National Voluntary

Laboratory Accreditation Program

CALIBRATION LABORATORIES **NVLAP LAB CODE 600384-0**

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

South Dakota State Metrology Laboratory	**Fields of Calibration**
1100 Otter Rd Sturgis, South Dakota Mr. Ron Peterson Phone: 605-347-7541 E-mail: ron.peterson@state.sd.us URL: https://dps.sd.gov/inspections/weights-measures/metrology-lab	Mechanical

CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) Notes 1,2

Measured Parameter or Device Calibrated	Range	Expanded Uncertainty Note 3	Remarks
MECHANICAL			
MASS DETERMINATION (20/M08)			
Metric	5 kg	1.3 mg	Echelon II
	3 kg	0.84 mg	
	2 kg	0.58 mg	
	1 kg	0.58 mg	
	500 g	0.11 mg	
	300 g	0.10 mg	
	200 g	0.061 mg	
	100 g	0.042 mg	
	50 g	0.040 mg	
	30 g	0.038 mg	
	20 g	0.015 mg	
	10 g	0.011 mg	
	5 g	0.0088 mg	
	3 g	0.014 mg	
	2 g	0.0061 mg	
	1 g	0.0051 mg	
	500 mg	0.0039 mg	
	300 mg	0.0031 mg	
	200 mg	0.0034 mg	
	100 mg	0.0024 mg	

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CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) [Notes 1,2]

Measured Parameter or Device Calibrated	Range	Expanded Uncertainty [Note 3]	Remarks
	50 mg	0.0024 mg	
	30 mg	0.0028 mg	
	20 mg	0.0024 mg	
	10 mg	0.0027 mg	
	5 mg	0.0024 mg	
	3 mg	0.0021 mg	
	2 mg	0.0029 mg	
	1 mg	0.0028 mg	
Avoirdupois	10 lb	1.5 mg	Echelon II
	5 lb	0.66 mg	
	3 lb	0.49 mg	
	2 lb	0.46 mg	
	1 lb	0.13 mg	
	0.5 lb	0.077 mg	
	0.3 lb	0.048 mg	
	0.2 lb	0.039 mg	
	0.1 lb	0.034 mg	
	0.05 lb	0.026 mg	
	0.03 lb	0.012 mg	
	0.02 lb	0.011 mg	
	0.01 lb	0.0092 mg	
	0.005 lb	0.0066 mg	
	0.003 lb	0.0045 mg	
	0.002 lb	0.0047 mg	
	0.001 lb	0.0037 mg	
	8 oz	0.077 mg	
	4 oz	0.050 mg	
	2 oz	0.032 mg	
	1 oz	0.033 mg	
	1/2 oz	0.014 mg	
	1/4 oz	0.0095 mg	
	1/8 oz	0.012 mg	
	1/16 oz	0.0050 mg	

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CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) [Notes 1,2]

Measured Parameter or Device Calibrated	Range	Expanded Uncertainty [Note 3]	Remarks
	1/32 oz	0.0074 mg	
Metric	30 kg	150 mg	Echelon III
	20 kg	36 mg	
	10 kg	34 mg	
	5 kg	22 mg	
	3 kg	22 mg	
	2 kg	8.7 mg	
	1 kg	4.5 mg	
	500 g	3.2 mg	
	300 g	3.2 mg	
	200 g	1.7 mg	
	100 g	0.89 mg	
	50 g	0.43 mg	
	30 g	0.43 mg	
	20 g0.3	0.17 mg	
	10 g	0.091 mg	
	5 g	0.067 mg	
	3 g	0.067 mg	
	2 g	0.049 mg	
	1 g	0.040 mg	
	500 mg	0.034 mg	
	300 mg	0.014 mg	
	200 mg	0.024 mg	
	100 mg	0.020 mg	
	50 mg	0.020 mg	
	30 mg	0.0082 mg	
	20 mg	0.012 mg	
	10 mg	0.010 mg	
	5 mg	0.010 mg	
	3 mg	0.0047 mg	
	2 mg	0.0094 mg	
	1 mg	0.0059 mg	

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CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) [Notes 1,2]

Measured Parameter or Device Calibrated	Range	Expanded Uncertainty [Note 3]	Remarks
Avoirdupois	1000 lb	4.7 g	Echelon III
	500 lb	2.3 g	
	50 lb	200 mg	
	25 lb	120 mg	
	20 lb	120 mg	
	10 lb	20 mg	
	5 lb	9.7 mg	
	3 lb	9.7 mg	
	2 lb	4.0 mg	
	1 lb	3.2 mg	
	0.5 lb	2.3 mg	
	0.3 lb	2.0 mg	
	0.2 lb	0.79 mg	
	0.1 lb	0.39 mg	
	0.05 lb	0.20 mg	
	0.03 lb	0.20 mg	
	0.02 lb	0.084 mg	
	0.01 lb	0.066 mg	
	0.001 5 lb	0.051 mg	
	0.003 lb	0.040 mg	
	0.002 lb	0.040 mg	
	0.001 lb	0.032 mg	
	8 oz	2.3 mg	
	4 oz	1.0 mg	
	2 oz	0.50 mg	
	1 oz	0.28 mg	
	1/2 oz	0.13 mg	
	1/4 oz	0.086 mg	
	1/8 oz	0.068 mg	
	1/16 oz	0.045 mg	
	1/32 oz	0.041 mg	

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CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) [Notes 1,2]

Measured Parameter or Device Calibrated	Range	Expanded Uncertainty [Note 3]	Remarks
Weight Carts	2000 lb 3000 lb 3500 lb 4000 lb 4500 lb 5000 lb	0.11 lb 0.12 lb 0.13 lb 0.12 lb 0.15 lb 0.14 lb	NIST HB 105-8
VOLUME AND DENSITY (20/M12)			
Volume Transfer	1500 gal 1000 gal 500 gal 100 gal 50 gal 25 gal 15 gal 5 gal 5 gal	38 in^3 27 in^3 15 in^3 4.9 in^3 2.8 in^3 1.5 in^3 0.49 in^3 0.38 in^3 0.28 in^3	Volume Transfer Method 4 in neck 3 in neck
Liquefied Petroleum Gas Prover (LPG)	100 gal 25 gal	5.2 in^3 1.6 in^3	Volume Transfer Method
END			

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Notes

Note 1: A Calibration and Measurement Capability (CMC) is a description of the best result of a calibration or measurement (result with the smallest uncertainty of measurement) that is available to the laboratory's customers under normal conditions, when performing more or less routine calibrations of nearly ideal measurement standards or instruments. The CMC is described in the laboratory's scope of accreditation by: the measurement parameter/device being calibrated, the measurement range, the uncertainty associated with that range (see note 3), and remarks on additional parameters, if applicable.

Note 2: Calibration and Measurement Capabilities are traceable to the national measurement standards of the U.S. or to the national measurement standards of other countries and are thus traceable to the internationally accepted representation of the appropriate SI (Système International) unit.

Note 3: The uncertainty associated with a measurement in a CMC is an expanded uncertainty with a level of confidence of approximately 95 %, typically using a coverage factor of $k = 2$. However, laboratories may report a coverage factor different than $k = 2$ to achieve the 95 % level of confidence. Units for the measurand and its uncertainty are to match. Exceptions to this occur when marketplace practice employs mixed units, such as when the artifact to be measured is labeled in non-SI units and the uncertainty is given in SI units (Example: 5 lb weight with uncertainty given in mg).

> **Note 3a:** The uncertainty of a specific calibration by the laboratory may be greater than the uncertainty in the CMC due to the condition and behavior of the customer's device and specific circumstances of the calibration. The uncertainties quoted do not include possible effects on the calibrated device of transportation, long term stability, or intended use.
> **Note 3b:** As the CMC represents the best measurement results achievable under normal conditions, the accredited calibration laboratory shall not report smaller uncertainty of measurement than that given in a CMC for calibrations or measurements covered by that CMC.
> **Note 3c:** As described in Note 1, CMCs cover calibrations and measurements that are available to the laboratory's customers under *normal conditions.* However, the laboratory may have the capability to offer special tests, employing special conditions, which yield calibration or measurement results with lower uncertainties. Such special tests are not covered by the CMCs and are outside the laboratory's scope of accreditation. In this case, NVLAP requirements for the labeling, on calibration reports, of results outside the laboratory's scope of accreditation apply. These requirements are set out in Annex A.1.h. of NIST Handbook 150, Procedures and General Requirements.

Note 4: Uncertainties associated with field service calibration may be greater as they incorporate on-site environmental contributions, transportation effects, or other factors that affect the measurements. (This note applies only if marked in the body of the scope.)

Note 5: Values listed with percent (%) are percent of reading or generated value unless otherwise noted.

Note 6: NVLAP accreditation is the formal recognition of specific calibration capabilities. Neither NVLAP nor NIST guarantee the accuracy of individual calibrations made by accredited laboratories.

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