NEBRASKA
Good Life. Great Roots.
DEPARTMENT OF AGRICULTURE

Nebraska Standards Laboratory
3721 West Cuming St.
Lincoln, NE 68524
(402)-471-2087

Director of Agriculture
Greg Ibach
P.O. Box 94947
Lincoln, NE 68509-4947
(402) 471-2341
www.nda.nebraska.gov

Calibration Certificate of Mass

Calibration Date: July 26, 2017 | **Certificate Number:** 2017-011-1

Submitted By: FSCP area 15
109 Front St
Kearney, NE 68845

Point of Contact: Kent McConnell
Ph. 402-416-2226
email: *www.agr.ne.gov*
PO Number: N/A

Test Item:	8 lb Wieght kit	**Artifact(s) Description:**	
Serial Number:	9-OPI-5 & N-99-C	**Date Received:**	July 24, 2017
Manufacture:	Tromner/Rice lake	**ID / Asset Number:**	N/A
Condition:	Good (some wear)	**Class Specification:**	NIST Class F
		Material:	SS & CI

Reference Standards Used:
NSL lb standards
Rice Lake NSL-WK

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:** 763.27 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/cm^3 reference mass density and an air density of 1.2 mg/cm3 at 20 °C.

Traceability Statement

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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.

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Calibration Date: July 26, 2017 | **Certificate Number:** 2017-011-1

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/cm³)
2 lb	1	-0.003	n	-0.003	0.011	2	0.091	7.84
2 lb	2	-0.055	n	-0.055	0.011	2	0.091	7.84
2 lb	3	-0.012	n	-0.012	0.011	2	0.091	7.84
1 lb	1	-0.0034	n	-0.0034	0.0083	2	0.07	7.84
8 oz	17	-0.0042	n	-0.0042	0.0054	2	0.045	7.84
4 oz	18	-0.0010	n	-0.0010	0.0028	2	0.023	7.84
2 oz		-0.0035	n	-0.0035	0.0013	2	0.011	7.84
1 oz		0.00033	n	0.00033	0.00064	2	0.0054	7.84
1/2 oz		0.00140	n	0.00140	0.00034	2	0.0028	7.84
1/4 oz		0.00024	n	0.00024	0.00024	2.005	0.0017	7.84
1/8 oz		-0.00078	n	-0.00078	0.00016	2	0.0013	7.84
1/16 oz		-0.00023	n	-0.00023	0.00013	2	0.0011	7.84
1/16 oz	*	0.00000	n	0.00000	0.00013	2	0.0011	7.84
0.2 lb		0.0068	n	0.0068	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		0.0039	n	0.0039	0.0011	2	0.0091	7.94
0.05 lb		0.00116	n	0.00116	0.00054	2	0.0045	7.94
0.02 lb		-0.00086	n	-0.00086	0.00022	2	0.0018	7.94
0.02 lb	*	-0.00017	n	-0.00017	0.00022	2	0.0018	7.94
0.01 lb		-0.00011	n	-0.00011	0.00018	2	0.0015	7.94
0.005 lb		0.00048	n	0.00048	0.00015	2	0.0012	2.7
0.002 lb		0.00012	n	0.00012	0.00011	2	0.00087	2.7
0.002 lb	*	0.00012	n	0.00012	0.00011	2	0.00087	2.7
0.001 lb		0.000053	n	0.000053	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*

7/27/2017
Date of Issue

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Lincoln, NE 68509-4947
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Calibration Certificate of Mass

Calibration Date: July 28, 2017 | **Certificate Number:** 2017-011-2

Submitted By: FSCP area 15
109 Front St
Kearney, NE 68845

Point of Contact: Kent McConnell
Ph. 402-416-2226
email: *www.agr.ne.gov*
PO Number: N/A

Test Item:	31 lb wieght kie	**Date Received:**	July 24, 2017
Serial Number:	3A11	**ID / Asset Number:**	N/A
Manufacture:	Tromner	**Class Specification:**	NIST Class F
Condition:	Good (some wear)	**Material:**	SS & AL

Artifact(s) Description:

Reference Standards Used:
NSL lb standards
Rice Lake NSL-WK

Procedure Used:
NIST HB 6969, SOP 8

Metrologist:
JPL

Equipment Used:
Sartorius CC10000S
Sartorius CCE6
Mettler AT 106

Environmental Cond. **Temp:** 22.7 °C **Pressure:** 765.55 mmHg **Relative Humidity:** 52 %

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/cm^3 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.

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Calibration Date: July 28, 2017 | **Certificate Number:** 2017-011-2

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/cm³)
2 lb	1	-0.067	n	-0.067	0.011	2	0.091	7.84
2 lb	2	-0.007	n	-0.007	0.011	2	0.091	7.84
2 lb	3	-0.042	n	-0.042	0.011	2	0.091	7.84
2 lb	4	-0.066	n	-0.066	0.011	2	0.091	7.84
2 lb	5	-0.051	n	-0.051	0.011	2	0.091	7.84
2 lb	6	-0.064	n	-0.064	0.011	2	0.091	7.84
2 lb	7	-0.054	n	-0.054	0.011	2	0.091	7.84
2 lb	8	-0.052	n	-0.052	0.011	2	0.091	7.84
2 lb	9	-0.056	n	-0.056	0.011	2	0.091	7.84
2 lb	10	-0.041	n	-0.041	0.011	2	0.091	7.84
2 lb	11	-0.055	n	-0.055	0.011	2	0.091	7.84
2 lb	12	-0.060	n	-0.060	0.011	2	0.091	7.84
2 lb	13	-0.051	n	-0.051	0.011	2	0.091	7.84
2 lb	14	-0.036	n	-0.036	0.011	2	0.091	7.84
1 lb	15	-0.0165	n	-0.0165	0.0083	2	0.07	7.84
1 lb	16	-0.0429	n	-0.0429	0.0083	2	0.07	7.84
8 oz		-0.0119	n	-0.0119	0.0054	2	0.045	7.84
4 oz		0.0011	n	0.0011	0.0028	2	0.023	7.84
2 oz		-0.0009	n	-0.0009	0.0013	2	0.011	7.84
1 oz		0.00147	n	0.00147	0.00064	2	0.0054	7.84
1/2 oz		-0.00153	n	-0.00153	0.00035	2.001	0.0028	7.84
1/4 oz		-0.00054	n	-0.00054	0.00021	2	0.0017	7.84
1/8 oz		0.00042	n	0.00042	0.00016	2	0.0013	7.84
1/16 oz		0.00063	n	0.00063	0.00013	2	0.0011	7.84
1/16 oz	*	0.00024	n	0.00024	0.00013	2	0.0011	7.84
0.3 lb		-0.0071	n	-0.0071	0.0032	2	0.027	7.84
0.2 lb		-0.0048	n	-0.0048	0.0022	2	0.018	7.84
0.1 lb		-0.0063	n	-0.0063	0.0011	2	0.0091	7.84
0.05 lb		0.00007	n	0.00007	0.00054	2	0.0045	7.84
0.03 lb		-0.00094	n	-0.00094	0.00032	2	0.0027	7.84
0.02 lb		-0.00061	n	-0.00061	0.00022	2	0.0018	7.84
0.01 lb		0.00134	n	0.00134	0.00018	2	0.0015	7.84
0.005 lb		0.00032	n	0.00032	0.00015	2	0.0012	2.7
0.003 lb		-0.00038	n	-0.00038	0.00012	2	0.00099	2.7
0.002 lb		0.00059	n	0.00059	0.00011	2	0.00087	2.7
0.001 lb		-0.000499	n	-0.000499	0.000083	2	0.0007	2.7
0.001 lb	*	0.000377	n	0.000377	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*

7/28/2017
Date of Issue

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Director of Agriculture
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P.O. Box 94947
Lincoln, NE 68509-4947
(402) 471-2341
www.nda.nebraska.gov

Calibration Certificate of Mass

Calibration Date: July 26, 2017 | **Certificate Number:** 2017-011-3

Submitted By: FSCP area 15
109 Front St
Kearney, NE 68845

Point of Contact: Kent McConnell
Ph. 402-416-2226
email: *www.agr.ne.gov*
PO Number: N/A

Test Item: 2-2 kg, 2-15 lb, 20-25 lb weights **Artifact(s) Description:**
Serial Number: See Below
Manufacture: Tromner/Rice lake
Condition: Good (some wear)

Date Received: July 24, 2017
ID / Asset Number: N/A
Class Specification: NIST Class F
Material: SS & CI

Reference Standards Used:
2kg Denver
NEBR-STD-10&5
NSL-25-1-25lb

Procedure Used:
NIST HB 6969, SOP 8

Metrologist:
JPL

Equipment Used:
Sartorius CC10000S Mettler KA30-3

Environmental Cond. **Temp:** 22.8 °C **Pressure:** 763.651 mmHg **Relative Humidity:** 45.15 %

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/cm^3 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 26, 2017 | **Certificate Number:** 2017-011-3

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/cm³)
2 kg	K5	0.005	n	0.005	0.024	2	0.2	7.94
2 kg	K6	0.010	n	0.010	0.024	2	0.2	7.94
15 lb	WM15-3	0.040	n	0.040	0.081	2	0.68	7.2
15 lb	WM15-4	-0.667	y	0.550	0.081	2	0.68	7.2
25 lb	WM25--28	-0.51	n	-0.51	0.14	2	1.1	7.2
25 lb	WM25-38	-0.10	n	-0.10	0.14	2	1.1	7.2
25 lb	WM25-45	0.50	n	0.50	0.14	2	1.1	7.2
25 lb	WM25-55	-0.92	n	-0.92	0.14	2	1.1	7.2
25 lb	WM25-56	-0.49	n	-0.49	0.14	2	1.1	7.2
25 lb	WM25-57	0.00	n	0.00	0.14	2	1.1	7.2
25 lb	WM25-58	0.18	n	0.18	0.14	2	1.1	7.2
25 lb	WM25-59	0.20	n	0.20	0.14	2	1.1	7.2
25 lb	WM25-75	-0.92	n	-0.92	0.14	2	1.1	7.2
25 lb	WM25-76	0.33	n	0.33	0.14	2	1.1	7.2
25 lb	WM25-77	-0.48	n	-0.48	0.14	2	1.1	7.2
25 lb	WM25-78	-0.52	n	-0.52	0.14	2	1.1	7.2
25 lb	WM25-79	-0.16	n	-0.16	0.14	2	1.1	7.2
25 lb	WM25-96	0.63	n	0.63	0.14	2	1.1	7.2
25 lb	WM25-97	0.59	n	0.59	0.14	2	1.1	7.2
25 lb	WM25-98	0.81	n	0.81	0.14	2	1.1	7.2
25 lb	WM25-100	0.10	n	0.10	0.14	2	1.1	7.2
25 lb	WM25-101	0.45	n	0.45	0.14	2	1.1	7.2
25 lb	WM25-102	0.84	n	0.84	0.14	2	1.1	7.2
25 lb	WM25-103	0.65	n	0.65	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*

7/26/2017
Date of Issue

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Director of Agriculture
Greg Ibach
P.O. Box 94947
Lincoln, NE 68509-4947
(402) 471-2341
www.nda.nebraska.gov

Calibration Date: 7/24/2017

Certificate of Calibration of Volume Transfer

Certificate Number: 2017-011-4

Items Submitted:

Quantity	Nominal Volume	Manufacturer	Type
2	5 gal	Seraphin	Test Measure

Submitted By: FSCP Area 15
109 Front St.
Kearney, NE 68845

POC: Kent McConnell
402-416-2226
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	89488D	SS	0.0000265	**5.00104 gal**	**5.00104 gal**	0.00069 gal	2.04
5 gal	89488A	SS	0.0000265	**5.00081 gal**	**5.00081 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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Uncertainty Statement:

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Pertinent Information:

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Condition of Item(s) Submitted for Calibration:
Minor wear

Treatment of Item(s) before Calibration:
Item(s) were tested as found

Environmental conditions at time of calibration:

Temp ˚C	25.4	Humidity %	48.0
Pressure mmHg	764.04		

Laboratory Reference Standard Used;
5 gallon Slicker Plate Standard S/N NE1586

Procedure Used:
NISTIR 7383 (2017), SOP 19

Water temperature at time of calibration:
68.54 °F

Date Submitted: 7/24/2017

Joel P. Lavicky, Metrologist

7/26/2017
Date:

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Director of Agriculture
Greg Ibach
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Lincoln, NE 68509-4947
(402) 471-2341
www.nda.nebraska.gov

Calibration Date: 7/25/2017

Certificate of Calibration of Volume Transfer

Certificate Number: 2017-011-5

Items Submitted:

Quantity	Nominal Volume	Manufacturer	Type
3	5 gal	Seraphin	Special J prover

Submitted By: FSCP Area 15
109 Front St.
Kearney, NE 68845

POC: Kent McConnell
402-416-2226
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	05-40547-01	SS	0.0000265	**5.00025 gal**	**5.00025 gal**	0.00065 gal	2.05
5 gal	05-40547-02	SS	0.0000265	**4.99933 gal**	**4.99933 gal**	0.00065 gal	2.05
5 gal	05-40547-03	SS	0.0000265	**4.99823 gal**	**4.99823 gal**	0.00065 gal	2.05

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:

The artifact(s) described in this report 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 report is the only unique calibration number to be used in referencing measurement traceability for the artifact(s) described in this report.

Uncertainty Statement:

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Pertinent Information:

The artifact(s) listed above 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.

Condition of Item(s) Submitted for Calibration:
Minor wear

Treatment of Item(s) before Calibration:
Item(s) were tested as found

Environmental conditions at time of calibration:

Temp ˚C	25.3	Humidity %	48.0
Pressure mmHg	764.03		

Laboratory Reference Standard Used;
5 gallon Slicker Plate Standard S/N NE1586

Procedure Used:
NISTIR 7383 (2017), SOP 19

Water temperature at time of calibration:
68.65 °F

Date Submitted: 7/24/2017

Joel P. Lavicky, Metrologist

7/25/2017
Date:

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