

Calibration Certificate of Mass

Calibration Date: July 17, 2017

Certificate Number: 2017-009-1

Submitted By: FSCP area 20
944 n 20th rd.
Unadilla, NE 68454

Point of Contact: Kurt Wenninghoff
Ph. 402-429-5611
email: www.agr.ne.gov
PO Number: N/A

Test Item: Metric Weight Kit
Serial Number: WM-2-89-4
Manufacture: Tromner
Condition: Good (some wear)

Artifact(s) Description:

Date Received: July 14, 2017

ID / Asset Number: N/A

Class Specification: NIST Class F

Material: Stainless Steel

Reference Standards Used:

OPI & /Den Metric

Procedure Used:

NIST HB 6969, SOP 8

Metrologist:

JPL

Equipment Used:

Sartorius CC 1201 Sartorius CCE6

Mettler AT 106

Environmental Cond. Temp: 22.8 °C Pressure: 764.032 mmHg Relative Humidity: 50.5 %

Pertinent Information

- The artifact(s) listed in this document have been found and/or left within the maximum permissible error for the specification stated above, except as noted. An artifact is considered in-compliance when the correction plus the measurement uncertainty is equal to or less than the maximum permissible error. **RED** print indicates an out-of-compliance reading.
- All corrections stated in this report correlate to a "Conventional Mass" (CM), also known as "apparent mass", scale verses 8.0 g/cm³ reference mass density and an air density of 1.2 mg/cm³ at 20 °C.

Traceability Statement

The artifact(s) described in this certificate have been compared to the Standards of the State of Nebraska. The Standards of the State of Nebraska are traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST) and are part of a comprehensive measurement assurance program for ensuring continued accuracy and measurement traceability within the level of uncertainty reported by this laboratory. The calibration number for this certificate is the only unique calibration number to be used in referencing measurement traceability for the artifact(s) described in this certificate.

Uncertainty Statement

The combined standard uncertainty includes uncertainties reported for the standard, uncertainties associated with the measurement process, uncertainties for any observed deviations from reference values which are less than surveillance limits and the standard uncertainty for any uncorrected errors associated with air buoyance corrections. The combined standard uncertainty is multiplied by a coverage factor (*k*), to give the expanded uncertainty, which defines an interval with a 95.45 percent level of confidence. The expanded uncertainty presented in this report is consistent with the *Guide to the Expression of Uncertainty in Measurement (2008, revised 2012)*. Some components of the calibration can be evaluated through a Type A evaluation, or the method of evaluation of uncertainty by the statistical analysis (standard deviation) from the observations taken. Magnetic testing has not been performed, therefore, there are no components for the effects of it in the uncertainty budget.

Calibration Date: July 17, 2017

Certificate Number: 2017-009-1

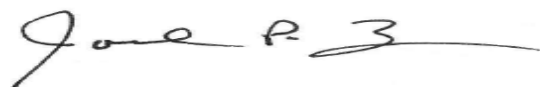
Calibration Results

Nominal Mass	Serial Number / ID	As Found Conventional Mass Correction (g)	Adjusted (Y/N)	As Left Conventional Mass Correction (g)	Uncertainty ± (g)	(k) factor	NIST Class F MPE ± (g)	Assumed Density (g/cm ³)
1 kg	1	-0.002	n	-0.002	0.012	2	0.1	7.84
500 g	2	-0.0089	n	-0.0089	0.0083	2	0.07	7.84
200 g	3	0.0022	n	0.0022	0.0048	2	0.04	7.84
200 g	4	-0.0055	n	-0.0055	0.0048	2	0.04	7.84
100 g		0.0122	n	0.0122	0.0024	2	0.02	7.84
50 g		-0.0063	n	-0.0063	0.0012	2	0.01	7.84
20 g		0.00108	n	0.00108	0.00048	2	0.004	7.84
20 g	*	0.00136	n	0.00136	0.00048	2	0.004	7.84
10 g		-0.00099	n	-0.00099	0.00024	2	0.002	7.84
5 g		0.00001	n	0.00001	0.00018	2	0.0015	7.84
2 g		0.00053	n	0.00053	0.00014	2	0.0011	7.84
2 g	*	0.00057	n	0.00057	0.00014	2	0.0011	7.84
1 g		0.00010	n	0.00010	0.00011	2	0.0009	7.84
500 mg		0.000316	n	0.000316	0.000086	2	0.00072	16.6
200 mg		0.000337	n	0.000337	0.000064	2	0.00054	16.6
200 mg	*	0.000298	n	0.000298	0.000064	2	0.00054	16.6
100 mg		-0.000049	n	-0.000049	0.000051	2	0.00043	16.6

Conversion Factors

1 ounce (avoirdupois) (oz) = 28.349 52 g

1 pound (avoirdupois) (lb) = 453.592 37 g exactly



Joel P. Lavicky Metrologist

7/17/2017

Date of Issue

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Calibration Certificate of Mass

Calibration Date: July 17, 2017

Certificate Number: 2017-009-2

Submitted By: FSCP area 20
944 n 20th rd.
Unadilla, NE 68454

Point of Contact: Kurt Wenninghoff
Ph. 402-429-5611

email: www.agr.ne.gov

PO Number: N/A

Test Item: 31 lb weight Kit
Serial Number: WM-2D86
Manufacture: Rice lake
Condition: Good (some wear)

Artifact(s) Description:

Date Received: July 14, 2017

ID / Asset Number: N/A

Class Specification: NIST Class F

Material: Stainless Steel

Reference Standards Used:

Procedure Used:

Equipment Used:

NSL lb standards
Rice Lake NSL-WK

NIST HB 6969, SOP 8

Sartorius CC100005 Mettler AT 106

Metrologist:
JPL

Sartorius CC 1201 Sartorius CCE6

Environmental Cond. Temp: 22.8 °C Pressure: 764.032 mmHg Relative Humidity: 49.5 %

Pertinent Information

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- All corrections stated in this report correlate to a "Conventional Mass" (CM), also known as "apparent mass", scale verses 8.0 g/cm³ reference mass density and an air density of 1.2 mg/cm³ at 20 °C.

Traceability Statement

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Uncertainty Statement

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Calibration Date: July 17, 2017

Certificate Number: 2017-009-2

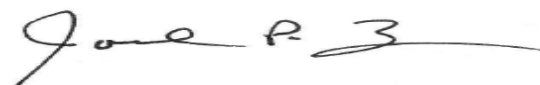
Calibration Results

Nominal Mass	Serial Number / ID	As Found Conventional Mass Correction (g)	Adjusted (Y/N)	As Left Conventional Mass Correction (g)	Uncertainty ± (g)	(k) factor	NIST Class F MPE ± (g)	Assumed Density (g/cm ³)
5 lb	1	-0.083	n	-0.083	0.028	2	0.23	7.94
5 lb	2	-0.110	n	-0.110	0.028	2	0.23	7.94
5 lb	3	-0.103	n	-0.103	0.028	2	0.23	7.94
5 lb	4	-0.043	n	-0.043	0.028	2	0.23	7.94
5 lb	5	-0.059	n	-0.059	0.028	2	0.23	7.94
1 lb	1	0.0110	n	0.0110	0.0083	2	0.07	7.94
1 lb	2	0.0340	n	0.0340	0.0083	2	0.07	7.94
1 lb	3	-0.0227	n	-0.0227	0.0083	2	0.07	7.94
1 lb	4	0.0041	n	0.0041	0.0083	2	0.07	7.94
1 lb	5	-0.0260	n	-0.0260	0.0083	2	0.07	7.94
8 oz	x11	0.0011	n	0.0011	0.0054	2	0.045	7.94
4 oz	13	0.0004	n	0.0004	0.0028	2	0.023	7.94
2 oz		-0.0023	n	-0.0023	0.0014	2	0.011	7.94
1 oz		0.00190	n	0.00190	0.00064	2	0.0054	7.94
1/2 oz		0.00052	n	0.00052	0.00034	2	0.0028	7.94
1/4 oz		-0.00108	n	-0.00108	0.00021	2	0.0017	7.94
1/8 oz		0.00012	n	0.00012	0.00016	2	0.0013	7.94
0.2 lb		0.0085	n	0.0085	0.0022	2	0.018	7.94
0.2 lb	*	0.0083	n	0.0083	0.0022	2	0.018	7.94
0.1 lb		0.0043	n	0.0043	0.0011	2	0.0091	7.94
0.05 lb		0.00177	n	0.00177	0.00054	2	0.0045	7.94
0.02 lb		0.00040	n	0.00040	0.00022	2	0.0018	7.94
0.02 lb	*	0.00038	n	0.00038	0.00022	2	0.0018	7.94
0.01 lb		0.00039	n	0.00039	0.00018	2	0.0015	7.94
0.005 lb		0.00060	n	0.00060	0.00015	2	0.0012	2.7
0.002 lb		0.00010	n	0.00010	0.00011	2	0.00087	2.7
0.002 lb	*	0.00011	n	0.00011	0.00011	2	0.00087	2.7
0.001 lb		0.000242	n	0.000242	0.000083	2	0.0007	2.7

Conversion Factors

1 ounce (avoirdupois) (oz) = 28.349 52 g

1 pound (avoirdupois) (lb) = 453.592 37 g exactly



Joel P. Lavicky Metrologist

7/17/2017

Date of Issue

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Calibration Certificate of Mass

Calibration Date: July 19, 2017

Certificate Number: 2017-009-3

Submitted By: FSCP area 20
944 n 20th rd.
Unadilla, NE 68454

Point of Contact: Kurt Wenninghoff
Ph. 402-429-5611
email: www.agr.ne.gov
PO Number: N/A

Test Item: 25, 50, 1000 lb weights
Serial Number: See Below
Manufacture: Tromner/Rice lake
Condition: Good (some wear)

Artifact(s) Description:

Date Received: July 14, 2017
ID / Asset Number: N/A
Class Specification: NIST Class F
Material: cast iron

Reference Standards Used:

NSL-25-1-25lb
NSL-50-1-50lb
C24-1000lb

Procedure Used:

NIST HB 6969, SOP 8
Metrologist:
JPL

Equipment Used:

Mettler KA30-3
Mettler XP 604

Environmental Cond. Temp: 25.25 °C Pressure: 764.032 mmHg Relative Humidity: 41.9 %

Pertinent Information

- The artifact(s) listed in this document have been found and/or left within the maximum permissible error for the specification stated above, except as noted. An artifact is considered in-compliance when the correction plus the measurement uncertainty is equal to or less than the maximum permissible error. **RED** print indicates an out-of-compliance reading.
- All corrections stated in this report correlate to a "Conventional Mass" (CM), also known as "apparent mass", scale verses 8.0 g/cm³ reference mass density and an air density of 1.2 mg/cm³ at 20 °C.

Traceability Statement

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Uncertainty Statement

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Calibration Date: July 19, 2017

Certificate Number: 2017-009-3

Calibration Results

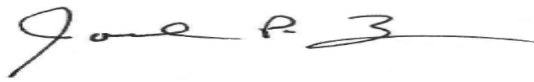
Nominal Mass	Serial Number / ID	As Found Conventional Mass Correction (g)	Adjusted (Y/N)	As Left Conventional Mass Correction (g)	Uncertainty ± (g)	(k) factor	NIST Class F MPE ± (g)	Assumed Density (g/cm ³)
25 lb	WM25-1	-0.83	n	-0.83	0.14	2	1.1	7.2
25 lb	WM25-1s	-0.66	n	-0.66	0.14	2	1.1	7.2
25 lb	WM25-2	0.29	n	0.29	0.14	2	1.1	7.2
25 lb	WM25-3	0.35	n	0.35	0.14	2	1.1	7.2
25 lb	WM25-4	0.05	n	0.05	0.14	2	1.1	7.2
25 lb	WM25-5	0.22	n	0.22	0.14	2	1.1	7.2
25 lb	WM25-6	0.86	n	0.86	0.14	2	1.1	7.2
25 lb	WM25-7	0.36	n	0.36	0.14	2	1.1	7.2
25 lb	WM25-8	-0.48	n	-0.48	0.14	2	1.1	7.2
25 lb	WM25-10	-1.46	y	0.24	0.14	2	1.1	7.2
25 lb	WM25-11	-0.20	n	-0.20	0.14	2	1.1	7.2
25 lb	WM25-12	0.33	n	0.33	0.14	2	1.1	7.2
25 lb	WM25-13	0.15	n	0.15	0.14	2	1.1	7.2
25 lb	WM25-14	0.14	n	0.14	0.14	2	1.1	7.2
25 lb	WM25-15	0.17	n	0.17	0.14	2	1.1	7.2
25 lb	WM25-16	0.33	n	0.33	0.14	2	1.1	7.2
25 lb	WM25-17	-0.60	n	-0.60	0.14	2	1.1	7.2
25 lb	WM25-18	-0.31	n	-0.31	0.14	2	1.1	7.2
25 lb	WM25-19	-0.21	n	-0.21	0.14	2	1.1	7.2
25 lb	WM25-20	-0.94	n	-0.94	0.14	2	1.1	7.2
50 lb	WM-C-A1	2.44	y	0.39	0.28	2	2.3	7.2
50 lb	WM-C-A2	2.01	n	2.01	0.28	2	2.3	7.2
50 lb	WM-C-A3	-0.25	n	-0.25	0.28	2	2.3	7.2
50 lb	WM-C-A5	0.78	n	0.78	0.28	2	2.3	7.2
50 lb	WM-C-A9	0.57	n	0.57	0.28	2	2.3	7.2
50 lb	WM-C-A10	0.00	n	0.00	0.28	2	2.3	7.2
50 lb	A5C * 13	-4.74	y	0.23	0.28	2	2.3	7.2
50 lb	A5C * 20	3.95	y	-0.01	0.28	2	2.3	7.2
50 lb	WM-OPI-C81	-5.69	y	0.65	0.28	2	2.3	7.2
50 lb	WM-OPI-C85	-5.56	y	1.22	0.28	2	2.3	7.2
1000 lb	A-1	-55.8	y	4.8	5.8	2	45	7.2
1000 lb	A-3	-77.0	y	2.5	5.8	2	45	7.2
1000 lb	A-4	-71.6	y	16.0	5.8	2	45	7.2
1000 lb	A-7	-42.3	y	-15.6	5.8	2	45	7.2
1000 lb	A-8	-27.1	n	-27.1	5.8	2	45	7.2
1000 lb	A-9	-22.5	n	-22.5	5.8	2	45	7.2
1000 lb	A-10	-34.9	y	6.3	5.8	2	45	7.2
1000 lb	A-14	-40.8	y	5.1	5.8	2	45	7.2
1000 lb	A-17	-55.8	y	5.6	5.8	2	45	7.2
1000 lb	A-18	-53.2	y	4.3	5.8	2	45	7.2
1000 lb	A-20	-65.1	y	-0.6	5.8	2	45	7.2
1000 lb	2189	13.1	n	13.1	5.8	2	45	7.2
1000 lb	2190	-39.7	y	4.1	5.8	2	45	7.2
1000 lb	2191	-20.1	n	-20.1	5.8	2	45	7.2
1000 lb	2192	-53.4	y	5.1	5.8	2	45	7.2
1000 lb	2194	-56.8	y	2.4	5.8	2	45	7.2
1000 lb	2195	-68.7	y	4.9	5.8	2	45	7.2
1000 lb	2196	-78.2	y	0.6	5.8	2	45	7.2
1000 lb	2197	-54.6	y	0.4	5.8	2	45	7.2
1000 lb	2198	-27.7	y	7.5	5.8	2	45	7.2

Calibration Date: July 19, 2017

Certificate Number: 2017-009-3

Conversion Factors

1 ounce (avoirdupois) (oz) = 28.349 52 g
1 pound (avoirdupois) (lb) = 453.592 37 g exactly



Joel P. Lavicky Metrologist

7/19/2017

Date of Issue

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