

# TECHtalk

A TECHNICAL PRODUCT PUBLICATION

## Traceable and Calibration Certificates Made Easy

### Which Certificate Do I Need?

One of the most frequently asked questions we hear at our mass metrology laboratory is which certificate do I need? This Tech Talk answers this question and provides some basic guidelines for making the appropriate decision. We offer four basic certificates for mass standards and test weights: Certificate of Accuracy, NVLAP Traceable Certificate, NVLAP Calibration Certificate, and Rice Lake Weighing Systems Traceable Certificate.

#### Certificate of Accuracy

This certificate does not provide the customer with traceability to NIST. It states that the weights we are selling have been adjusted and tested by RLWS standards, which are traceable to NIST. A Certificate of Accuracy is adequate if the actual values and stated uncertainties of the weights are not necessary, and only the tolerances of the specific classes are needed. It is available for all classes, and guarantees that weights are within the tolerance for the class listed. These certificates are normally adequate for weights used to calibrate industrial balances and scales more than six kilograms in capacity. Weights with this certificate do not meet the requirements needed in legal-for-trade scale applications. The certificate lists the report number, nominal value, description of weight (or kit), serial number, class, and tolerance.

#### NVLAP Traceable Certificate

This certificate is appropriate for weight accuracy classes: ASTM 4, 5, 6, and 7; NIST Class F (Legal for Trade); OIML M1, M2, and M3. Weights that include this certificate are traceable to NIST through RLWS. The certificate conforms to ANSI/NCSL Z 540-1 and includes all the information that is required by the superseded Military Standard Spec 45662A. We use a modified weighing design and provide the following information: nominal and correction values, tolerance for the specific class, assumed density, and the environmental conditions present at the time the tests were performed.

#### NVLAP Calibration Certificate

This certificate is appropriate for weight accuracy classes: ASTM 0,1, 1.1, 2 and 3; OIML E1, E2, F1 and F2. This certificate also conforms to ANSI/NCSL Z540-1 and the superseded Military Standard Spec 45662A, and is traceable to NIST through RLWS. The weighing designs for this calibration are extensive and consist of repeated comparisons, the same used at NIST. When these calibrations are performed, the 4-to-1 uncertainty to tolerance ratio is met for a weight range of 1 kg to 10 mg, thus giving the most accurate values of the weights as possible.

#### RLWS Mass Value Certificate

This certificate is used for all weight accuracy classes. This is not a NVLAP certificate, and a modified substitution design is used. Therefore, the weight information reported is not as precise as a full calibration. This certificate is only offered if the customer has determined that he does not need a full NVLAP calibration. Both actual weight values and uncertainties are included on the certificate.

# Weight Standard Classification Chart

Which certificate you choose may depend upon legal or contractual requirements that mandate a specific certification. In the absence of any requirements, the certificate you choose depends solely upon the accuracy classes for mass standards and test weights. Use the following charts as a guide to define which certificate is required.

CURRENT STANDARDS AND TEST WEIGHTS ACCURACY CLASSES					
TYPICAL USE	OIML	ASTM E617	NIST 105-1	General Tolerances	Recommended Certificates
<b>Weight Calibration Certificate Essential</b>					
<b>Primary Laboratory Reference Standard</b> High precision standards for calibration of weights and special precision analytical balances accuracy Classes I and II (class number depending on precision).	E1			1/2,000,000	<b>Weight Calibration</b>
	E2	0		1/670,000	
		1		1/400,000	
<b>Weight Calibration Certificate Recommended</b>					
<b>High Accuracy Balances</b> Working standard for precision analytical work, built-in weights and external weights used to calibrate moderate precision balances.	F1	2		1/200,000	<b>Weight Calibration</b>
		3		1/100,000	
	F2			1/67,000	
<b>Traceable Certificate Acceptable</b>					
<b>Industrial Scales &amp; Balances</b> Accuracy Class III industrial scales, dial scales, trip balances, platform scales. Also used for accuracy Class IIIIL and IV, and weights used to calibrate scales in legal-for-trade applications.		4		1/50,000	<b>Traceable</b>
	M1	5		1/20,000	
	M2	6	F	1/10,000	
	M3	7		1/6,700	

WEIGHT CERTIFICATES									
Certificates	Nominal Value	As Found Value	As Left Value	Weighing Design Test	Tolerance	ISO	H44	Traceable To	Uncertainty
<b>NVLAP Weight Calibration</b>	Y	Y	Y	Minimum 3 to 1	Y	Y	Y	NIST	Y
<b>NVLAP Traceable Report</b>	Y	Y	Y	Modified and Double	Y	Y	Y	NIST	Y
<b>RLWS Mass Value Certificate</b>	Y	Y	Y	Modified Substitution	Y	N	N	None	Y
<b>Certificate of Accuracy</b>	Y	N	N	Single	Y	N	N	None	N

Pass this TechTalk along to share this technical information with your associates.

ROUTE TO:

- .....
- .....
- .....
- .....

Check out the Distributor Section on our web site, [www.rlws.com](http://www.rlws.com), for more service-related information on all of our products.



Industrial Solutions on a Global Scale<sup>®</sup>  
**Service Department**  
**715-234-9171**  
 Saturdays: 8:00 a.m. – 12 noon CT  
 Weekdays: 6:30 a.m. – 6:30 p.m. CT