



**National Voluntary
Laboratory Accreditation Program**



CALIBRATION LABORATORIES

NVLAP LAB CODE 200396-0

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

<p>Oklahoma Bureau of Standards 2800 North Lincoln Boulevard Oklahoma City, OK 73105-4298 Mr. Jeremy Nading Phone: 405-522-5459 Fax: 405-522-5457 E-mail: jeremy.nading@ag.ok.gov URL: http://www.odo.state.ok.us/lab/bos.htm</p>	<p>Fields of Calibration Mechanical</p> <p>This laboratory is compliant to ANSI/NCSL Z540-1-1994; Part 1. ((20/A01))</p>
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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	30 kg 25 kg 20 kg 10 kg 5 kg 3 kg 2 kg 1 kg 500 g 300 g 200 g 100 g 50 g 30 g 20 g 10 g	1.9 mg 1.7 mg 1.3 mg 0.64 mg 0.25 mg 0.12 mg 88 µg 29 µg 14 µg 8.8 µg 6.0 µg 3.7 µg 2.1 µg 1.4 µg 1.2 µg 1.2 µg	Echelon I Automated
Avoirdupois	50 lb 25 lb	1.4 mg 0.74 mg	Echelon I Automated
Metric	30 kg 20 kg 10 kg	8.9 mg 7.2 mg 1.1 mg	Echelon I

2016-08-23 through 2016-12-31

Effective dates

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Measured Parameter or Device Calibrated	Range	Expanded Uncertainty ^{Note 3}	Remarks
	5 kg	0.69 mg	
	3 kg	0.58 mg	
	2 kg	0.54 mg	
	1 kg	61 µg	
	500 g	32 µg	
	300 g	21 µg	
	200 g	16 µg	
	100 g	7.1 µg	
	50 g	7.5 µg	
	30 g	5.0 µg	
	20 g	3.7 µg	
	10 g	3.3 µg	
	5 g	1.8 µg	
	3 g	1.2 µg	
	2 g	0.93 µg	
	1 g	0.90 µg	
	500 mg	0.50 µg	
	300 mg	0.35 µg	
	200 mg	0.30 µg	
	100 mg	0.30 µg	
	50 mg	0.20 µg	
	30 mg	0.18 µg	
	20 mg	0.15 µg	
	10 mg	0.18 µg	
	5 mg	0.15 µg	
	3 mg	0.13 µg	
	2 mg	0.13 µg	
	1 mg	0.15 µg	
	1200 kg	13.0 g	Echelon II
	750 kg	9.6 g	
	500 kg	1.1 g	
	250 kg	0.48 g	
	200 kg	0.47 g	
	100 kg	0.47 g	

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Dana S. Kaman

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Measured Parameter or Device Calibrated	Range	Expanded Uncertainty ^{Note 3}	Remarks
	50 kg	37 mg	
	30 kg	12 mg	
	20 kg	9.5 mg	
	10 kg	3.0 mg	
	5 kg	1.4 mg	
	3 kg	0.91 mg	
	2 kg	0.76 mg	
	1 kg	0.28 mg	
	500 g	0.15 mg	
	300 g	0.1 mg	
	200 g	97 µg	
	100 g	41 µg	
	50 g	36 µg	
	30 g	24 µg	
	20 g	18 µg	
	10 g	13 µg	
	5 g	7.1 µg	
	3 g	5.8 µg	
	2 g	5.3 µg	
	1 g	2.0 µg	
	500 mg	2.3 µg	
	300 mg	1.6 µg	
	200 mg	1.2 µg	
	100 mg	0.77 µg	
	50 mg	0.59 µg	
	30 mg	0.5 µg	
	20 mg	0.38 µg	
	10 mg	0.42 µg	
	5 mg	0.38 µg	
	3 mg	0.31 µg	
	2 mg	0.24 µg	
	1 mg	0.24 µg	
Avoirdupois	2500 lb	0.030 lb	Echelon II
	2000 lb	0.022 lb	

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CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) ^{Notes 1,2}

Measured Parameter or Device Calibrated	Range	Expanded Uncertainty ^{Note 3}	Remarks
	1000 lb	0.0024 lb	
	500 lb	0.0011 lb	
	300 lb	0.0010 lb	
	200 lb	0.0010 lb	
	100 lb	81 μlb	
	50 lb	23 μlb	
	25 lb	13 μlb	
	20 lb	8.5 μlb	
	10 lb	3.3 μlb	
	5 lb	2.3 μlb	
	3 lb	2.0 μlb	
	2 lb	0.73 μlb	
	1 lb	0.40 μlb	
	0.5 lb	0.31 μlb	
	0.3 lb	0.20 μlb	
	0.2 lb	0.12 μlb	
	0.1 lb	0.1 μlb	
	0.05 lb	0.075 μlb	
	0.03 lb	0.046 μlb	
	0.02 lb	0.037 μlb	
	0.01 lb	0.022 μlb	
	0.005 lb	0.019 μlb	
	0.003 lb	0.013 μlb	
	0.002 lb	0.0078 μlb	
	0.001 lb	0.0075 μlb	
	0.0005 lb	0.0054 μlb	
	0.0003 lb	0.0038 μlb	
	0.0002 lb	0.0025 μlb	
	0.0001 lb	0.0020 μlb	
	0.00005 lb	0.0021 μlb	
	0.00003 lb	0.0018 μlb	
	0.00002 lb	0.0009 μlb	
	0.00001 lb	0.0008 μlb	
	0.000005 lb	0.0010 μlb	
	0.000003 lb	0.00053 μlb	

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CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) Notes 1,2

Measured Parameter or Device Calibrated	Range	Expanded Uncertainty <small>Note 3</small>	Remarks
Metric	0.000002 lb	0.00053 μ lb	Echelon III
	0.000001 lb	0.00053 μ lb	
	3000 kg	69 g	
	2500 kg	66 g	
	2000 kg	64 g	
	1500 kg	41 g	
	1200 kg	31 g	
	1000 kg	15 g	
	750 kg	13 g	
	500 kg	6.1 g	
	250 kg	4.6 g	
	200 kg	4.2 g	
	100 kg	1.8 g	
	50 kg	1.5 g	
	30 kg	0.51 g	
	25 kg	0.16 g	
	20 kg	0.15 g	
	10 kg	0.14 g	
	5 kg	8.1 mg	
	3 kg	7.0 mg	
	2 kg	6.5 mg	
	1 kg	6.1 mg	
	500 g	6.0 mg	
	300 g	3.9 mg	
	200 g	0.28 mg	
	100 g	0.16 mg	
	50 g	0.13 mg	
	30 g	0.13 mg	
	20 g	0.12 mg	
	10 g	0.11 mg	
5 g	0.11 mg		
3 g	0.11 mg		
2 g	0.11 mg		
1 g	0.11 mg		

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Tara S. Laman

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CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) ^{Notes 1,2}

Measured Parameter or Device Calibrated	Range	Expanded Uncertainty ^{Note 3}	Remarks
Avoirdupois	500 mg	0.11 mg	Echelon III
	300 mg	0.11 mg	
	200 mg	63 µg	
	100 mg	63 µg	
	50 mg	43 µg	
	30 mg	43 µg	
	20 mg	43 µg	
	10 mg	42 µg	
	5 mg	33 µg	
	3 mg	26 µg	
	2 mg	26 µg	
	1 mg	24 µg	
	6000 lb	0.15 lb	
	5500 lb	0.15 lb	
	5000 lb	0.14 lb	
	4500 lb	0.14 lb	
	4000 lb	0.12 lb	
	3500 lb	0.11 lb	
	3000 lb	0.071 lb	
	2500 lb	0.037 lb	
	2000 lb	0.032 lb	
	1500 lb	0.029 lb	
	1250 lb	0.014 lb	
	1000 lb	0.013 lb	
	500 lb	0.0092 lb	
	300 lb	0.0053 lb	
	250 lb	0.0040 lb	
	200 lb	0.0040 lb	
	125 lb	0.0032 lb	
	100 lb	0.0011 lb	
	50 lb	0.00034 lb	
	30 lb	0.00032 lb	
25 lb	0.00032 lb		
20 lb	0.00031 lb		

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CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) ^{Notes 1,2}

Measured Parameter or Device Calibrated	Range	Expanded Uncertainty ^{Note 3}	Remarks	
	15 lb	0.00031 lb		
	10 lb	18 µlb		
	5 lb	15 µlb		
	4 lb	15 µlb		
	3 lb	14 µlb		
	2 lb	13 µlb		
	1 lb	8.6 µlb		
	0.5 lb	8.5 µlb		
	0.3 lb	0.52 µlb		
	0.2 lb	0.35 µlb		
	0.1 lb	0.29 µlb		
	0.05 lb	0.28 µlb		
	0.03 lb	0.27 µlb		
	0.02 lb	0.24 µlb		
	0.01 lb	0.24 µlb		
	0.005 lb	0.24 µlb		
	0.003 lb	0.24 µlb		
	0.002 lb	0.23 µlb		
	0.001 lb	0.24 µlb		
	5500 lb	0.17 lb	Weight Carts	
	5000 lb	0.17 lb		
	4500 lb	0.17 lb		
	4000 lb	0.14 lb		
	3500 lb	0.14 lb		
	3000 lb	0.11 lb		
	2500 lb	0.088 lb		
	2000 lb	0.086 lb		
VOLUME and DENSITY (20/M12)				
Volume	375 gal	13 in ³		Volume Transfer
	300 gal	10 in ³		
	250 gal	8.4 in ³		
	200 gal	6.7 in ³		
	150 gal	5.1 in ³		

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CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) ^{Notes 1,2}

Measured Parameter or Device Calibrated	Range	Expanded Uncertainty ^{Note 3}	Remarks
	100 gal	3.4 in ³	Gravimetric Method
	50 gal	1.7 in ³	
	30 gal	1.0 in ³	
	25 gal	0.88 in ³	
	20 gal	0.71 in ³	
	15 gal	0.53 in ³	
	10 gal	0.36 in ³	
	5 gal	0.21 in ³	
	100 gal	1.4 in ³	
	25 gal	0.86 in ³	
	5 gal	0.077 in ³	
	1 gal	0.026 in ³	
	0.5 gal	0.026 in ³	
	1 qt	0.026 in ³	
	1 pt	0.013 in ³	
	0.5 pt	0.0071 in ³	
	1 gill	0.0071 in ³	
	2 oz	0.0014 in ³	
	1 oz	0.0014 in ³	
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.

Note 7: See NIST Handbook 150 for further explanation of these notes.

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