

Calibration Certificate of Mass

Calibration Date: July 11, 2018

Certificate Number: 2018-062-1

Submitted By: FSCP Area 45
606 4th St.
Yutan, NE 68073

Point of Contact: Andrew Vanhoozer
Ph. 402-471-3422
email: andrew.vanhoozer@nebraska.gov
PO Number: N/A

Test Item(s): (2)-15 & (24)-25 lb wts
Serial Number(s): See Next Page
Manufacture: Tromner and Rice Lake
Condition: Good (some wear)

Artifact(s) Description:

Date Received: July 9, 2018
ID / Asset Number: N/A
Class Specification: NIST Class F
Material: Cast iron

Reference Standards Used:

NSL lb standards

Procedure Used:

NIST HB 6969, SOP 8

Metrologist:

JPL

Equipment Used:

Mettler KA30-3
Sartorius CC10000S

Environmental Cond. Temp: 25.5 °C Pressure: 770.128 mmHg Relative Humidity: 46.5 %

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

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 11, 2018

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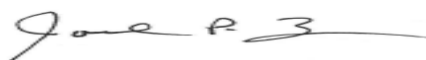
Calibration Results

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)
15 lb	WM15-9	0.615	y	0.585	0.081	2	0.68	7.2
15 lb	WM15-10	0.682	y	0.477	0.081	2	0.68	7.2
25 lb	NE-21	1.73	y	0.73	0.14	2	1.1	7.2
25 lb	NE-22	0.43	n	0.43	0.14	2	1.1	7.2
25 lb	NE-24	1.45	y	0.52	0.14	2	1.1	7.2
25 lb	NE-25	1.97	y	0.81	0.14	2	1.1	7.2
25 lb	NE-26	1.79	y	0.94	0.14	2	1.1	7.2
25 lb	NE-30	1.56	y	0.05	0.14	2	1.1	7.2
25 lb	NE-31	2.10	y	0.47	0.14	2	1.1	7.2
25 lb	NE-32	1.79	y	0.85	0.14	2	1.1	7.2
25 lb	NE-33	1.91	y	0.66	0.14	2	1.1	7.2
25 lb	NE-34	1.08	y	0.68	0.14	2	1.1	7.2
25 lb	NE-35	1.27	y	0.74	0.14	2	1.1	7.2
25 lb	NE-36	1.93	y	0.37	0.14	2	1.1	7.2
25 lb	NE-37	2.50	y	0.45	0.14	2	1.1	7.2
25 lb	NE-40	1.75	y	0.67	0.14	2	1.1	7.2
25 lb	WM25-131	1.15	y	-0.04	0.14	2	1.1	7.2
25 lb	WM25-42	1.01	y	0.60	0.14	2	1.1	7.2
25 lb	WM25-43	1.55	y	0.73	0.14	2	1.1	7.2
25 lb	WM25-44	1.48	y	0.33	0.14	2	1.1	7.2
25 lb	WM25-114	0.53	n	0.53	0.14	2	1.1	7.2
25 lb	WM25-116	1.68	y	0.80	0.14	2	1.1	7.2
25 lb	WM25-117	1.00	y	-0.31	0.14	2	1.1	7.2
25 lb	WM25-119	1.03	y	0.68	0.14	2	1.1	7.2
25 lb	WM25-124	1.03	y	0.70	0.14	2	1.1	7.2
25 lb	WM25-127	1.75	y	0.31	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

7/13/2018

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: July 12, 2018

Certificate Number: 2018-060-2

Submitted By: FSCP Area 45
 606 4th St.
 Yutan, NE 68073

Point of Contact: Andrew Vanhoozer
 Ph. 402-471-3422
email: andrew.vanhoozer@nebraska.gov
PO Number: N/A

Test Item(s): (1)-31 lb weight kit
Serial Number(s): 11-OPI-85
Manufacture: Tromner
Condition: Fair (significant wear)

Artifact(s) Description:

Date Received: July 9, 2018
ID / Asset Number: N/A
Class Specification: NIST Class F
Material: SS & AL

Reference Standards Used:

NSL lb standards

Procedure Used:

NIST HB 6969, SOP 8

Metrologist:
 JPL

Equipment Used:

Sartorius CC10000S Mettler AT 106
 Sartorius CC 1201 Sartorius CCE6

Environmental Cond. **Temp:** 22.95 °C **Pressure:** 769.112 mmHg **Relative Humidity:** 48 %

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: July 12, 2018

Certificate Number: 2018-060-2

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)
2 lb	1	0.032	n	0.032	0.011	2	0.091	7.84
2 lb	2	0.017	n	0.017	0.011	2	0.091	7.84
2 lb	3	-0.003	n	-0.003	0.011	2	0.091	7.84
2 lb	4	-0.018	n	-0.018	0.011	2	0.091	7.84
2 lb	5	-0.001	n	-0.001	0.011	2	0.091	7.84
2 lb	6	-0.069	n	-0.069	0.011	2	0.091	7.84
2 lb	7	-0.066	n	-0.066	0.011	2	0.091	7.84
2 lb	8	-0.005	n	-0.005	0.011	2	0.091	7.84
2 lb	9	-0.007	n	-0.007	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	-0.008	n	-0.008	0.011	2	0.091	7.84
2 lb	12	-0.005	n	-0.005	0.011	2	0.091	7.84
2 lb	13	-0.004	n	-0.004	0.011	2	0.091	7.84
2 lb	14	0.003	n	0.003	0.011	2	0.091	7.84
1 lb	1	-0.0552	n	-0.0552	0.0083	2	0.07	7.84
1 lb	2	-0.0563	n	-0.0563	0.0083	2	0.07	7.84
0.2 lb		0.0080	n	0.0080	0.0022	2	0.018	7.84
0.2 lb	*	0.0081	n	0.0081	0.0022	2	0.018	7.84
0.1 lb		0.0032	n	0.0032	0.0011	2	0.0091	7.84
0.05 lb		-0.00036	n	-0.00036	0.00054	2	0.0045	7.84
0.02 lb		-0.00129	n	-0.00129	0.00022	2	0.0018	7.84
0.02 lb	*	-0.00092	n	-0.00092	0.00022	2	0.0018	7.84
0.01 lb		0.00011	n	0.00011	0.00018	2	0.0015	7.84
0.005 lb		0.00043	n	0.00043	0.00015	2	0.0012	2.7
0.002 lb		-0.00024	n	-0.00024	0.00011	2	0.00087	2.7
0.002 lb	*	-0.00046	n	-0.00046	0.00011	2	0.00087	2.7
0.001 lb		-0.000242	n	-0.000242	0.000083	2	0.0007	2.7
8 oz		-0.0318	n	-0.0318	0.0054	2	0.045	7.84
4 oz		0.0006	n	0.0006	0.0028	2	0.023	7.84
2 oz		-0.0001	n	-0.0001	0.0013	2	0.011	7.84
1 oz		0.00036	n	0.00036	0.00064	2	0.0054	7.84
1/2 oz		0.00104	n	0.00104	0.00034	2	0.0028	7.84
1/4 oz		0.00070	n	0.00070	0.00021	2	0.0017	7.84
1/16 oz		0.00014	n	0.00014	0.00014	2.001	0.0011	7.84
1/16 oz	*	0.00047	n	0.00047	0.00014	2.001	0.0011	7.84

Conversion Factors

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

Joel P. Lavicky Metrologist

7/12/2018

Date of Issue

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Calibration Date: 7/12/2018

**Certificate of Calibration
of Volume Transfer**

Certificate Number: 2018-60-3

Items Submitted:

Quantity	Nominal Volume	Manufacturer	Type
3	5 gal	Sensitive Measurement	Bottom Drain Prover

Submitted By: FSCP Area 45
2300 S. 7th
Yutan, NE 68073

POC: Andrew Van hoozer
402-471-3422
andrew.vanhoozer@nebraska.gov

Test Results

Nominal Volume	Serial Number	Material	Cubical Coefficient of Expansion (1/°F)	As Found Volume Delivered @ 60 °F	As left Volume Delivered @ 60 °F	Uncertainty (U)	(k)
5 gal	247	SS	0.0000265	4.99927 gal	4.99927 gal	0.00065 gal	2.02
5 gal	248	SS	0.0000265	4.99977 gal	4.99977 gal	0.00065 gal	2.02
5 gal	249	SS	0.0000265	5.00087 gal	5.00087 gal	0.00065 gal	2.02

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 gal SP NE 1586

Treatment of Item(s) before Calibration:

Item(s) were tested as found

Procedure Used:

NISTIR 7383 (2017), SOP 19

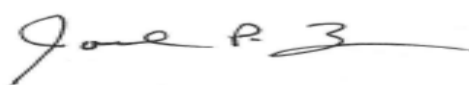
Environmental conditions at time of calibration:

Temp °C	25.3	Humidity %	49.3
Pressure mmHg	765.81		

Water temperature at time of calibration:

65.98 °F

Date Submitted: 7/9/2018



Joel P. Lavicky, Metrologist

7/13/2018

Date:

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Calibration Date: 7/12/2018

**Certificate of Calibration
of Volume Transfer**

Certificate Number: 2018-60-4

Items Submitted:

Quantity	Nominal Volume	Manufacturer	Type
2	5 gal	Seraphin	Test Measure

Submitted By: FSCP Area 45
2300 S. 7th
Yutan, NE 68073

POC: Andrew Van hoozer
402-471-3422
andrew.vanhoozer@nebraska.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	4393-5-E	SS	0.0000265	5.0008 gal	5.0008 gal	0.00065 gal	2.02
5 gal	4393-5-F	SS	0.0000265	5.00251 gal	4.9998 gal	0.00065 gal	2.02

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 gal SP NE 1586

Treatment of Item(s) before Calibration:

Item(s) were tested as found

Procedure Used:

NISTIR 7383 (2017), SOP 19

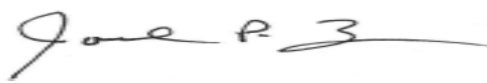
Environmental conditions at time of calibration:

Temp °C	25.3	Humidity %	49.3
Pressure mmHg	765.81		

Water temperature at time of calibration:

65.97 °F

Date Submitted: 7/9/2018



Joel P. Lavicky, Metrologist

7/13/2018

Date:

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