Calibration Laboratory Assessment Service

CLAS Certificate Number 2010-03

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Clients served: All interested parties.

Fields of calibration : Volume

SCC accreditation:
(ISO/IEC 17025)

Accredited Laboratory n^{o} 679
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This scope of calibration capabilities is published by the CLAS program of the National Research Council of Canada (NRC) in close co-operation with the PALCAN program of the Standards Council of Canada (SCC), Canada's accreditation body for calibration and testing laboratories. The SCC accredits the capability of the named laboratory for being able to perform the listed calibrations at the given Calibration Measurement Capability (see Supplementary Notes C and D) with traceability to the International System of Units (SI) or to standards acceptable to the CLAS program.

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Type II Capability				
Measured Quantity & Range or Instrument	Calibration and Measurement Capability expressed as an Uncertainty (±) (see Supplementary Notes)			Remarks
PISTON PIPETTE				Calibration as per ISO 8655-6. For the calibration of pipettes in the Mandel Calibration Laboratory only.
	% of Nominal Volume			
Nominal Volume	**25%**	**50%**	**100%**	
2 µL	0.0093 µL	0.0096 µL	0.0098 µL	
	% of Nominal Volume			
Nominal Volume	**10%**	**50%**	**100%**	
10 µL	0.011 µL	0.016 µL	0.020 µL	
20 µL	0.016 µL	0.023 µL	0.027 µL	
100 µL	0.088 µL	0.090 µL	0.095 µL	
200 µL	0.10 µL	0.11 µL	0.13 µL	
1000 µL	0.61 µL	0.66 µL	0.75 µL	
5000 µL	1.1 µL	1.7 µL	2.6 µL	
10000 µL	6.1 µL	6.6 µL	7.7 µL	

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Supplementary Notes

A. Calibration capabilities are traceable to the national measurement standards of Canada held or accepted by the National Research Council (NRC) or, with the agreement of NRC, to the national measurement standards of other countries and are thus traceable to the internationally accepted representation of the appropriate SI (Système International) unit.

B. Laboratories are certified by the NRC's Calibration Laboratory Assessment Service (CLAS) for one or more of the following capabilities:

Type I: A capability of which the primary purpose is the calibration of measurement standards for other calibration laboratories. A laboratory with this type of capability has the appropriate reference standards, working standards, check standards, and calibration systems to be able to assess dynamically and to quantify its measurement uncertainty, and is able to monitor its measurement processes continually. The environmental conditions that affect the laboratory's measurements are closely monitored and controlled. A laboratory with this type of capability usually reports a measurement value accompanied by a comprehensive statement of uncertainty. A laboratory with this type of capability is often referred to as a standards or standards calibration laboratory.

Type II: A capability of which the main purpose is the calibration and adjustment of test, measurement and diagnostic equipment for use in product testing, manufacturing, servicing, etc. A laboratory with this type of capability has the appropriate working standards and calibration systems to be able to calibrate to a manufacturer's specification and tolerance or calibrate to a written standard, using appropriate test uncertainty ratios (TUR). A laboratory with this type of capability usually reports a measurement value and indicates if the test equipment complies with a specification, tolerance or a written standard. It will, usually, base its capabilities on the specifications and tolerances of the working standards being used. It also has, normally, the means to check its working standards between calibrations and has available the appropriate environment(s). A laboratory with this type of capability is often referred to as a test equipment calibration laboratory.

Type III: A calibration capability, within a laboratory, mobile or fixed, with the appropriate reference or working standards, of which the main purpose is to provide a reference. A laboratory with this type of capability usually has minimal means to monitor its calibration system. It relies mainly on the values assigned by higher echelon laboratories to its standards and uses these values with few other considerations to assign values or verify the compliance of equipment being calibrated to their specifications and tolerances or to written standards. This could be an on-site service subject to a wide range of environmental factors.

C. The "calibration measurement capability" includes the uncertainty associated with the calibration of the accredited laboratory's reference or transfer standard by NRC, or by a laboratory acceptable to CLAS, uncertainties caused by the transportation of the calibrated reference standard from NRC (or other laboratories) to the accredited laboratory, uncertainties of the calibration process in the accredited laboratory, and uncertainties due to the behaviour of a typical measurement device during its calibration. These uncertainties include components which could have been evaluated by statistical methods on a of series of repeated measurements and which can be characterised by experimental standard deviations. The other components, which can also be characterized by standard deviations, are evaluated from assumed probability distributions based on experience or other information. These have been combined to form an expanded uncertainty $U = ku_c$ with U determined from a combined standard uncertainty u_c and a coverage factor $k = 2$. Since it can be assumed that the probability distribution characterised by the reported result and u_c is approximately normal, the value of a calibrated device can be asserted to lie in the interval represented by the expanded uncertainty U with a level of confidence of approximately 95 percent. The uncertainties quoted do not include the possible effects on the calibrated device of transportation, long term stability or intended use. For clients requiring a confidence level of 99%, the laboratory is able to adjust the uncertainty accordingly.

D. The uncertainty of a specific calibration by an accredited laboratory can be greater than the "calibration measurement capability" because it will include uncertainties due to the actual condition and behaviour of the customer's device during its calibration.

E. As a rule, the smaller the uncertainty sought the greater the cost. Users should not demand uncertainties inappropriate to the device being calibrated or its intended use.

F. SCC accreditation and CLAS certification is the formal recognition of specific calibration capabilities. Neither the CLAS nor the SCC guarantee the accuracy of individual calibrations made by accredited laboratories.