National Voluntary Laboratory Accreditation Program

CALIBRATION LABORATORIES

NVLAP LAB CODE 200396-0
Scope Revised: 2012-04-24

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

Oklahoma Bureau of Standards 2800 North Lincoln Boulevard Oklahoma City, OK 73105-4298 Mr. Robert Whitney Phone: 405-522-0316 Fax: 405-522-5457 E-mail: robert.whitney@ag.ok.gov URL: http://www.state.ok.us/lab-bos.htm	**Parameter(s) of Accreditation** Mechanical This laboratory is compliant to ANSI/NCSL Z540-1-1994; Part 1. (NVLAP Code: 20/A01)

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

Measured Parameter or Device Calibrated	Range	Uncertainty (k=2) [Note 3]	Remarks
MECHANICAL			
NVLAP Code: 20/M08 **MASS**			
Metric	20 kg	7.1 mg	Echelon I
	10 kg	0.79 mg	
	5 kg	0.53 mg	
	3 kg	0.46 mg	
	2 kg	0.44 mg	
	1 kg	52 µg	
	500 g	27 µg	
	300 g	18 µg	
	200 g	13 µg	
	100 g	11 µg	
	50 g	6.3 µg	
	30 g	4.3 µg	
	20 g	3.4 µg	
	10 g	3.3 µg	
	5 g	1.7 µg	
	3 g	1.2 µg	
	2 g	0.88 µg	
	1 g	0.83 µg	
	500 mg	0.41 µg	
	300 mg	0.28 µg	
	200 mg	0.23 µg	
	100 mg	0.23 µg	
	50 mg	0.15 µg	

2012-01-01 through 2012-12-31
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CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) [Notes 1,2]

Measured Parameter or Device Calibrated	Range	Uncertainty (k=2) [Note 3]	Remarks
	30 mg	0.12 µg	
	20 mg	0.14 µg	
	10 mg	0.13 µg	
	5 mg	0.10 µg	
	3 mg	0.090 µg	
	2 mg	0.080 µg	
	1 mg	0.10 µg	
	1200 kg	9.9 g	Echelon II
	750 kg	6.2 g	
	500 kg	5.9 g	
	250 kg	4.4 g	
	200 kg	3.3g	
	100 kg	3.3 g	
	50 kg	41 mg	
	30 kg	14 mg	
	20 kg	11 mg	
	10 kg	3.0 mg	
	5 kg	1.4 mg	
	3 kg	0.95 mg	
	2 kg	0.87 mg	
	1 kg	0.26 mg	
	500 g	0.14 mg	
	300 g	96 µg	
	200 g	74 µg	
	100 g	39 µg	
	50 g	34 µg	
	30 g	25 µg	
	20 g	21 µg	
	10 g	11 µg	
	5 g	6.1 µg	
	3 g	4.8 µg	
	2 g	4.3 µg	
	1 g	1.9 µg	
	500 mg	2.0 µg	
	300 mg	1.3 µg	

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

Measured Parameter or Device Calibrated	Range	Uncertainty (*k*=2) [Note 3]	Remarks
	200 mg	1.2 µg	
	100 mg	0.93 µg	
	50 mg	0.49 µg	
	30 mg	0.54 µg	
	20 mg	0.47 µg	
	10 mg	0.39 µg	
	5 mg	0.35 µg	
	3 mg	0.34 µg	
	2 mg	0.28 µg	
	1 mg	0.21 µg	
Avoirdupois	2500 lb	0.021 lb	Echelon II
	2000 lb	0.021 lb	
	1000 lb	0.0075 lb	
	500 lb	0.0073 lb	
	300 lb	0.0073 lb	
	200 lb	0.0073 lb	
	100 lb	88 µlb	
	50 lb	27 µlb	
	25 lb	14 µlb	
	20 lb	6.8 µlb	
	10 lb	3.3 µlb	
	5 lb	4.0 µlb	
	3 lb	3.7 µlb	
	2 lb	0.64 µlb	
	1 lb	0.36 µlb	
	0.5 lb	0.44 µlb	
	0.3 lb	0.17 µlb	
	0.2 lb	0.11 µlb	
	0.1 lb	0.091 µlb	
	0.05 lb	0.071 µlb	
	0.03 lb	0.038 µlb	
	0.02 lb	0.032 µlb	
	0.01 lb	0.021 µlb	
	0.005 lb	0.016 µlb	
	0.003 lb	0.012 µlb	

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

Measured Parameter or Device Calibrated	Range	Uncertainty (k=2) [Note 3]	Remarks
	0.002 lb	0.0091 µlb	
	0.001 lb	0.0066 µlb	
	0.0005 lb	0.0044 µlb	
	0.0003 lb	0.0046 µlb	
	0.0002 lb	0.0037 µlb	
	0.0001 lb	0.0018 µlb	
	0.00005 lb	0.0021 µlb	
	0.00003 lb	0.0019 µlb	
	0.00002 lb	0.0012 µlb	
	0.00001 lb	0.00082 µlb	
	0.000005 lb	0.00059 µlb	
	0.000003 lb	0.00058 µlb	
	0.000002 lb	0.00058 µlb	
	0.000001 lb	0.00058 µlb	
Metric	3000 kg	68 g	Echelon III
	2500 kg	66 g	
	2000 kg	63 g	
	1500 kg	51 g	
	1200 kg	18 g	
	1000 kg	18 g	
	750 kg	16 g	
	500 kg	7.2 g	
	250 kg	6.4 g	
	200 kg	4.3 g	
	100 kg	3.5 g	
	50 kg	3.5 g	
	30 kg	0.31 g	
	25 kg	0.16 g	
	20 kg	0.15 g	
	10 kg	0.14 g	
	5 kg	8.2 mg	
	3 kg	6.9 mg	
	2 kg	6.4 mg	
	1 kg	6.0 mg	
	500 g	6.0 mg	

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

Measured Parameter or Device Calibrated	Range	Uncertainty (k=2) [Note 3]	Remarks
	300 g	3.7 mg	
	200 g	0.27 mg	
	100 g	0.16 mg	
	50 g	0.13 mg	
	30 g	0.12 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	
	500 mg	0.11 mg	
	300 mg	0.11 mg	
	200 mg	62 µg	
	100 mg	62 µg	
	50 mg	42 µg	
	30 mg	42 µg	
	20 mg	42 µg	
	10 mg	42 µg	
	5 mg	33 µg	
	3 mg	26 µg	
	2 mg	26 µg	
	1 mg	25 µg	
Avoirdupois	6000 lb	0.13 lb	Echelon III
	5500 lb	0.12 lb	
	5000 lb	0.12 lb	
	4500 lb	0.12 lb	
	4000 lb	0.10 lb	
	3500 lb	0.090 lb	
	3000 lb	0.066 lb	
	2500 lb	0.041 lb	
	2000 lb	0.037 lb	
	1500 lb	0.037 lb	
	1250 lb	0.034 lb	
	1000 lb	0.010 lb	

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

Measured Parameter or Device Calibrated	Range	Uncertainty (k=2) [Note 3]	Remarks
	500 lb	0.0095 lb	
	300 lb	0.0052 lb	
	250 lb	0.0039 lb	
	200 lb	0.0039 lb	
	125 lb	0.0032 lb	
	100 lb	0.00058 lb	
	50 lb	0.00034 lb	
	30 lb	0.00032 lb	
	25 lb	0.00031 lb	
	20 lb	0.00031 lb	
	15 lb	0.00031 lb	
	10 lb	18 µlb	
	5 lb	15 µlb	
	4 lb	15 µlb	
	3 lb	13 µlb	
	2 lb	13 µlb	
	1 lb	8.3 µlb	
	0.5 lb	8.2 µlb	
	0.3 lb	0.51 µlb	
	0.2 lb	0.34 µlb	
	0.1 lb	0.28 µlb	
	0.05 lb	0.27 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	0.15 lb	Weight Carts
	5000 lb	0.15 lb	
	4500 lb	0.15 lb	
	4000 lb	0.12 lb	
	3500 lb	0.12 lb	
	3000 lb	0.094 lb	

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

Measured Parameter or Device Calibrated	Range	Uncertainty (k=2) [Note 3]	Remarks
	2500 lb	0.071 lb	
	2000 lb	0.085 lb	
NVLAP Code: 20/M12			
VOLUME and DENSITY			
Volume	375 gal	13 in^3	Volume Transfer
	300 gal	10 in^3	
	250 gal	8.6 in^3	
	200 gal	6.8 in^3	
	150 gal	5.2 in^3	
	100 gal	3.5 in^3	
	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	0.54 in^3	
	10 gal	0.36 in^3	
	5 gal	0.24 in^3	
	100 gal	1.5 in^3	Gravimetric Method
	25 gal	0.87 in^3	
	5 gal	0.081 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 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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