Certificate Options

Variety of Weight Certificates

Troemner's calibration and certificate options are designed to provide the customer a range of choices in measurement precision, quality of data, and compliance to calibration and quality standards.

The choices are as follows:

NVLAP+ Accredited Mass Code Report of Mass Values

Troemner Mass Code Report of Mass Values is available for one-piece weights in ANSI/ASTM E617 Class 000, 00, 0 and Class E0*, OIML R 111 E1, and E2, and is the same report one would receive if weights were calibrated directly by NIST. This calibration delivers uncertainties which are the lowest available by a commercial laboratory matching those of many National Metrology Institutes. Troemner utilizes a calibration software program provided by NIST to perform a calibration that involves a series of interdependent comparisons. Troemner's primary standards are used for this calibration procedure. The calibration provides a high level of confidence that the measurements are in statistical control. This multi-page report of mass values is very detailed and includes statistical analysis including all measurement results, uncertainty calculations, as well as F and t test values. This certificate also includes Density Determination and Magnetic Susceptibility Determination Calibrations.

NVLAP+ Accredited Primary Reference Certificate

This certificate is available for one-piece weights in ANSI/ASTM Class 000, 00, 0 and Class E0*, OIML R 111 E1 and E2, and contains all of the information as the standard NVLAP+ Accredited Certificate as well as the Density Determination and Magnetic Susceptibility Determination Calibrations. Troemner's secondary standards are used for this calibration procedure.

NVLAP+ Accredited Certificate

The NVLAP+ Accredited Certificate provides compliance in both measurement process and data reported to the customer to meet a variety of standards including NVLAP Handbook 150-2, ISO/IEC 9000, ISO/IEC 17025, FDA, GMP, GLP, DOD, ANSI/NCSL Z540-1, and nuclear requirements. Troemner's NVLAP Laboratory Code is 105013-0. The NIST administered National Voluntary Laboratory Accreditation Program (NVLAP+) approves, through periodic audits, all processing and weighing procedures, as well as certificate format and content. Calibration procedures vary by tolerance class requested. For example, for higher accuracy classes such as Troemner UltraClass Series, ANSI/ASTM Class 000, 00, 0, and 1, Class E0*, OIML R 111 Class E1, E2, and F1, Troemner performs a multiple weighing procedure utilizing our secondary working standards to determine the mass of a customer's weight.

NVLAP+ Accredited Density Determination Calibration

Troemner's mass metrology laboratory can determine the actual density of one-piece mass standards that range in size from 1 g through 5 kg. Troemner is the only private NIST/NVLAP+ accredited laboratory in the United States for this mass calibration service. Troemner provides this service to reduce the uncertainty of calibrating one-piece precision ANSI/ASTM Class 000, 00, and 0 and Class E0*, OIML R 111 Class E1, and E2 weights. The process is highly recommended for one-piece weights used as reference standards. Utilizing a balance, a series of measurements are compared to a NIST traceable density standard immersed in water to determine the density value. The data found in this certificate will enable you to make the proper buoyancy corrections when performing calibrations on other weights. This certificate provides you with the information you need for working in true mass. Density Determination Calibration is also included in the NVLAP+ Accredited Mass Code Report of Mass Values and the NVLAP+ Accredited Primary Reference Certificate.

+ NVLAP Laboratory Code 105013-0
*E0 is a theoretical tolerance that is 50% of OIML R 111 Class E1

NVLAP+ Accredited Magnetic Susceptibility Determination Calibration

Troemner has the capability of measuring the magnetic field intensity and the potential magnetic susceptibility of stainless steel one-piece mass standards sized 1 g through 10 kg. Troemner is the only private accredited laboratory in the world for this mass calibration service. This process is recommended for one-piece weights used as reference standards to demonstrate the weights meet the required specifications for magnetism. Magnetic Susceptibility Determination Calibration is also included in the NVLAP+ Accredited Mass Code Report of Mass Values and the NVLAP+ Accredited Primary Reference Certificate.

The NVLAP+ Accredited Certificates include:

- Date of calibration
- Serial number and ID number
- Equipment and standards used during the calibration and their calibration due dates
- Accuracy class
- True mass value (mass in a vacuum)
- Conventional mass value ("As Found" and "As Left" for recalibration)
- Conventional mass correction ("As Found" and "As Left" for recalibration)
- Uncertainty of the measurement process for each weight
- Environmental conditions during test
- Construction and assumed density of weights
- Weight calibration procedures used
- Statement of traceability to NIST
- Helpful list of terms and definitions

Traceable Certificate

The Traceable Certificate is designed for those laboratories and companies that require traceability, but do not need to meet any stringent regulatory requirements. The Traceable Certificate measurement process is based on a single standard and utilizes one series of comparisons.

Information includes:

- Date of calibration
- Serial number and ID number
- Accuracy class
- The nominal value of the weight
- Mass correction, tolerance and uncertainty
- As Found and As Left tolerance status
- Statement of traceability to NIST

+ NVLAP Laboratory Code 105013-0
* E0 is a theoretical tolerance that is 50% of OIML R 111 Class E1
** As found data is not provided with new weights

Certificate Options

Certificate Options Comparison Chart

The chart below depicts the varying features among the certificate options of an individual weight or weight set.

	NVLAP+ Accredited Mass Code Report of Mass Values	NVLAP+ Accredited Primary Reference Certificate	NVLAP+ Accredited Certificate	Traceable Certificate
Name, Address, P.O. Number	X	X	X	X
Date of Calibration	X	X	X	X
Serial Number	X	X	X	X
Equipment and Standards Used				
Balance – Calibration Due Dates	X	X	X	
Standards – Calibration Due Dates	X	X	X	
Standards – Corrections	X			
Accuracy Class	X	X	X	X
Nominal Value	X	X	X	X
Conventional Mass Value				
"As Found Data" *	X	X	X	
"As Left Data"	X	X	X	
Conventional Mass Correction				
"As Found Data" *	X	X	X	X
"As Left Data"	X	X	X	X
True Mass Value (Mass in a Vacuum)				
"As Found Data" *	X	X	X	
"As Left Data"		X	X	
Density Determination	X	X		
Magnetic Susceptibility Determination	X	X		

+ NVLAP Laboratory Code 105013-0

* As found data is not provided with new weights

	NVLAP+ Accredited Mass Code Report of Mass Values	NVLAP+ Accredited Primary Reference Certificate	NVLAP+ Accredited Certificate	Traceable Certificate
Uncertainty of Measurement Process	X	X	X	X
Environmental Conditions During Test	X	X	X	
Construction and Density of Weights	X	X	X	X
Calibration Procedures Used	X	X	X	
Statement of Traceability to NIST	X	X	X	X
Measurement Assurance Data	X			
Helpful List of Terms and Definitions		X	X	
One Series of Comparisons Using a Single Standard		ANSI/ASTM Class 5,6 OIML Class M1, M2 NIST Class F		All Classes
Multiple Comparisons Using a Check Standard	One-Piece Weights ANSI/ASTM Class 000, 00, 0 Class E0*, OIML R 111 Class E1, E2		ANSI/ASTM Class 0, 1, 2, 3, 4 OIML Class E1, E2, F1, F2	
Comparison Method Data	X			
Meets ISO/IEC 17025, FDA, GMP, DOD, ANSI/NCSL Z540-1, NCR 10CFR50 Appendix B	X	X	X	

+ NVLAP Laboratory Code 105013-0

*E0 is a theoretical tolerance that is 50% of OIML R 111 Class E1