine	Using Reference Hardness Test Blocks by Indirect Method as per IS 1501 (Part -2): 2020, ISO 6507-2 : 2018, ASTM E 92: 2017, ASTM E384-22	HV 0.1	11.9%
19	MECHANICAL-HARDNESS TESTING MACHINES	Verification of Vickers Hardness Testing Machine	Using Reference Hardness Test Blocks by Indirect Method as per IS 1501 (Part -2): 2020, ISO 6507-2 : 2018, ASTM E 92: 2017, ASTM E384-22	HV 0.2	5%
20	MECHANICAL-HARDNESS TESTING MACHINES	Verification of Vickers Hardness Testing Machine	Using Reference Hardness Test Blocks by Indirect Method as per IS 1501 (Part -2): 2020, ISO 6507-2 : 2018, ASTM E 92: 2017, ASTM E384-22	HV 0.3	8.3%

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21	MECHANICAL-HARDNESS TESTING MACHINES	Verification of Vickers Hardness Testing Machine	Using Reference Hardness Test Blocks by Indirect Method as per IS 1501 (Part -2): 2020, ISO 6507-2 : 2018, ASTM E 92: 2017, ASTM E384-22	HV 0.5	3.5%
22	MECHANICAL-HARDNESS TESTING MACHINES	Verification of Vickers Hardness Testing Machine	Using Reference Hardness Test Blocks by Indirect Method as per IS 1501 (Part -2): 2020, ISO 6507-2 : 2018, ASTM E 92: 2017, ASTM E384-22	HV 1	4.1%
23	MECHANICAL-HARDNESS TESTING MACHINES	Verification of Vickers Hardness Testing Machine	Using Reference Hardness Test Blocks by Indirect Method as per IS 1501 (Part -2): 2020, ISO 6507-2 : 2018, ASTM E 92: 2017, ASTM E384-22	HV 10	2.2%

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24	MECHANICAL-HARDNESS TESTING MACHINES	Verification of Vickers Hardness Testing Machine	Using Reference Hardness Test Blocks by Indirect Method as per IS 1501 (Part -2): 2020, ISO 6507-2 : 2018, ASTM E 92: 2017, ASTM E384-22	HV 3	4.1%
25	MECHANICAL-HARDNESS TESTING MACHINES	Verification of Vickers Hardness Testing Machine	Using Reference Hardness Test Blocks by Indirect Method as per IS 1501 (Part -2): 2020, ISO 6507-2 : 2018, ASTM E 92: 2017, ASTM E384-22	HV 30	1.5%
26	MECHANICAL-HARDNESS TESTING MACHINES	Verification of Vickers Hardness Testing Machine	Using Reference Hardness Test Blocks by Indirect Method as per IS 1501 (Part -2): 2020, ISO 6507-2 : 2018, ASTM E 92: 2017, ASTM E384-22	HV 5	2.5%

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27	MECHANICAL-IMPACT TESTING MACHINE	Verification of Impact Testing Machine Direct & Indirect Method - Charpy, Izod (Metallic Material)	Using Load Cell with Indicator, Clinometer, Bevel Protractor, Stop Watch and Other Gauges as per ASTM E23:2018, ISO 148: 2016	0 to 750 J	0.46%
28	MECHANICAL-IMPACT TESTING MACHINE	Verification of Impact Testing Machine Direct Method - Charpy, Izod, Tensile (Plastic Material)	Using Load Cell with Indicator, Clinometer, Bevel Protractor, Stop Watch and Other Gauges as per ASTM D256-23, ASTM D6110-18, ISO 13802:2015	0 to 50 J	0.46%
29	MECHANICAL-UTM, TENSION CREEP AND TORSION TESTING MACHINE	Verification of Material Testing Machine - UTM, CTM, MFR, MVR	Using Load Cell with Indicator by Comparison Method as per IS 1828-1 : 2022, ISO 7500-1: 2018	1 N to 5000 N	0.34%
30	MECHANICAL-UTM, TENSION CREEP AND TORSION TESTING MACHINE	Verification of Speed in Material Testing Machine	Using Extensometer / Displacement Calibrator and Incremental Sensor, Stop Watch by Comparison Method as per ASTM E2658-15	0 to 1500 mm/min	0.25%

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31	MECHANICAL-UTM, TENSION CREEP AND TORSION TESTING MACHINE	Verification of Static Uni - Axial Testing Machine - Compression Mode	Using Dead Weights by Comparison Method as per IS 1828-1 : 2022, ISO 7500-1: 2018	0.1 N to 100 N	0.2%
32	MECHANICAL-UTM, TENSION CREEP AND TORSION TESTING MACHINE	Verification of Static Uni - Axial Testing Machine - Compression Mode	Using Load Cells and Dead Weights by Comparison Method as per IS 1828-1 : 2022, ISO 7500-1: 2018	100 N to 600 kN	0.23%
33	MECHANICAL-UTM, TENSION CREEP AND TORSION TESTING MACHINE	Verification of Static Uni - Axial Testing Machine - Tension Mode	Using Dead Weights by Comparison Method as per IS 1828-1 : 2022, ISO 7500-1: 2018	0.1 N to 100 N	0.2%
34	MECHANICAL-UTM, TENSION CREEP AND TORSION TESTING MACHINE	Verification of Static Uni - Axial Testing Machine - Tension Mode	Using Load Cells and Dead Weights by Comparison Method as per IS 1828-1 : 2022, ISO 7500-1: 2018	100 N to 600 kN	0.23%
35	MECHANICAL-UTM, TENSION CREEP AND TORSION TESTING MACHINE	Verification of Testing Machine - Compression Mode	Using Load Cells with Indicator by Comparison Method as per ASTM E4-21	0.1 kN to 600 kN	0.3%

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36	MECHANICAL-UTM, TENSION CREEP AND TORSION TESTING MACHINE	Verification of Testing Machine - Tensile Mode	Using Load Cells with Indicator by Comparison Method as per ASTM E4-21	0.1 kN to 600 kN	0.3%
37	THERMAL-TEMPERATURE	Indicator with Sensor of Chamber, Furnace, Oven, Extrusion Plastometer (MFR / MVR)	Using RTD Sensor with Indicator by Comparison Method	50 °C to 400 °C	0.5°C

*** CMCs represent expanded uncertainties expressed at approximately the 95% level of confidence, using a coverage factor of k = 2.**