



NABL

National Accreditation Board for Testing and Calibration Laboratories

Department of Science & Technology, India

CERTIFICATE OF ACCREDITATION

HI-TECH LABORATORY & SERVICES

has been assessed and accredited in accordance with the standard

ISO/IEC 17025:2005

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

for its facilities at

Shivani Complex, C-4, Vidya Vihar Opp. To Barkatullah University, Bhopal

in the field of

MECHANICAL CALIBRATION

(You may also visit NABL website www.nabl-india.org to view the scope of accreditation)

Certificate Number C-0600

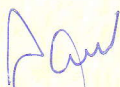
Issue Date 25/01/2012

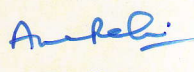


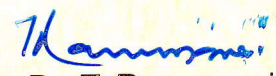
Valid Until 24/01/2014

This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the additional requirements of NABL.

Signed for and on behalf of NABL


Alok Jain
Convenor


Anil Relia
Director


Dr T. Ramasami
Chairman



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SCOPE OF ACCREDITATION

Laboratory	Hi-Tech Laboratory & Services, Shivani Complex, C-4, Vidya Vihar, opp. to Barkatullah University, Bhopal		
Accreditation Standard	ISO/IEC 17025:2005		
Field	Mechanical Calibration	Issue Date	25.01.2012
Certificate Number	C-0600	Valid Until	24.01.2014
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Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (\pm)	Remarks
1 WEIGHTS	1 mg	0.1 mg	Using Standard weights of F1 Class & Precision Balances Based on OIML R -111. Substitution method of Weighing And "ABBA" weighing Cycle
	2 mg	0.1 mg	
	5 mg	0.1 mg	
	10 mg	0.1 mg	
	20 mg	0.1 mg	
	50 mg	0.1 mg	
	100 mg	0.1 mg	
	200 mg	0.2 mg	
	500 mg	0.2 mg	
	1 g	0.2 mg	
	2 g	0.2 mg	Using Reference Weights of (F2 & M1) Class and ABBA/ABA Weighing Cycle
	5 g	0.2 mg	
	10 g	0.2 mg	
	20 g	0.2 mg	
	50 g	0.2 mg	
	100 g	0.3 mg	
	200 g	0.4 mg	
	500 g	13 mg	
	1 kg	22 mg	
	2 kg	32 mg	

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Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (\pm)	Remarks
2 VOLUME Pipette Burette Volumetric Flask Measuring Cylinder , Beaker & other Glass Wares	(0.1 to 1) ml	0.08 ml	Using Precision
	(0.1 to 10) ml	0.09 ml	Balances, standard
	(0.1 to 25) ml	0.10 ml	weights and density of
	(0.1 to 10) ml	0.08 ml	pure distilled water
	(0.1 to 50) ml	0.09 ml	By Gravimetric Method
	(0.1 to 100) ml	0.10 ml	based on
	(1 to 10) ml	0.08 ml	ISO 8655, ISO:20461 &
	>10ml to 50 ml	0.09 ml	IS 8897-1978(2006-01)
	>50ml to 100 ml	0.1 ml	
	>100 ml to 200 ml	0.2 ml	
	>200 ml to 2000 ml	0.7 ml	
	(1 to 10) ml	0.08 ml	
3 Balances	>10ml to 50 ml	0.09 ml	
	>50ml to 100 ml	0.10 ml	
	>100 ml to 200 ml	0.20 ml	
	>200 ml to 1000 ml	0.70 ml	
	(0 to 200) g	1.2 mg	Procedure based on
			OIML R 76 of 2006,
			Using Standard Weights
			of F1 Class
			Standard weights of F2
			& M1 Class
Readability $\leq 100 \mu\text{g}$	(0 to 2000) g	5.0 mg	
Readability $\leq 1 \text{ mg}$		30 mg	
Readability $\leq 10 \text{ mg}$			
Readability $\leq 100 \text{ mg}$	(0 to 15) kg	1 g	Standard weights of F2
Readability $\leq 1 \text{ g}$		3 g	& M1 Class
Readability $\leq 10 \text{ g}$		30 g	

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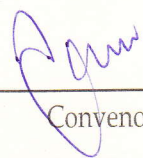
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Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (\pm)	Remarks
4 Spring Balance	(0 to 1) kg L.C. = 10 g	5.5 g	Using Standard Weights (F2 & M1 Class) Indications of the balance are in the units of mass, Procedure based on IS 1702 – 1987
	(0 to 10) kg L.C. = 50 g	26 g	
	(0 to 20) kg L.C. = 100 g	52 g	
5 Tension Gram Gauge	(0 to 1000) g L.C. = 10 g	6 g	Using Standard Weights (F2 & M1 Class) Indications of the balance are in the units of mass, Procedure based on IS 1702 – 1987
	(0 to 2000) g L.C. = 50 g	27 g	
6 External Micrometer L.C. 0.001 mm L.C. 0.01 mm	(0 to 100) mm	3.0 μ m	Using Slip Gauge & Length Bar
	(0 to 100) mm	7.0 μ m	
	(100 to 700) mm	11.0 μ m	
7 Internal Micrometer L.C. 0.01 mm	Up to 1000 mm	12.0 μ m	Using Slip Gauge, Length Bar, Caliper Checker & Surface Plate
8 Micrometer Setting Piece/Length Bar/ Height Block (Master)	(0 to 100) mm	5.0 μ m	Using Slip Gauge , Length Bar ,Plunger Dial Gauge & Comparator Stand
	(100 to 300) mm	8.0 μ m	
	(300 to 700) mm	12.0 μ m	


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Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (\pm)	Remarks
9 Depth Micrometer L.C. 0.01mm	(0 to 300) mm	8.0 μ m	Using Slip Gauge and Surface Plate
10 Vernier Caliper L.C. 0.01mm	(0 to 600) mm (600 to 1000) mm	15.0 μ m 20.0 μ m	Using Slip Gauge, Caliper Checker & Length Bar
L.C. 0.02mm	(0 to 600) mm (600 to 1000) mm (1000 to 2000) mm	20.0 μ m 25.0 μ m 40.0 μ m	
11 Vernier Height Gauge L.C. 0.01mm	(0 to 600) mm (600 to 1000) mm	15.0 μ m 20.0 μ m	Using Slip Gauge , Caliper Checker ,Length Bar & Surface Plate
L.C. 0.02mm	(0 to 600) mm (600 to 1000) mm	20.0 μ m 30.0 μ m	
12 Vernier Depth Gauge L.C. 0.02mm	(0 to 300) mm	22.0 μ m	Using Slip Gauge , Length Bar , Caliper Checker , Length Bar & Surface Plate
13 Plunger Dial Gauge & Digital Dial Gauge L.C.0.001mm LC 0.002mm L.C. 0.01mm	(0 to 25) mm (0 to 25) mm (0 to 25) mm	3.5 μ m 3.5 μ m 6.0 μ m	Using Slip Gauge and Comparator Stand
14 Dial Thickness Gauge / Pistol Caliper L.C. 0.01mm	(0 to 10) mm	7.0 μ m	

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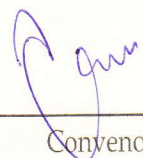
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Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (\pm)	Remarks
15 Snap Gauge	Up to 100mm	3.0 μ m	Using Slip Gauge
16 Plain Plug Gauge/ OD Master/ Height Block/ Width Gauge/ Measuring Pins	Up to 100mm	5.8 μ m	Using Slip Gauges, Comparator Stand & Plunger Dial Gauge
17 Feeler Gauge/ Coating Thickness Foil	Up to 1mm	3.0 μ m	Using Digital Micrometer
18 Spirit Level L.C. 0.01 μ m /m L.C. 0.02 μ m /m	Up to 300mm Up to 300mm	15.0 μ m /m 15.0 μ m /m	Using Slip gauge & Surface Plate
19 Ford Cup	4 mm	22.0 μ m	Using Digital Universal Caliper
20 Bevel Protractor / Angle Protractor / Combination Square Set L.C. 5min of arc L.C. 1°C	Upto 360°	3.5 min of arc 7.0 min of arc	Using Sine Bar, Slip Gauge Set, & Surface Plate
21 Speed (R.P.M.)	Upto 20,000rpm	1.15% FSD	Using Standard Tachometer
22 Pressure Gauge	(0 to 700) kg/cm ²	1.0% FSD	Using Digital Test Gauge with Comparator


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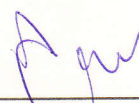
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Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (\pm)	Remarks
AT SITE			
23 Pressure Gauge	(0 to 20) kg/cm ²	1.0% FSD	Using Digital Test Gauge & Hydraulic Comparator
24 Vacuum Gauge	-700mm Hg	1.4% FSD	Using Digital Test Gauge & Pneumatic Comparator
25 Balances			
Readability $\leq 100 \mu\text{g}$	(0 to 200) g	1.2 mg	Procedure based on OIML R 76 of 2006, Using Standard Weights of F1 Class
Readability $\leq 1 \text{ mg}$	(0 to 2000) g	5.0 mg	
Readability $\leq 10 \text{ mg}$		30 mg	
Readability $\leq 100 \text{ mg}$	(0 to 15) kg	1 g	Standard weights of F2 & M1 Class
Readability $\leq 1 \text{ g}$		3 g	
Readability $\leq 10 \text{ g}$		30 g	

*Measurement Capability is expressed as an uncertainty (\pm) at a confidence probability of 95%


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