Certificate of Weight Calibration (Accredited)

A customer requesting an accredited Certificate of Weight Calibration needing traceability to NIST is looking for a nominal mass value plus or minus corrections and uncertainty values. To produce this document, a calibration laboratory must maintain a statistical measurement process acceptable by the accrediting body. Also, depending on the weight class and the accuracy required, different standards and procedures need to be incorporated to make sure the level of uncertainty is appropriate for the item being calibrated. The accredited Certificate of Weight Calibration is in compliance with ISO International Standard 17025 and ANSI/NCSL Z540-1 requirements.

RICE LAKE

Certificate of Weight Calibration

ISO/IEC 17025:2017 & ANSI/NCSL-Z540-1-1994 ACCREDITED

Traceable Certificate Number: 1234567 (1)
Contractor: RICE LAKE WEIGHING SYSTEMS (2)
230 W. COLEMAN STREET
RICE LAKE, WI 54868

Purchase Order Number: PURCHASE ORDER (3)
Client: RICE LAKE WEIGHING SYSTEMS
230 W. COLEMAN STREET
RICE LAKE, WI 54868

Traceable to the SI through the National Institute of Standards and Technology
TMAP
RICE LAKE WEIGHING SYSTEMS

(4) **Date Received:** 25 Sep 2022
Date Calibrated: (5) 26 Sep 2022 to 27 Sep 2022
Recalibration Date: (6) 26 Sep 2023
NIST Certificate Number: 684/292805-19
If there are two NIST numbers, one or both may apply
Calibrated By: (7) 20, 28
Procedure: WI05-0095 Rev. D
Condition of Weights: (8) Acceptable for Calibration
Description of Weights: 2 mg to 100 g Polished Weights, ASTM Class 1, S/N 1234, ID# ABCD
Comments:

Key Notes

Finish	Indicates the weight does not meet the finish requirements
Material	Indicates the weight does not meet the material requirements
New Wt	Indicates new weight
Missing Wt	Indicates replaced missing weight with new weight
Damaged Wt	Indicates replaced damaged weight
Replaced OOT	Indicates replaced out of tolerance weight
OOT	Indicates correction plus or minus Uncertainty greater than or equal to MPE
Magnetic Wt	Indicates replaced magnetic weight
Design	Indicates the weight does not meet the design or shape requirements
Repainted	Indicates the weight was repainted after As Found obtained
Other	See comments above

Cleaning Levels

A	Dusted with brush or cloth
B	Spot cleaned with ethyl alcohol
C	Full surface cleaned with ethyl alcohol
D	Spot cleaned with non-alcohol solvent followed by ethyl alcohol
E	Full surface cleaned with non-alcohol solvent followed by ethyl alcohol
F	No cleaning performed

Material Abbreviations

AL	Aluminum	TA	Tantalum
SS	Stainless Steel	BR	Brass
CI	Cast Iron	PL	Platinum
IR	Iron	NS	Nickel Silver
MS	Mild Steel	OR	Other/Unknown

Check with your local state agency for certification of compliance on Legal-for-Trade items. The weight accuracy class is referenced in the Description of Weights. Unless otherwise noted, the weights calibrated meet the requirements of the accuracy class. Results relate only to weights calibrated. The Surface Finishes of weights are evaluated visually. Weights are screened for magnetism using work instruction WI05-0035 when they are new, when requested by the customer or when weights are suspected of not meeting specifications. Density if measured is measured using OIML R111-1 (2004) method A2. Conventional Mass is reported based on a reference density of 8.0 g/cm^3. The Uncertainty of Measurement is included in the determination of Maximum Permissible Error (MPE) Pass/Fail Criteria. The specifications for Maximum Permissible Error (MPE) can be found in NIST Handbook 105-1 (2019), NIST Handbook 105-1 (1990), ASTM E617-23 or OIML R111-1 (2004), manufacturer specifications or customer specifications.

The Uncertainty assigned to the Conventional Mass values are the result of the root-sum-square of the type A and type B components, calculated in accordance with NIST SOP 29 and the Guide to the expression of uncertainty in measurement, with coverage factor (k=2), to express the expanded uncertainty with an approximate 95.45% confidence level. This report is not to be used to claim product certification, approval, or endorsement by NVLAP, NIST, A2LA, or any government agency. **This document and all data within, shall not be reproduced, except in full, without the written approval of Rice Lake Weighing Systems.**

Dan Demers, Metrologist

30 Sep 2022
Issued Date:

(9) NVLAP CALIBRATION NVLAP LAB CODE 105001-0 ilac-MRA

(10) Prepared By:
Rice Lake Weighing Systems® ●PN 64784●12/21
230 West Coleman Street●Rice Lake, WI 54868●USA
TEL: 715-234-9171●FAX: 715-234-6967
Definitions: http://certs.ricelake.com/certs/DefinitionsV2.docx
Page 1 of 2

ilac-MRA A2LA ACCREDITED Certificate #4363.01 (9)

Procedure used:
Internationally published procedures defined by NIST, ASTM and OIML

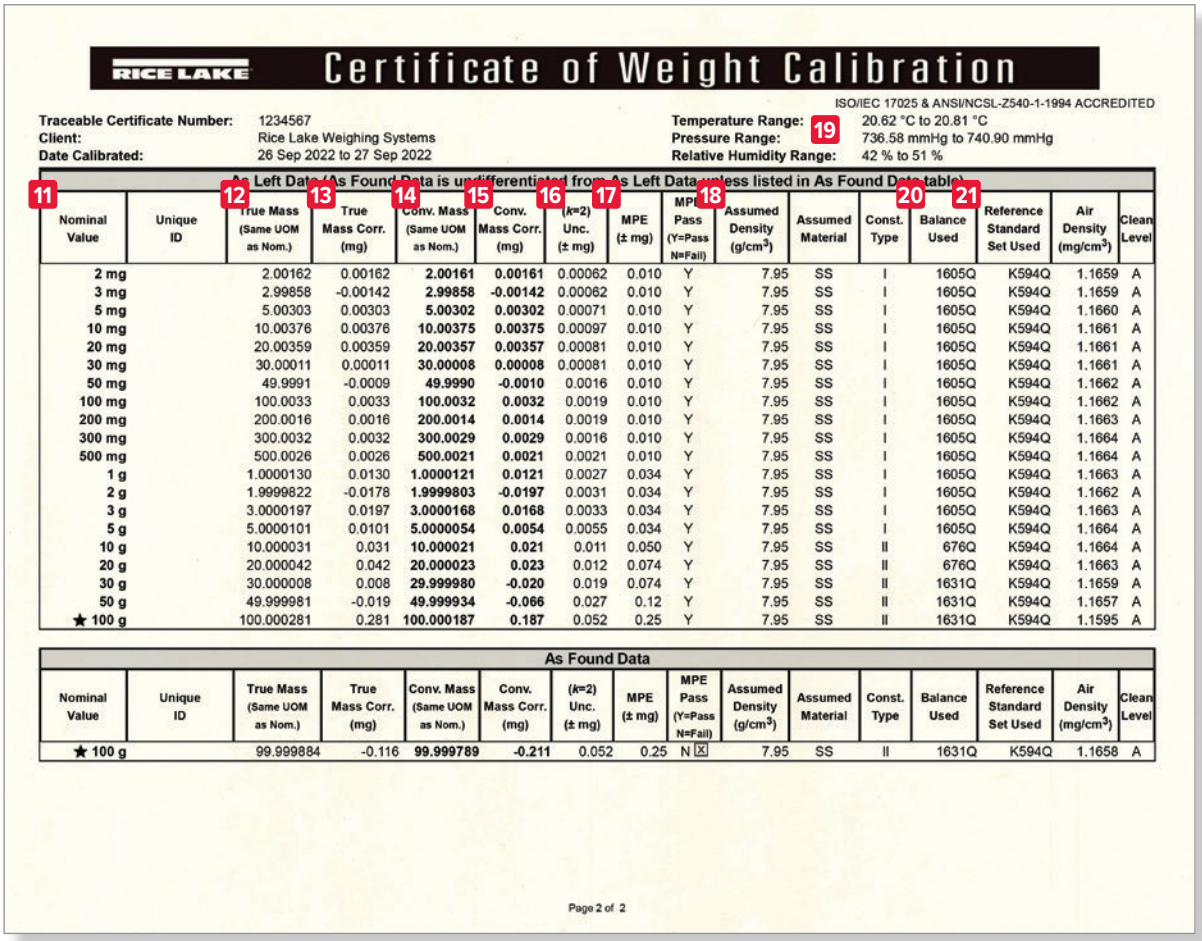
The Certificate of Weight Calibration (accredited) includes the following information:

1. Traceable Certificate Number
2. Contractor (sold to) name and address
3. End user name and address
4. Date Calibrated
5. Recalibration Date (if requested)
6. NIST Certificate of Calibration Number
7. Procedure used (Intercomparison Method)
8. Identification of the calibrated item(s) and serial number, if applicable
9. The NVLAP and A2LA official logo's are displayed (meeting the scope of accreditation) or (parameters provided under the scope of accreditation)
10. Name and Address of the Calibration Laboratory
11. Nominal Mass
12. True Mass (Mass in Vacuum)
13. True Mass Correction[0]
14. Conventional Mass: mass of a weight of a density of 8000 kg/m^3 which it balances in air of density of 1.2 kg/m^3
15. Conventional Mass Correction[1]
16. A stated quantity of the estimated value of uncertainty[2]
17. Maximum Permissible Error for the specified accuracy class
18. Assumed material density of the weight being calibrated
19. Environmental conditions to time of calibration
20. Record of the weighing instrument(s)
21. Reference standard set used to calibrate item(s) listed on certificate

0 The True Mass Correction is the deviation from the Nominal Value, reported in milligrams. A minus sign indicates that the True Mass of the weight is less than the nominal value.

1 The Conventional Mass Correction is the deviation from the Nominal Value, reported in milligrams. A minus sign indicates that the Conventional Mass of the weight is less than the nominal value.

2 All measurements have a degree of uncertainty regardless of precision and accuracy. This is caused by two factors, the limitation of the measuring instrument (systematic error) and the skill of the experimenter making the measurements (random error).



RICE LAKE **Certificate of Weight Calibration**

ISO/IEC 17025 & ANSI/NCSL-Z540-1-1994 ACCREDITED

Traceable Certificate Number: 1234567
Client: Rice Lake Weighing Systems
Date Calibrated: 26 Sep 2022 to 27 Sep 2022

Temperature Range: 20.62 °C to 20.81 °C
Pressure Range: 736.58 mmHg to 740.90 mmHg
Relative Humidity Range: 42 % to 51 %

As Left Data (As Found Data is undifferentiated from As Left Data unless listed in As Found Data table)

Nominal Value	Unique ID	True Mass (Same UOM as Nom.)	True Mass Corr. (mg)	Conv. Mass (Same UOM as Nom.)	Conv. Mass Corr. (mg)	(k=2) Unc. (± mg)	MPE (± mg)	MPE Pass (Y=Pass N=Fail)	Assumed Density (g/cm^3)	Assumed Material	Const. Type	Balance Used	Reference Standard Set Used	Air Density (mg/cm^3)	Clean Level
2 mg		2.00162	0.00162	2.00161	0.00161	0.00062	0.010	Y	7.95	SS	I	1605Q	K594Q	1.1659	A
3 mg		2.99858	-0.00142	2.99858	-0.00142	0.00062	0.010	Y	7.95	SS	I	1605Q	K594Q	1.1659	A
5 mg		5.00303	0.00303	5.00302	0.00302	0.00071	0.010	Y	7.95	SS	I	1605Q	K594Q	1.1660	A
10 mg		10.00376	0.00376	10.00375	0.00375	0.00097	0.010	Y	7.95	SS	I	1605Q	K594Q	1.1661	A
20 mg		20.00359	0.00359	20.00357	0.00357	0.00081	0.010	Y	7.95	SS	I	1605Q	K594Q	1.1661	A
30 mg		30.00011	0.00011	30.00008	0.00008	0.00081	0.010	Y	7.95	SS	I	1605Q	K594Q	1.1661	A
50 mg		49.9991	-0.0009	49.9990	-0.0010	0.0016	0.010	Y	7.95	SS	I	1605Q	K594Q	1.1662	A
100 mg		100.0033	0.0033	100.0032	0.0032	0.0019	0.010	Y	7.95	SS	I	1605Q	K594Q	1.1662	A
200 mg		200.0016	0.0016	200.0014	0.0014	0.0019	0.010	Y	7.95	SS	I	1605Q	K594Q	1.1663	A
300 mg		300.0032	0.0032	300.0029	0.0029	0.0016	0.010	Y	7.95	SS	I	1605Q	K594Q	1.1664	A
500 mg		500.0026	0.0026	500.0021	0.0021	0.0021	0.010	Y	7.95	SS	I	1605Q	K594Q	1.1664	A
1 g		1.0000130	0.0130	1.0000121	0.0121	0.0027	0.034	Y	7.95	SS	I	1605Q	K594Q	1.1663	A
2 g		1.9999822	-0.0178	1.9999803	-0.0197	0.0031	0.034	Y	7.95	SS	I	1605Q	K594Q	1.1662	A
3 g		3.0000197	0.0197	3.0000168	0.0168	0.0033	0.034	Y	7.95	SS	I	1605Q	K594Q	1.1663	A
5 g		5.0000101	0.0101	5.0000054	0.0054	0.0055	0.034	Y	7.95	SS	I	1605Q	K594Q	1.1664	A
10 g		10.000031	0.031	10.000021	0.021	0.011	0.050	Y	7.95	SS	II	676Q	K594Q	1.1664	A
20 g		20.000042	0.042	20.000023	0.023	0.012	0.074	Y	7.95	SS	II	676Q	K594Q	1.1663	A
30 g		30.000008	0.008	29.999980	-0.020	0.019	0.074	Y	7.95	SS	II	1631Q	K594Q	1.1659	A
50 g		49.999981	-0.019	49.999934	-0.066	0.027	0.12	Y	7.95	SS	II	1631Q	K594Q	1.1657	A
★ 100 g		100.000281	0.281	100.000187	0.187	0.052	0.25	Y	7.95	SS	II	1631Q	K594Q	1.1595	A

As Found Data

Nominal Value	Unique ID	True Mass (Same UOM as Nom.)	True Mass Corr. (mg)	Conv. Mass (Same UOM as Nom.)	Conv. Mass Corr. (mg)	(k=2) Unc. (± mg)	MPE (± mg)	MPE Pass (Y=Pass N=Fail)	Assumed Density (g/cm^3)	Assumed Material	Const. Type	Balance Used	Reference Standard Set Used	Air Density (mg/cm^3)	Clean Level
★ 100 g		99.999884	-0.116	99.999789	-0.211	0.052	0.25	N ☒	7.95	SS	II	1631Q	K594Q	1.1658	A

Page 2 of 2