



**CALIBRATION LABORATORIES**

**NVLAP LAB CODE 200934-0**

**SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005**

<p><b>State of Nevada Metrology Laboratory</b>                  2150 Frazier Avenue                  Sparks, NV 89431                  Mr. Steven R. Schultz                  Phone: 775-353-3794 Fax: 775-353-3798                  E-mail: <a href="mailto:boxcar53@agri.nv.gov">boxcar53@agri.nv.gov</a>                  URL:  <a href="http://www.agri.nv.gov/protection/weights_and_measures/">http://www.agri.nv.gov/protection/weights_and_measures/</a></p>	<p><b>Parameter(s) of Accreditation</b>                  Mechanical</p>
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**CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) <sup>Notes 1,2</sup>**

Measured Parameter or Device Calibrated	Range	Uncertainty ( $k=2$ ) <sup>Note 3</sup>	Remarks
<b>MECHANICAL</b>			
<p><b>NVLAP Code: 20/M08</b>  <b>MASS</b>                      Metric</p>	5 kg	1.4 mg	Echelon II
	3 kg	1.1 mg	
	2 kg	0.26 mg	
	1 kg	0.054 mg	
	500 g	0.042 mg	
	300 g	0.037 mg	
	200 g	0.047 mg	
	100 g	0.020 mg	
	50 g	0.020 mg	
	30 g	0.020 mg	
	20 g	0.008 mg	
	10 g	0.0076 mg	
	5 g	0.0057 mg	
	3 g	0.0057 mg	
	2 g	0.0032 mg	
	1 g	0.0027 mg	
	500 mg	0.0026 mg	
	300 mg	0.0026 mg	
200 mg	0.0028 mg		
100 mg	0.0026 mg		
50 mg	0.0025 mg		
30 mg	0.0025 mg		

2013-04-01 through 2014-03-31

*Effective dates*

*For the National Institute of Standards and Technology*



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**CALIBRATION AND MEASUREMENT CAPABILITIES (CMC)** Notes 1,2

Measured Parameter or Device Calibrated	Range	Uncertainty ( $k=2$ ) <small>Note 3</small>	Remarks
Avoirdupois	20 mg	0.0025 mg	Echelon II
	10 mg	0.0025 mg	
	5 mg	0.0025 mg	
	3 mg	0.0025 mg	
	2 mg	0.0026 mg	
	1 mg	0.0024 mg	
	50 lb	19 mg	
	30 lb	13 mg	
	25 lb	7.1 mg	
	20 lb	7.0 mg	
	10 lb	2.4 mg	
	5 lb	0.45 mg	
	3 lb	0.31 mg	
	2 lb	0.16 mg	
	1 lb	0.18 mg	
	0.5 lb	0.08 mg	
	0.3 lb	0.062 mg	
	0.2 lb	0.027 mg	
	0.1 lb	0.026 mg	
0.05 lb	0.010 mg		
0.03 lb	0.011 mg		
0.02 lb	0.0088 mg		
0.01 lb	0.0082 mg		
0.005 lb	0.0068 mg		
0.003 lb	0.0040 mg		
0.002 lb	0.0040 mg		
0.001 lb	0.0039 mg		
Metric	30 kg	71 mg	Echelon III
	20 kg	62 mg	
	10 kg	32 mg	
	5 kg	12 mg	
	3 kg	7.1 mg	
	2 kg	4.7 mg	
	1 kg	2.4 mg	

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Measured Parameter or Device Calibrated	Range	Uncertainty ( $k=2$ ) <small>Note 3</small>	Remarks
	500 g	1.3 mg	
	300 g	0.94 mg	
	200 g	0.53 mg	
	100 g	0.38 mg	
	50 g	0.14 mg	
	30 g	0.11 mg	
	20 g	0.084 mg	
	10 g	0.061 mg	
	5 g	0.044 mg	
	3 g	0.0037 mg	
	2 g	0.0033 mg	
	1 g	0.0024 mg	
	500 mg	0.0019 mg	
	300 mg	0.0016 mg	
	200 mg	0.0014 mg	
	100 mg	0.0012 mg	
	50 mg	0.0010 mg	
	30 mg	0.00088 mg	
	20 mg	0.00082 mg	
	10 mg	0.00071 mg	
	5 mg	0.0066 mg	
	3 mg	0.0062 mg	
	2 mg	0.0060 mg	
	1 mg	0.0059 mg	
Avoirdupois	1000 lb	7.5 g	Echelon III
	500 lb	5.8 g	
	50 lb	0.27 g	
	25 lb	0.13 g	
	30 lb	47 mg	
	20 lb	26 mg	
	10 lb	14 mg	
	5 lb	4.8 mg	
	3 lb	2.5 mg	
	2 lb	1.3 mg	
	1 lb	0.81 mg	

*W. R. M. L. Q.*

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**CALIBRATION AND MEASUREMENT CAPABILITIES (CMC)** Notes 1,2

Measured Parameter or Device Calibrated	Range	Uncertainty ( $k=2$ ) <small>Note 3</small>	Remarks
	0.5 lb	0.55 mg	
	0.3 lb	0.36 mg	
	0.2 lb	0.33 mg	
	0.1 lb	0.11 mg	
	0.05 lb	0.084 mg	
	0.03 lb	0.062 mg	
	0.02 lb	0.046 mg	
	0.01 lb	0.038 mg	
	0.005 lb	0.034 mg	
	0.003 lb	0.024 mg	
	0.002 lb	0.019 mg	
	0.001 lb	0.017 mg	
	4 oz	0.38 mg	
	2 oz	0.14 mg	
	1 oz	0.086 mg	
	1/2 oz	0.062 mg	
	1/4 oz	0.046 mg	
	1/8 oz	0.038 mg	
	1/16 oz	0.024 mg	
	1/32 oz	0.019 mg	
<b>NVLAP Code: 20/M12 VOLUME and DENSITY</b>			
Volume	600 gal	31 in <sup>3</sup>	Volume Transfer
	100 gal	7.2 in <sup>3</sup>	
	50 gal	2.3 in <sup>3</sup>	
	30 gal	1.5 in <sup>3</sup>	
	25 gal	1.5 in <sup>3</sup>	
	20 gal	1.2 in <sup>3</sup>	
	5 gal	0.26 in <sup>3</sup>	
	100 gal	11 in <sup>3</sup>	LPG
	20 gal	2.1 in <sup>3</sup>	
	5 gal	2.2 mL	Gravimetric
	1 gal	0.50 mL	

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Measured Parameter or Device Calibrated	Range	Uncertainty ( $k=2$ ) <small>Note 3</small>	Remarks
	1/2 gal	0.28 mL	
	1 qt	0.090 mL	
	1 pt	0.050 mL	
	1/2 pt	0.038 mL	
	1 gill	0.081 mL	
	2 fl oz	0.061 mL	
<b>END</b>			

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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 using a coverage factor,  $k = 2$ , with a level of confidence of approximately 95 %. 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.

**Note 7:** See [NIST Handbook 150](#) for further explanation of these notes.

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