

Calibration Certificate of Mass

Calibration Date: August 8, 2017

Certificate Number: 2017-013-1

Submitted By: FSCP Area 30
500 E Prarie Rd
Grand Island, NE 68803

Point of Contact: Jeff Saathoff
Ph. 402-416-1091
email: www.nda.gov
PO Number: N/A

Test Item: 31 lb weight kit
Serial Number: 7A73
Manufacture: Tromner
Condition: Good (some wear)

Artifact(s) Description:

Date Received: August 3, 2017
ID / Asset Number: N/A
Class Specification: NIST Class F
Material: SS

Reference Standards Used:

Procedure Used:

Equipment Used:

NSL lb standards
Rice Lake NSL-WK

NIST HB 6969, SOP 8
Metrologist:
JPL

Sartorius CC 1201 Sartorius CCE6
Mettler AT 106

Environmental Cond. Temp: 22.6 °C Pressure: 767.84 mmHg Relative Humidity: 52 %

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

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: August 8, 2017

Certificate Number: 2017-013-1


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)
2 lb	1	0.010	n	0.010	0.011	2	0.091	7.84
2 lb	2	0.036	n	0.036	0.011	2	0.091	7.84
2 lb	3	-0.071	n	-0.071	0.011	2	0.091	7.84
2 lb	4	-0.002	n	-0.002	0.011	2	0.091	7.84
2 lb	5	0.008	n	0.008	0.011	2	0.091	7.84
2 lb	6	-0.050	n	-0.050	0.011	2	0.091	7.84
2 lb	7	0.022	n	0.022	0.011	2	0.091	7.84
2 lb	8	0.042	n	0.042	0.011	2	0.091	7.84
2 lb	9	-0.082	y	-0.032	0.011	2	0.091	7.84
2 lb	10	0.068	n	0.068	0.011	2	0.091	7.84
2 lb	11	0.068	n	0.068	0.011	2	0.091	7.84
2 lb	12	-0.025	n	-0.025	0.011	2	0.091	7.84
2 lb	13	0.036	n	0.036	0.011	2	0.091	7.84
2 lb	14	0.100	y	0.054	0.011	2	0.091	7.84
1 lb	15	-0.0465	n	-0.0465	0.0083	2	0.07	7.84
1 lb	16	-0.0462	n	-0.0462	0.0083	2	0.07	7.84
8 oz		0.0190	n	0.0190	0.0054	2	0.045	7.84
8 oz	WM-30-1	-0.0121	n	-0.0121	0.0054	2	0.045	7.84
4 oz	18	-0.0014	n	-0.0014	0.0028	2	0.023	7.84
2 oz		-0.0003	n	-0.0003	0.0013	2	0.011	7.84
1 oz	:	0.00152	n	0.00152	0.00064	2	0.0054	7.84
1/4 oz	22	0.00056	n	0.00056	0.00021	2	0.0017	7.84
1/8 oz		-0.00106	n	-0.00106	0.00016	2	0.0013	7.84
1/16 oz		-0.00034	n	-0.00034	0.00013	2	0.0011	7.84
1/16 oz	*	0.00075	n	0.00075	0.00013	2	0.0011	7.84
0.3 lb	1	-0.0047	n	-0.0047	0.0032	2	0.027	7.84
0.2 lb	2	-0.0096	n	-0.0096	0.0022	2	0.018	7.84
0.1 lb		-0.0053	n	-0.0053	0.0011	2	0.0091	7.84
0.05 lb	4	0.00255	n	0.00255	0.00054	2	0.0045	7.84
0.03 lb	5	-0.00212	n	-0.00212	0.00032	2	0.0027	7.84
0.02 lb	6	0.00042	n	0.00042	0.00022	2	0.0018	7.84
0.01 lb	7	-0.00033	n	-0.00033	0.00018	2	0.0015	7.84
0.005 lb	8	-0.00170	y	-0.00085	0.00015	2	0.0012	2.7
0.003 lb	9	-0.00054	n	-0.00054	0.00012	2	0.00099	2.7
0.002 lb	10	0.00025	n	0.00025	0.00011	2	0.00087	2.7
0.001 lb	11	-0.000564	n	-0.000564	0.000083	2	0.0007	2.7
0.001 lb	12*	-0.000110	n	-0.000110	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

8/8/2017

Date of Issue

The results in this certificate only applies to those item specifically listed in this certificate. This certificate cannot be considered complete unless it contains all pages. This document may not be reproduced except in full, without the written consent of the Nebraska Standards Laboratory.

Calibration Certificate of Mass

Calibration Date: August 7, 2017

Certificate Number: 2017-013-2

Submitted By: FSCP Area 30
500 E Prarie Rd
Grand Island, NE 68803

Point of Contact: Jeff Saathoff
Ph. 402-416-1091
email: www.nda.gov
PO Number: N/A

Test Item: 1-4 kg, 2-15 lb, 20-25 lb weights	Artifact(s) Description:	Date Received: August 3, 2017
Serial Number: see below		ID / Asset Number: N/A
Manufacture: Tromner		Class Specification: NIST Class F
Condition: Good (some wear)		Material: SS & CI

Reference Standards Used:

Procedure Used:

Equipment Used:

NSL lb standards
Rice Lake NSL-WK

NIST HB 6969, SOP 8
Metrologist:
JPL

Sartorius CC100005
Mettler KA30-3

Environmental Cond. **Temp:** 22.2 °C **Pressure:** 767.84 mmHg **Relative Humidity:** 56 %

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: August 7, 2017

Certificate Number: 2017-013-2

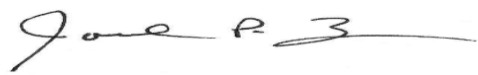
Calibration Results

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)
4 kg	6	-0.012	n	-0.012	0.048	2	0.4	7.84
15 lb	WM15-1	0.817	y	0.490	0.081	2	0.68	7.2
15 lb	WM15-2	0.739	y	0.375	0.081	2	0.68	7.2
25 lb	WM25-22	0.62	n	0.62	0.14	2	1.1	7.2
25 lb	WM25-26	0.11	n	0.11	0.14	2	1.1	7.2
25 lb	WM25-31	-0.74	n	-0.74	0.14	2	1.1	7.2
25 lb	WM25-35	0.59	n	0.59	0.14	2	1.1	7.2
25 lb	WM25-41	0.75	n	0.75	0.14	2	1.1	7.2
25 lb	WM25-54	-0.04	n	-0.04	0.14	2	1.1	7.2
25 lb	WM25-60	0.76	n	0.76	0.14	2	1.1	7.2
25 lb	WM25-61	0.52	n	0.52	0.14	2	1.1	7.2
25 lb	WM25-62	1.06	y	0.05	0.14	2	1.1	7.2
25 lb	WM25-63	0.25	n	0.25	0.14	2	1.1	7.2
25 lb	WM25-64	1.36	y	0.25	0.14	2	1.1	7.2
25 lb	WM25-34	-0.57	n	-0.57	0.14	2	1.1	7.2
25 lb	WM25-132	0.92	n	0.92	0.14	2	1.1	7.2
25 lb	WM25-133	0.66	n	0.66	0.14	2	1.1	7.2
25 lb	WM25-135	1.02	y	-0.46	0.14	2	1.1	7.2
25 lb	WM25-136	1.21	y	-0.70	0.14	2	1.1	7.2
25 lb	WM25-137	0.97	n	0.97	0.14	2	1.1	7.2
25 lb	WM25-138	0.65	n	0.65	0.14	2	1.1	7.2
25 lb	WM25-139	1.39	y	-0.82	0.14	2	1.1	7.2
25 lb	WM25-140	0.70	n	0.70	0.14	2	1.1	7.2

Conversion Factors

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

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



Joel P. Lavicky Metrologist

8/7/2017

Date of Issue

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Calibration Date: 8/4/2017

**Certificate of Calibration
of Volume Transfer**

Certificate Number: 2017-013-3

Items Submitted:

Quantity	Nominal Volume	Manufacturer	Type
2	5 gal	Seraphin	Test Measures

Submitted By: FSCP Area 30
500E Prarie Rd
Grand Island, NE 68803

POC: Jeff Saathoff
402-416-1091
www.nda.gov

Test Results

Nominal Volume	Serial Number	Material	Cubical Coefficient of Expansion (°F)	As Found Volume Delivered @ 60 °F	As left Volume Delivered @ 60 °F	Uncertainty (U)	(k)
5 gal	40702 C	SS	0.0000265	4.99859 gal	4.99859 gal	0.00069 gal	2.04
5 gal	40702 D	SS	0.0000265	4.99793 gal	4.99793 gal	0.00069 gal	2.04

The data in this report only applies to those items specifically listed on this report.

Volume delivered at 60°F after a 30 second pour and 10 second drain for test measures. For provers and a 30 second drain time would apply.

Conversion Factors:

1 gal = 231 in³
1 gal = 3.785 412 E-03 m³

Traceability Statement:

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Pertinent Information:

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Condition of Item(s) Submitted for Calibration:

Minor wear

Laboratory Reference Standard Used:

5 gallon Slicker Plate Standard S/N NE1586

Treatment of Item(s) before Calibration:

Item(s) were tested as found

Procedure Used:

NISTIR 7383 (2017), SOP 19


Environmental conditions at time of calibration:

Temp °C	23.3	Humidity %	48.5
Pressure mmHg	768.60		

Water temperature at time of calibration:

69.37 °F

Date Submitted: 8/3/2017


Joel P. Lavicky, Metrologist

8/4/2017

Date:

Calibration Date: 8/4/2017

**Certificate of Calibration
of Volume Transfer**

Certificate Number: 2017-013-4

Items Submitted:

Quantity	Nominal Volume	Manufacturer	Type
3	5 gal	Seraphin	"Special" J Prover

Submitted By: FSCP Area 30
500E Prarie Rd
Grand Island, NE 68803

POC: Jeff Saathoff
402-416-1091
www.nda.gov

Test Results

Nominal Volume	Serial Number	Material	Cubical Coefficient of Expansion (°F)	As Found Volume Delivered @ 60 °F	As left Volume Delivered @ 60 °F	Uncertainty (U)	(k)
5 gal	00-16623-03	SS	0.0000265	4.99545 gal	4.99998 gal	0.00069 gal	2.04
5 gal	00-16623-02	SS	0.0000265	4.99886 gal	4.99886 gal	0.00069 gal	2.04
5 gal	00-16623-01	SS	0.0000265	5.00006 gal	5.00006 gal	0.00069 gal	2.04

The data in this report only applies to those items specifically listed on this report.

Volume delivered at 60°F after a 30 second pour and 10 second drain for test measures. For provers and a 30 second drain time would apply.

Conversion Factors:

1 gal = 231 in³
1 gal = 3.785 412 E-03 m³

Traceability Statement:

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Condition of Item(s) Submitted for Calibration:

Minor wear

Laboratory Reference Standard Used:

5 gallon Slicker Plate Standard S/N NE1586

Treatment of Item(s) before Calibration:

Item(s) were tested as found

Procedure Used:

NISTIR 7383 (2017), SOP 19


Environmental conditions at time of calibration:

Temp °C	24.4	Humidity %	46.4
Pressure mmHg	764.04		

Water temperature at time of calibration:

69.07 °F

Date Submitted: 8/3/2017


Joel P. Lavicky, Metrologist

8/4/2017

Date:

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