National Voluntary Laboratory Accreditation Program

CALIBRATION LABORATORIES **NVLAP LAB CODE 200381-0**

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

Arizona Department of Weights and Measures **Metrology Laboratory** 4425 West Olive Avenue, Suite 134 Glendale, AZ 85302-3844 Mr. Brian Sellers Phone: 602-771-4938 Fax: 623-463-0440 E-mail: bsellers@azdwm.gov URL: http://www.azdwm.gov	**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	500 kg	2.9 g	Echelon II
	250 kg	2.8 g	
	30 kg	12 mg	
	25 kg	11 mg	
	20 kg	9.6 mg	
	10 kg	2.1 mg	
	5 kg	1.11 mg	
	4 kg	0.78 mg	
	3 kg	0.78 mg	
	2 kg	0.62 mg	
	1 kg	0.16 mg	
	500 g	0.088 mg	
	300 g	0.064 mg	
	200 g	0.054 mg	
	100 g	0.024 mg	
	50 g	0.016 mg	
	30 g	0.014 mg	
	20 g	0.013 mg	
	10 g	0.013 mg	
	5 g	0.0038 mg	
	3 g	0.0037 mg	
	2 g	0.0036 mg	
	1 g	0.0036 mg	

2011-10-01 through 2012-09-30
Effective dates

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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) [Note 3]	Remarks
	500 mg	0.0019 mg	
	300 mg	0.0018 mg	
	200 mg	0.0018 mg	
	100 mg	0.0018 mg	
	50 mg	0.0012 mg	
	30 mg	0.0012 mg	
	20 mg	0.0012 mg	
	10 mg	0.0012 mg	
	5 mg	0.0012 mg	
	3 mg	0.0012 mg	
	2 mg	0.0012 mg	
	1 mg	0.0012 mg	
Avoirdupois	2500 lb	0.076 lb	Echelon II
	2000 lb	0.075 lb	
	1000 lb	0.0062 lb	
	500 lb	0.0062 lb	
	50 lb	12 mg	
	30 lb	10.1 mg	
	25 lb	9.6 mg	
	20 lb	2.8 mg	
	10 lb	1.4 mg	
	5 lb	0.80 mg	
	4 lb	0.61 mg	
	3 lb	0.61 mg	
	2 lb	0.32 mg	
	1 lb	0.057 mg	
	0.5 lb	0.046 mg	
	0.3 lb	0.047 mg	
	0.2 lb	0.017 mg	
	0.1 lb	0.015 mg	
	0.05 lb	0.013 mg	
	0.03 lb	0.013 mg	
	0.02 lb	0.013 mg	
	0.01 lb	0.0029 mg	
	0.005 lb	0.0023 mg	
	0.003 lb	0.0023 mg	
	0.002 lb	0.0014 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
	0.001 lb	0.0012 mg	
	8 oz	0.046 mg	Echelon II
	4 oz	0.046 mg	
	2 oz	0.015 mg	
	1 oz	0.014 mg	
	1/2 oz	0.014 mg	
	1/4 oz	0.013 mg	
	1/8 oz	0.0026 mg	
	1/16 oz	0.0023 mg	
	1/32 oz	0.0014 mg	
Metric	500 kg	5.3 g	Echelon III
	250 kg	5.2 g	
	50 kg	51 mg	
	25 kg	42 mg	
	20 kg	42 mg	
	10 kg	40 mg	
	5 kg	4.4 mg	
	4 kg	5.6 mg	
	3 kg	4.4 mg	
	2.5 kg	4.4 mg	
	2 kg	4.4 mg	
	1 kg	2.8 mg	
	524.20 g	2.8 mg	
	500 g	2.8 mg	
	464.08 g	2.8 mg	
	300 g	2.8 mg	
	250 g	2.8 mg	
	209.68 g	2.8 mg	
	200 g	0.17 mg	
	185.63 g	0.16 mg	
	104.84 g	0.16 mg	
	100 g	0.16 mg	
	92.82 g	0.16 mg	
	50 g	0.15 mg	
	42.94 g	0.15 mg	
	30 g	0.15 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
	25 g	0.14 mg	
	20.97 g	0.14 mg	
	20 g	0.14 mg	
	10 g	0.14 mg	
	5 g	0.046 mg	
	3 g	0.040 mg	
	2 g	0.034 mg	
	1 g	0.029 mg	
	500 mg	0.025 mg	
	300 mg	0.022 mg	
	200 mg	0.020 mg	
	100 mg	0.019 mg	
	50 mg	0.018 mg	
	30 mg	0.016 mg	
	20 mg	0.015 mg	
	10 mg	0.015 mg	
	5 mg	0.015 mg	
	3 mg	0.015 mg	
	2 mg	0.015 mg	
	1 mg	0.015 mg	
Avoirdupois	5000 lb	0.10 lb	Echelon III
	3000 lb	0.080 lb	
	2500 lb	0.075 lb	
	2000 lb	0.075 lb	
	1000 lb	0.012 lb	
	500 lb	0.012 lb	
	100 lb	49 mg	
	50 lb	42 mg	
	30 lb	42 mg	
	25 lb	41 mg	
	20 lb	40 mg	
	18 lb	40 mg	
	15 lb	40 mg	
	10 lb	5.1 mg	
	5 lb	4.6 mg	
	4 lb	4.4 mg	
	3 lb	4.4 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
	2 lb	2.8 mg	
	1 lb	2.8 mg	
	0.5 lb	2.8 mg	
	0.3 lb	0.12 mg	
	0.2 lb	0.12 mg	
	0.1 lb	0.12 mg	
	0.05 lb	0.12 mg	
	0.03 lb	0.12 mg	
	0.02 lb	0.12 mg	
	0.01 lb	0.044 mg	
	0.005 lb	0.034 mg	
	0.003 lb	0.033 mg	
	0.002 lb	0.029 mg	
	0.001 lb	0.025 mg	
	100 oz	7.1 mg	
	80 oz	7.1 mg	
	40 oz	6.0 mg	
	20 oz	6.0 mg	
	10 oz	6.0 mg	
	8 oz	2.8 mg	
	5 oz	6.0 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	0.040 mg	
	1/16 oz	0.034 mg	
	1/32 oz	0.029 mg	
	0.5 oz	0.12 mg	
	0.2 oz	0.12 mg	
	0.1 oz	0.12 mg	
	0.05 oz	0.12 mg	
Weight Carts	5000 lb	0.094 lb	Echelon III
	3000 lb	0.094 lb	
	2500 lb	0.094 lb	
	2000 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
NVLAP Code: 20/M12 **VOLUME and DENSITY**			
Volume	1044 gal	21 in^3	Volume Transfer Method
	500 gal	12 in^3	
	200 gal	8.0 in^3	
	100 gal	4.8 in^3	
	50 gal	2.8 in^3	
	15 gal	3.8 in^3	
	5 gal	0.37 in^3	
	1 gal	0.39 in^3	
	100 gal	5.9 in^3	LPG Volume Transfer
	20 gal	2.3 in^3	
	100 gal	0.93 in^3	Volume Gravimetric
	50 gal	0.74 in^3	
	15 gal	0.07 in^3	
	5 gal	0.04 in^3	
	1 gal	0.06 in^3	
	20 gal	0.99 in^3	SVP - Volume Gravimetric
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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