			Director of Agricultur
NEBRASKA	Nebraska Standards Labord	atory	Steve Wellman
Good Life. Great Roots.	3721 West Cuming St. Lincoln, NE 68524		P.O. Box 9494
bood Life. Great Roots.	,		Lincoln, NE 68509-494
DEPARTMENT OF AGRICULTURE	(402)-471-2087		(402) 471-234 www.nda.nebraska.go
	Calibration Contificate		www.nua.nebraska.go
	<u>Calibration</u> Certificate		
Calibration Date: April 28, 2020		Certificate Number:	2020-049-1
Submitted By: FSCP Area 45		Point of Contact: Carson Jones	
3721 West Cun	ning St	Ph. 402-471-3	477
	-		
Lincoln, NE 68	524	email: carson.jones@	enebraska.gov
		PO Number: N/A	
Test Item(s): (2)-15 & (20)-2	25lb weights	Date Receiv	ed: April 27, 2020
Serial Number(s): See Next Page	Artifact(s) Description:	ID / Asset Numb	oer: FSCP Area 45
Manufacture: Rice Lake		Class Specificati	on: NIST Class F
Condition: Good (some we	ear)	· · · · · ·	ial: Cast Iron
·			
Reference Standards Used:	Procedure Used:		oment Used:
NSL lb standards	NIST HB 6969, SOP 8 (2018)	Mettler XPR32	003
	<u>Metrologist:</u>		
nvironmental Cond. Temp:	20.6 °C Pressure: 736.092 mmHg I Pertinent Information	Relative Humidity: 53.1 %	
	ent have been found and/or left within the maxi		
except as noted. An artifact is cons		ne measurement uncertainty is ec e tolerances and specifications we	qual to or less than the
except as noted. An artifact is cons naximum permissible error. RED print i	ent have been found and/or left within the maxin idered in-compliance when the correction plus th indicates an out-of-compliance reading. All of the	ne measurement uncertainty is ec e tolerances and specifications we 1 (2019). own as "apparent mass", scale ve	qual to or less than the ere evaluated according to
except as noted. An artifact is cons naximum permissible error. RED print i	ent have been found and/or left within the maximidered in-compliance when the correction plus the indicates an out-of-compliance reading. All of the ASTM E617 (2018) and/or NIST HB 105 correlate to a "Conventional Mass" (CM), also kn	ne measurement uncertainty is ec e tolerances and specifications we 1 (2019). own as "apparent mass", scale ve	qual to or less than the ere evaluated according to
 except as noted. An artifact is constant in the second print in the artifact(s) described in this certific are traceable to the International second print is comprehensive measurement assurant reported by this laboratory. The second print is a second print is a second print is a second print in the second print is a second pr	ent have been found and/or left within the maximi idered in-compliance when the correction plus th indicates an out-of-compliance reading. All of the ASTM E617 (2018) and/or NIST HB 105 correlate to a "Conventional Mass" (CM), also kn mass density and an air density of 1.2 mg/	ne measurement uncertainty is ed e tolerances and specifications we 1 (2019). own as "apparent mass", scale ve 'cm ³ at 20 °C. State of Nebraska. The Standard e of Standards and Technology (N measurement traceability within r unique calibration number to be	qual to or less than the ere evaluated according to erses 8.0 g/cm ³ reference ls of the State of Nebraska NST) and are part of a the level of uncertainty

NEBRASKA

Nebraska Standards Laboratory

3721 West Cuming St. Lincoln, NE 68524 (402)-471-2087 Director of Agriculture Steve Wellman P.O. Box 94947 Lincoln, NE 68509-4947 (402) 471-2341 www.nda.nebraska.gov

Good Life. Great Roots.

DEPARTMENT OF AGRICULTURE **Certificate Number:** 2020-049-1 **Calibration Date:** April 28, 2020 **Calibration Results** As Left As Found Serial Number Adjusted NIST Class F MPE **Assumed Density** Nominal Mass **Conventional Mass** Conventional Mass Uncertainty ± (g) (k) factor / ID (Y/N) (g/cm³) ± (g) Correction (g) Correction (g) WM15-9 WM15-10 WM25-22 WM25-26 WM25-31 WM25-34 WM25-35 WM25-41 WM25-60 0.416 0.301 0.416 0.301 0.083 0.68 0.68 Ν 15 b 15 b 25 b <u>7.2</u> 7.2 7.2 Ν 0.74 0.34 -0.47 -0.37 0.74 0.34 Ν 0.14 1.1 0.14 Ν <u>1.1</u> 7.2 7.2 7.2 -0.47 Ν 1.1Ν 0.14 1.10.00 0.27 0.33 0.00 0.14 N 7.2 7.2 7.2 1.11.1Ν 0.14 Ν 0.33 1.1 WM25-34 WM25-60 WM25-62 WM25-63 WM25-63 WM25-64 WM25-132 WM25-133 WM25-135 <u>0.72</u> -0.03 <u>0.72</u> -0.03 <u>7.2</u> 7.2 Ν 0.14 1.1N 0.14 1.1 0.62 <u>0.62</u> 0.83 0.14 0.14 N $\frac{1.1}{1.1}$ <u>7.2</u> 7.2 0.18 0.54 -0.78 0.04 0.18 0.54 -0.78 0.04 Ν 0.14 7.2 1.1<u>0.1</u>4 N 7.2 7.2 7.2 1.10.14 0.14 Ν 1.1Ν 1.1WM25-136 WM25-137 -0.09 0.16 -0.09 0.16 0.14 Ν $\frac{1.1}{1.1}$ <u>7.2</u> 7.2 Ν WM25-138 WM25-139 0.38 0.38 0.14 0.14 $\frac{1.1}{1.1}$ Ν <u>7.2</u> 7.2 Ν WM25-140 0.15 0.15 0.14 N 1.1

Conversion Factors

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

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

Jone P. 3

5/21/2020

Joel P. Lavicky Metrologist

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 <u>all</u> pages. This document may not be reproduced except in <u>full</u>, without the written consent of the Nebraska Standards Laboratory.

NEBRASK Good Life. Great Ro DEPARTMENT OF AGRICUL	ots.		Nebraska Standards Laboratory 3721 West Cuming St. Lincoln, NE 68524 (402) 471-2087 20 Certificate of Calibration of Volume Transfer						Director of Agricultur Steve Wellman P.O. Box 9494' Lincoln, NE 68509-494' (402) 471-234 www.nda.nebraska.gov	
Calibration Da	ite:	4/28/2020							2020-049-2	
			Items Su	bmitted:		Submitted By:	FSCP Area 45			
	Quantity	Nominal Volume	minal Volume Manufacturer Type			g St.				
	2			Seraphin Test Measure 4" Neck POC: Carson Jones						
							aska.gov			
				7	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)	(<i>k</i>)		
	5 gal	4393-5-E	SS	0.0000265	5.0008 gal	5.0008 gal	0.0012 gal	2.08		
	5 gal	4393-5-F	SS	0.0000265	4.9997 gal	4.9997 gal	0.0012 gal	2.08	7	

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 a 30 second drain time would apply.

Conversion Factors:

 $1 \text{ gal} = 231 \text{ in}^3$ 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:

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. 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.

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. All of the tolerances and specifications were evaluated according to NIST HB 105-3 (2010).

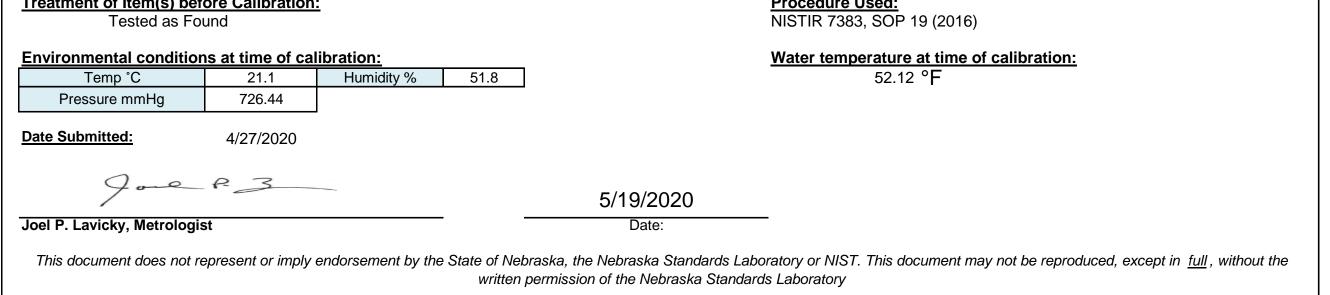
Condition of Item(s) Submitted for Calibration:

Good

Laboratory Reference Standard Used; 5 gal SP NE 1586

Treatment of Item(s) before Calibration:

Procedure Used:



NEBRASKA Good Life. Great Roots. DEPARTMENT OF AGRICULTURE Calibration Date: 4/29/2020			Nebraska Standards Laboratory 3721 West Cuming St. Lincoln, NE 68524 (402) 471-2087 Certificate of Calibration Certificate Number:					Director of Agriculture Steve Wellman P.O. Box 94947 Lincoln, NE 68509-4947 (402) 471-2341 www.nda.nebraska.gov 2020-049-3	
Calibration Date: 4/29/2020		of Volume Transfer					2020-049-3		
Quanti	ty Nominal Volume		ubmitted: nufacturer	Туре	Submitted By:	FSCP Area 45 3721 West Cumir Lincoln, NE 6852	•		
3	5 gal		SMI	"Special" J Prover	POC:	Carson Jones			
			Te	est Results		402-471-3422 carson.jones@ne	braska.gov		
Nomin Volum	Serial Number	Material	Cubical Coefficient of Expansion (/°F)	As Found Volume Delivered @ 60 °F	As left Volume Delivered @ 60 °F	Uncertainty (U)	(<i>k</i>)		
5 gal	247	SS	0.0000265	4.9982 gal	4.9982 gal	0.0011 gal	2.03		
5 gal	248	SS	0.0000265	4.9996 gal	4.9996 gal	0.0011 gal	2.03		
5 gal	249	SS	0.0000265	4.9993 gal	4.9993 gal	0.0011 gal	2.03		
	The	data in this	s report only app	lies to those items	specifically listed or	n this report.		•	

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

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. 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.

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 incompliance when the correction plus the measurement uncertainty is equal to or less than the maximum permissible error. All of the tolerances and specifications were evaluated according to NIST HB 105-3 (2010).

Condition of Item(s) Submitted for Calibration:

Laboratory Reference Standard Used;

Good

Treatment of Item(s) before Calibration:

Tested as Found

Environmental conditions at time of calibration:

Temp °C	19.4	Humidity %	51.8		
Pressure mmHg	731.52				

Date Submitted: 4/27/2020

Jone P 3

Joel P. Lavicky, Metrologist

5 gal SP NE 1586

Procedure Used: NISTIR 7383, SOP 19 (2016)

Water temperature at time of calibration: 51.15 °F

5/19/2020 Date:

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NEBRASKA		Director of Agriculture
INCONTON/	Nebraska Standards Laboratory	Steve Wellman
Cood Life Creat Doots	3721 West Cuming St.	P.O. Box 94947
Good Life. Great Roots.	Lincoln, NE 68524	Lincoln, NE 68509-4947
DEPARTMENT OF AGRICULTURE	(402)-471-2087	(402) 471-2341
		www.nda.nebraska.gov
	libration Certificate of Mass	
Calibration Date: April 30, 202	0 Certificate Number	er: 2020-049-4
Submitted By: FSCP Area 45	Point of Contact: Car	
3721 West Cumir	5	. 402-471-3422
Lincoln, NE 6852		son.jones@nebraska.gov
	<u>PO Number:</u>	N/A
Test Item(s): Ib weight kit	Date	Received: April 27, 2020
Serial Number(s): 11-OPI-85 / N-99-I	3 <u>Artifact(s) Description:</u> ID / Asset	t Number: FSCP Area 45
Manufacture: Troemner	Class Spec	cification: NIST Class F
Condition: Good (some wear)		Material: SS & AL
Reference Standards Used:	Procedure Used:	Equipment Used:
NSL lb standards		ius CC 1201 Sartorius CCE6
		ttler AT 106
	JPL	
Environmental Cond. Temp: 22.1	°C Pressure: 729.6 mmHg Relative Humidity:	51.4 %
	Pertinent Information	
.,,	have been found and/or left within the maximum permissible er	-
· · ·	nsidered in-compliance when the correction plus the measuremen	,
	RED print indicates an out-of-compliance reading. All of the tolera	ances and specifications were
evalu	aed according to ASTM E617 (2018) and NIST HB 105-1 (2019).	

• 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.



Good Life. Great Roots.

Nebraska Standards Laboratory

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

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

DEPARTMENT OF AGRICULTURE

Calibrat	Calibration Date: April 30, 2020				Certificat	te Numbe	r: 2020-049	-4	
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	-0.015	n	-0.015	0.011	2	0.091	7.84	
2 lb	2	0.016	n	0.016	0.011	2	0.091	7.84	
2 lb	3	-0.005	n	-0.005	0.011	2	0.091	7.84	
2 lb	4	-0.019	n	-0.019	0.011	2	0.091	7.84	
2 lb	5	-0.009	n	-0.009	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	-0.069	n	-0.069	0.011	2	0.091	7.84	
2 lb	8	-0.006	n	-0.006	0.011	2	0.091	7.84	
2 lb	9	-0.008	n	-0.008	0.011	2	0.091	7.84	
2 lb	10	-0.069	n	-0.069	0.011	2	0.091	7.84	
2 lb	11	0.023	n	0.023	0.011	2	0.091	7.84	
2 lb	12	-0.006	n	-0.006	0.011	2	0.091	7.84	
2 lb	13	-0.005	n	-0.005	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	-0.0544	n	-0.0544	0.0083	2	0.07	7.84	
1 lb	2	-0.0542	n	-0.0542	0.0083	2	0.07	7.84	
0.2 lb		0.0079	n	0.0079	0.0022	2	0.018	7.84	
0.2 lb	*	0.0084	n	0.0084	0.0022	2	0.018	7.84	
0.1 lb		0.0034	n	0.0034	0.0011	2	0.0091	7.84	
0.05 lb		-0.00043	n	-0.00043	0.00054	2	0.0045	7.84	
0.02 lb		-0.00123	n	-0.00123	0.00022	2	0.0018	7.84	
0.02 lb	*	0.00048	n	0.00048	0.00022	2	0.0018	7.84	
0.01 lb		0.00009	n	0.00009	0.00018	2	0.0015	7.84	
0.005 lb		0.00031	n	0.00031	0.00014	2	0.0012	2.7	
0.002 lb		-0.00016	n	-0.00016	0.00011	2	0.00087	2.7	
0.002 lb	*	-0.00043	n	-0.00043	0.00011	2	0.00087	2.7	
0.001 lb		-0.000262	n	-0.000262	0.000083	2	0.0007	2.7	
8 oz		-0.0306	n	-0.0306	0.0054	2	0.045	7.84	
4 oz		0.0006	n	0.0006	0.0028	2	0.023	7.84	
2 oz		0.0012	n	0.0012	0.0013	2	0.011	7.84	
1 oz		0.00065	n	0.00065	0.00064	2	0.0054	7.84	
1/2 oz		0.00118	n	0.00118	0.00034	2	0.0028	7.84	
1/4 oz		0.00092	n	0.00092	0.00021	2	0.0017	7.84	
1/8 oz		0.00052	n	0.00052	0.00016	2	0.0013	7.84	
1/16 oz		0.00084	n	0.00084	0.00014	2	0.0011	7.84	
1/16 oz		-0.00047	n	-0.00047	0.00014	2	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

5/21/2020 Date of Issue

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