

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 & ANSI/NCSL-Z540-1-1994 ACCREDITED

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

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

4 Date Received: 01 Jul 2020
4 Date Calibrated: 01 Jul 2020 to 02 Jul 2020
5 Recalibration Date: 01 Jul 2021
6 NIST Certificate Number: 684/291344-18 & 684/292805-19

If there are two NIST numbers, one or both may apply

7 Calibrated By: 01, 02
 Procedure: WI05-0095 Rev. D

7 Condition of Weights: Acceptable for Calibration

8 Description of Weights: 5 mg to 200 g Polished Weight Kit, ASTM Class 1, S/N 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/cm³. 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 E817-18 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 shall not be reproduced, except in full, without the written approval of Rice Lake Weighing Systems.

Dan Demers
 Dan Demers, Metrologist



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 Definitions: <http://certs.ricelake.com/certs/DefinitionsV2.docx>
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10 Jul 2020
 Date:




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

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

- 1** Traceable report number
- 2** Contractor (sold to) name and address
- 3** Client (shipped to) name and address
- 4** Date calibrated
- 5** Recall date (if requested)
- 6** NIST certificate of calibration
- 7** Procedure used Intercomparison Method
- 8** Identification of the calibrated item and serial number, if applicable
- 9** The NVLAP and A2LA official logo will be displayed when the documentation meets the scope of accreditation
- 10** Name and address of the calibration laboratory
- 11** Nominal conventional mass
- 12** Conventional Mass As Found - mass that weighs at 20 °C in air of density of 1.2 milligram/cm³ against a standard density of 8.0 gram/cm³
- 13** Conventional mass correction of the weight before adjustment¹
- 14** Conventional Mass As Left - mass that weighs at 20 °C in air of density of 1.2 milligram/cm³ against a standard density of 8.0 gram/cm³
- 15** As left conventional mass correction of the weight¹
- 16** A statement of the estimated value of uncertainty²
- 17** Maximum permissible error for the specific accuracy class
- 18** Assumed density of the weight being calibrated
- 19** Environmental condition at time of calibration
- 20** Record of the weighing equipment
- 21** Reference standard set used to calibrate items listed on report

1 The Conventional Mass Correction is the deviation from the Nominal Value, reported in milligrams. A minus sign indicates that 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).



Certificate of Weight Calibration

ISO/IEC 17025 & ANSI/NCSL-Z540-1-1994 ACCREDITED
 Temperature Range: 19 20.93°C to 21.00 °C
 Pressure Range: 728.79 mmHg to 729.87 mmHg
 Relative Humidity Range: 49 % to 52 %

Traceable Certificate Number: 1234567
 Client: RICE LAKE WEIGHING SYSTEMS
 Date Calibrated: 01 Jul 2020 to 02 Jul 2020

As Left Data (As Found only shown when different than As Left)																	
Nominal Value	Unique ID	True Mass	True Mass Corr. (mg)	Conv. Mass	Conv. Mass Corr. (mg)	k=2 Unc. (± mg)	MPE (± mg)	MP Pass	Assumed Density (g/cm ³)	Assumed Material	Const. Type	Balance Used	Reference Standard Set Used	Air Density (mg/cm ³)	Clean Level		
5 mg		4.99940	-0.00060	4.99939	-0.00061	0.00084	0.010	Y	7.95	SS	I	503Q	L595Q	1.1474	A		
20 mg		20.00116	0.00116	20.00114	0.00114	0.00087	0.010	Y	7.95	SS	I	503Q	L595Q	1.1471	A		
20 mg		20.00115	0.00115	20.00113	0.00112	0.00087	0.010	Y	7.95	SS	I	503Q	L595Q	1.1472	A		
50 mg		50.0027	0.0027	50.0026	0.0026	0.0011	0.010	Y	7.95	SS	I	503Q	L595Q	1.1469	A		
100 mg		99.9984	-0.0016	99.9983	-0.0017	0.0014	0.010	Y	7.95	SS	I	503Q	L595Q	1.1470	A		
200 mg		199.9974	-0.0026	199.9972	-0.0028	0.0014	0.010	Y	7.95	SS	I	503Q	L595Q	1.1470	A		
200 mg		199.9977	-0.0023	199.9975	-0.0025	0.0014	0.010	Y	7.95	SS	I	503Q	L595Q	1.1469	A		
500 mg		499.9965	-0.0035	499.9960	-0.0040	0.0014	0.010	Y	7.95	SS	I	503Q	L595Q	1.1466	A		
2 g		2.000016	0.0016	2.000027	0.0027	0.0023	0.034	Y	8.03	SS	II	650Q	L595Q	1.1470	A		
2 g		2.000098	0.0098	2.000109	0.0109	0.0023	0.034	Y	8.03	SS	II	650Q	L595Q	1.1469	A		
5 g		5.000065	0.0065	5.000093	0.0093	0.0046	0.034	Y	8.03	SS	II	650Q	L595Q	1.1469	A		
10 g		9.9999517	-0.0483	9.9999573	-0.0427	0.0059	0.050	Y	8.03	SS	II	1958Q	L595Q	1.1480	A		
20 g		19.9999780	-0.0220	19.9999892	-0.0108	0.0056	0.074	Y	8.03	SS	II	1958Q	L595Q	1.1479	A		
20 g		19.9999828	-0.0172	19.9999940	-0.0060	0.0056	0.074	Y	8.03	SS	II	1958Q	L595Q	1.1476	A		
50 g		49.999961	-0.039	49.999989	-0.011	0.011	0.12	Y	8.03	SS	II	1958Q	L595Q	1.1476	A		
100 g		99.999817	-0.183	99.999873	-0.127	0.021	0.25	Y	8.03	SS	II	1958Q	L595Q	1.1478	A		
200 g		199.999942	-0.058	200.000054	0.054	0.045	0.50	Y	8.03	SS	II	699Q	L595Q	1.1431	A		
200 g		199.999862	-0.138	199.999974	-0.026	0.045	0.50	Y	8.03	SS	II	699Q	L595Q	1.1429	A		

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