



CALIBRATION LABORATORIES

NVLAP LAB CODE 200869-0

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

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

Measured Parameter or Device Calibrated	Range	Uncertainty ($k=2$) ^{Note 3}	Remarks
DIMENSIONAL			
SURVEYING RODS and TAPES (20/D13)			
Surveying Tapes	0 ft to 16 ft 0 ft to 30 ft 0 ft to 45 ft 0 ft to 60 ft 0 ft to 75 ft 0 ft to 84 ft 0 ft to 90 ft 0 ft to 100 ft 0 ft to 105 ft 0 ft to 120 ft 0 ft to 135 ft 0 ft to 150 ft 0 ft to 165 ft 0 ft to 180 ft 0 ft to 184 ft 0 ft to 195 ft 0 ft to 200 ft	0.0071 in 0.013 in 0.019 in 0.026 in 0.032 in 0.039 in 0.039 in 0.045 in 0.045 in 0.051 in 0.058 in 0.064 in 0.070 in 0.077 in 0.083 in 0.083 in 0.090 in	Bench Method
TIME and FREQUENCY			
STOPWATCHES and TIMERS (20/F05)			
Stopwatches			
DUT Resolution 0.01 s	0 h to 24 h	0.43 s	Direct Comparison
DUT Resolution 1 s	0 h to 24 h	0.72 s	Direct Comparison

2014-04-01 through 2015-03-31

Effective dates

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Measured Parameter or Device Calibrated	Range	Uncertainty ($k=2$) ^{Note 3}	Remarks
MECHANICAL			
MASS DETERMINATION (20/M08)			
Metric	30 kg	16 mg	Echelon II
	25 kg	9.8 mg	
	20 kg	8.8 mg	
	10 kg	3.3 mg	
	5 kg	1.7 mg	
	3 kg	1.3 mg	
	2 kg	1.1 mg	
	1 kg	0.23 mg	
	500 g	0.11 mg	
	300 g	0.076 mg	
	200 g	0.059 mg	
	100 g	0.039 mg	
	50 g	0.023 mg	
	30 g	0.019 mg	
	20 g	0.018 mg	
	10 g	0.012 mg	
	5 g	0.0053 mg	
	3 g	0.0037 mg	
	2 g	0.0027 mg	
	1 g	0.0021 mg	
	500 mg	0.0015 mg	
	300 mg	0.0013 mg	
	200 mg	0.0013 mg	
	100 mg	0.0012 mg	
	50 mg	0.0013 mg	
	30 mg	0.0013 mg	
	20 mg	0.0013 mg	
	10 mg	0.0014 mg	
	5 mg	0.0011 mg	
	3 mg	0.0010 mg	
	2 mg	0.0010 mg	
	1 mg	0.0011 mg	
Avoirdupois	50 lb	17 mg	Echelon II

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

Measured Parameter or Device Calibrated	Range	Uncertainty ($k=2$) ^{Note 3}	Remarks
Metric	25 lb	6.6 mg	Echelon III
	20 lb	4.5 mg	
	10 lb	2.0 mg	
	5 lb	1.4 mg	
	3 lb	1.2 mg	
	2 lb	0.20 mg	
	1 lb	0.11 mg	
	0.5 lb	0.075 mg	
	0.2 lb	0.029 mg	
	0.1 lb	0.027 mg	
	0.05 lb	0.017 mg	
	0.03 lb	0.012 mg	
	0.02 lb	0.010 mg	
	0.01 lb	0.0073 mg	
	0.005 lb	0.0041 mg	
	0.003 lb	0.0027 mg	
	0.002 lb	0.0023 mg	
	0.001 lb	0.0018 mg	
	2500 kg	31 g	
	1000 kg	17 g	
	750 kg	17 g	
	500 kg	1.7 g	
	250 kg	1.4 g	
	200 kg	1.4 g	
	50 kg	110 mg	
	30 kg	71 mg	
	25 kg	71 mg	
	20 kg	71 mg	
10 kg	70 mg		
5 kg	7.8 mg		
3 kg	7.8 mg		
2 kg	7.8 mg		
1 kg	7.8 mg		
500 g	7.8 mg		
300 g	7.8 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
	200 g	7.8 mg	
	100 g	0.15 mg	
	50 g	0.14 mg	
	30 g	0.14 mg	
	20 g	0.14 mg	
	10 g	0.14 mg	
	5 g	0.14 mg	
	3 g	0.14 mg	
	2 g	0.14 mg	
	1 g	0.14 mg	
	500 mg	0.014 mg	
	300 mg	0.014 mg	
	200 mg	0.014 mg	
	100 mg	0.014 mg	
	50 mg	0.014 mg	
	30 mg	0.014 mg	
	20 mg	0.014 mg	
	10 mg	0.014 mg	
	5 mg	0.014 mg	
	3 mg	0.014 mg	
	2 mg	0.014 mg	
	1 mg	0.014 mg	
	Avoirdupois	5000 lb	
2500 lb		25 g	
2000 lb		17 g	
1000 lb		1.7 g	
500 lb		1.4 g	
250 lb		1.0 g	
200 lb		1.0 g	
100 lb		0.13 g	
50 lb		72 mg	
25 lb		71 mg	
20 lb		70 mg	
10 lb		7.8 mg	
5 lb		7.8 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
Troy Ounce	3 lb	7.8 mg	
	2 lb	7.8 mg	
	1 lb	7.8 mg	
	0.5 lb	7.8 mg	
	0.3 lb	0.15 mg	
	0.2 lb	0.14 mg	
	0.1 lb	0.14 mg	
	0.05 lb	0.14 mg	
	0.03 lb	0.14 mg	
	0.02 lb	0.14 mg	
	0.01 lb	0.14 mg	
	0.005 lb	0.14 mg	
	0.003 lb	0.14 mg	
	0.002 lb	0.14 mg	
	0.001 lb	0.14 mg	
	8 oz	7.8 mg	
	4 oz	0.15 mg	
	2 oz	0.15 mg	
	1 oz	0.15 mg	
	1/2 oz	0.14 mg	
	1/4 oz	0.14 mg	
	1/8 oz	0.14 mg	
	1/16 oz	0.14 mg	
	1/32 oz	0.14 mg	
	200 oz t	7.9 mg	
	100 oz t	8.1 mg	
	50 oz t	7.8 mg	
	20 oz t	7.8 mg	
10 oz t	7.8 mg		
5 oz t	7.8 mg		
2 oz t	0.14 mg		
1 oz t	0.26 mg		
0.5 oz t	0.14 mg		
0.25 oz t	0.14 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	
Wheel Load Weighers	0.2 oz t	0.14 mg	Echelon III	
	0.1 oz t	0.14 mg		
	0.05 oz t	0.14 mg		
	0.025 oz t	0.14 mg		
	0.02 oz t	0.14 mg		
	0.01 oz t	0.14 mg		
	0.005 oz t	0.14 mg		
Wheel Load Weighers	40 000 lb	98 lb		
	30 000 lb	91 lb		
	20 000 lb	69 lb		
	10 000 lb	64 lb		
Weight Carts	6000 lb	89 g		Echelon III
	5500 lb	89 g		
	5000 lb	89 g		
	4500 lb	88 g		
	4000 lb	88 g		
	3500 lb	88 g		
	3000 lb	88 g		
	2500 lb	66 g		
	2000 lb	63 g		
VOLUME and DENSITY (20/M12)				
Volume	1500 gal	49 in ³	Transfer Method	
	1000 gal	33 in ³		
	500 gal	19 in ³		
	200 gal	8.6 in ³		
	100 gal	4.3 in ³		
	50 gal	4.5 in ³		
	25 gal	2.3 in ³		
	10 gal	0.59 in ³		
	5 gal	0.35 in ³		
	4 gal	0.63 in ³		
	3 gal	0.51 in ³		
	2 gal	0.39 in ³		

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Measured Parameter or Device Calibrated	Range	Uncertainty ($k=2$) ^{Note 3}	Remarks
	1 gal	0.28 in ³	
	5000 L	0.82 L	
	3000 L	0.61 L	
	2000 L	0.44 L	
	1000 L	0.27 L	
	500 L	0.12 L	
	250 L	89 mL	
	200 L	50 mL	
	120 L	38 mL	
	100 L	26 mL	
	60 L	18 mL	
	50 L	19 mL	
	40 L	15 mL	
	20 L	5.0 mL	
	10 L	4.9 mL	
	5 L	3.4 mL	
Slicker Standard	10 gal	0.21 in ³	Gravimetric Method
	5 gal	0.10 in ³	
	1 gal	0.027 in ³	
Test Measure	5 gal	0.20 in ³	
	3 gal	0.19 in ³	
	2.5 gal	0.19 in ³	
	2 gal	0.19 in ³	
	1 gal	0.18 in ³	
Slicker Standard	20 L	1.7 mL	
	5 L	0.55 mL	
Test Measure	20 L	3.3 mL	
	10 L	0.84 mL	
	5 L	0.58 mL	
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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