NEBRAS						Director of Agriculture
NEDRAS		Nebi	raska Standards Labore 3721 West Cuming St.	atory		Sherry Vinton P.O. Box 94947
Good Life. Great F	Roots.		Lincoln, NE 68524			Lincoln, NE 68509-4947
			(402)-471-2087			(402) 471-2341
DEPARTMENT OF AGRIC	ULTURE	Calibrat	ion Cortificat	o of Mass		www.nda.nebraska.gov
		Calibrat	ion Certificat			
Calibration Date:	May 17, 2023			Certificate Num	iber:	2023-069-1
Submitted By:	FSCP Area 65			Point of Contact: Bria	an Maser	
	3721 West Cum	ing St.			402-471-3422	2
	Lincoln, NE 685	24		<u>email:</u> brid	an.maser@nel	braska.gov
				PO Number: N/A	4	
Test Item(s)	: Cast weights			Da	ate Received:	May 12, 2023
ID / Asset Number	0		Artifact(s) Description:		al Number(s):	
Manufacture	: Various			Class S	Specification:	NIST Class F
Material	: Cast Iron				Condition:	Good (some wear)
Reference Standards L	lsed:		Procedure Used:		Equipme	ent Used:
NSL lb standards	<u> </u>		NIST HB 6969, SOP 8 (2019)	Met	tler XPR32003	
			Metrologist:			
			JPL			
Environmental Cond.	Temp:	22.2 °C Pressure	: 727.9 mmHg	Relative Humidity:	53.2 %	
	i cinp.		Pertinent Information	Relative Hamarey.	JJ.L /0	
as noted. An artifac permissible error. RED correction and the u	t is considered ir print indicates ar uncertainty excee	n-compliance when t n out-of-compliance ed 95% of the maxim	d/or left within the maximum the correction plus the measure reading. It is the decision of num permissible error. All o to ASTM E617 (2018) and/or N	urement uncertainty is e the Laboratory to adjus f the tolerances and des	equal to or les at the artifact ign specificati	s than the maximum (s) when the sum of the ions (except density,
	-	mass density	nventional Mass" (CM), also k and an air density of 1.2 mg	/cm³ at 20 °C.		-
			hts meet the accuracy requir ghts for calibration of comm			(2022),
			Traceability Statement			
traceable to the Interna measurement assura	ational System of nce program for	Units (SI) through t ensuring continued this certificate is th	ared to the Standards of the he National Institute of Star accuracy and measurement t he only unique calibration nu tifact(s) described in this cer	Idards and Technology (N raceability within the le mber to be used in refer	NIST) and are vel of uncerta	part of a comprehensive ainty reported by this
			Uncertainty Statement			
uncertainties for a uncorrected errors as expanded uncertain consistent with the evaluated through	ny observed devi sociated with air ty, which defines <i>Guide to the Exp</i> a Type A evalua	ations from referen buoyance correctior an interval with a 9 pression of Uncertain tion, or the method	es reported for the standard ce values which are less thar ns. The combined standard un 05.45 percent level of confident <i>y</i> in <i>Measurement (2008, re</i> of evaluation of uncertainty ned, therefore, there are no	n surveillance limits and ncertainty is multiplied b ence. The expanded unce evised 2012). Some con by the statistical analys	the standard by a coverage ertainty prese nponents of th sis (standard d	uncertainty for any factor (k), to give the ented in this report is ne calibration can be leviation) from the



Nebraska Standards Laboratory

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

Good Life. Great Roots.

DEPARTMENT OF AGRICULTURE

Calibratio	Calibration Date: May 17, 2023				Certificat	e Numbe	r: 2023-069-	-1
	Calibration Results							
Nominal Mass	Serial Number / ID	As Found Conventional Mass Correction (g)	Adjusted (Y/N)	Correction (g)	Uncertainty ± (g)		NIST Class F MPE ± (g)	Assumed Density (g/cm³)
15 lb	WM15-5	-0.195	N	-0.195	0.085	2.01	0.68	7.2
15 lb	WM15-6	0.095	N	0.095	0.085	2.01	0.68	7.2
25 lb	NE-61	-0.40	N	-0.40	0.14	2.01	1.1	7.2
25 lb	NE-62	-0.28	Ν	-0.28	0.14	2.01	1.1	7.2
25 lb	NE-63	-0.07	N	-0.07	0.14	2.01	1.1	7.2
25 lb	NE-64	-0.29	Ν	-0.29	0.14	2.01	1.1	7.2
25 lb	NE-65	-0.44	N	-0.44	0.14	2.01	1.1	7.2
25 lb	NE-66	-0.61	N	-0.61	0.14	2.01	1.1	7.2
25 lb	NE-67	-0.25	N	-0.25	0.14	2.01	1.1	7.2
25 lb	NE-68	0.00	N	0.00	0.14	2.01	1.1	7.2
25 lb	NE-69	-0.36	N	-0.36	0.14	2.01	1.1	7.2
25 lb	NE-70	-0.23	N	-0.23	0.14	2.01	1.1	7.2
25 lb	NE-71	0.35	N	0.35	0.14	2.01	1.1	7.2
25 lb	NE-72	0.26	N	0.26	0.14	2.01	1.1	7.2
25 lb	NE-73	-0.18	N	-0.18	0.14	2.01	1.1	7.2
25 lb	NE-74	0.24	N	0.24	0.14	2.01	1.1	7.2
25 lb	NE-75	-0.20	N	-0.20	0.14	2.01	1.1	7.2
25 lb	NE-76	-0.16	N	-0.16	0.14	2.01	1.1	7.2
25 lb	NE-77	-0.29	Ν	-0.29	0.14	2.01	1.1	7.2
25 lb	NE-78	-0.11	N	-0.11	0.14	2.01	1.1	7.2
25 lb	NE-79	0.26	N	0.26	0.14	2.01	1.1	7.2
25 lb	NE-80	-0.23	N	-0.23	0.14	2.01	1.1	7.2

Conversion Factors

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

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

Jone P. 3 Joel P. Lavicky Metrologist

5/24/2023

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.

				D	Director of Agricultur
NEBRAS	Ne Ne	ebraska Standards La	-		Sherry Vinto
Good Life, Great F	Doots	3721 West Cuming St	•		P.O. Box 9494
UUUU LIIE. UIEal I	10013.	Lincoln, NE 68524 (402)-471-2087		L	incoln, NE 68509-494
DEPARTMENT OF AGRIC	CULTURE	(402)-471-2087		140	(402) 471-234 ww.nda.nebraska.go
		bration Cortific	ato of Mass	VVV	ww.nua.nebraska.go
		bration Certifica			
Calibration Date:	May 18, 2023		Certificate Num	ber: 20	023-069-2
Submitted By: F	SCP Area 65		Point of Contact: Br	rian Maser	
	3721 West Cuming St.		Pł	n. 402-471-342	22
L	incoln, NE 68524			ian.maser@nebras	ska.gov
			<u>PO Number:</u>	N/A	
Test Item(s): [Date	e Received: Ma	ay 12, 2023
Serial Number(s): N		Artifact(s) Description		et Number: Ar	
	Good (some wear)		•	ecification: N	
Material: S	tainless Steel & Alumir	num	Ma	nufacture: Tr	roemner
Reference Standard	s Used:	Procedure Used:		<u>Equipmer</u>	nt Used:
NSL lb standards		NIST HB 6969, SOP 8 (201	19) Sarto	orius CC 1201	Sartorius CCE6
		<u>Metrologist:</u>	Met	tler XPR 205	
		JPL			
<u>Environmental Cond.</u>	Temp: 21.38 °C	Pressure: 728.28 mmHg	Relative Humidity:	49.64 %	
 The artifact(s) listed i except as noted. An ar maximum permissible when the sum of th 	n this document have t rtifact is considered in- error. RED print indica ne correction and the u	Pertinent Informatio been found and/or left within the compliance when the correction p ates an out-of-compliance reading. ncertainty exceed 95% of the maxi	<u>n</u> maximum permissible er lus the measurement un It is the decision of the imum permissible error.	rror for the spec acertainty is equ Laboratory to a All of the tole	ual to or less than the adjust the artifact(s) erances and design
 The artifact(s) listed i except as noted. An ar maximum permissible when the sum of th specifications (except of 	n this document have t rtifact is considered in- error. RED print indica ne correction and the u density, hardness and r ated in this report corre	Pertinent Informatio been found and/or left within the compliance when the correction p ates an out-of-compliance reading. Incertainty exceed 95% of the maxi magnetism) were evaluated accord artifacts designated clue elate to a "Conventional Mass" (CM	n maximum permissible er lus the measurement un It is the decision of the imum permissible error. ing to ASTM E617 (2018) ass. Λ), also known as "appar	rror for the spec neertainty is eque Laboratory to a All of the tole and/or NIST HI rent mass", scal	ual to or less than the adjust the artifact(s) erances and design B 105-1 (2019) for the
 The artifact(s) listed i except as noted. An ar maximum permissible when the sum of th specifications (except of 	n this document have t rtifact is considered in- error. RED print indica ne correction and the u density, hardness and r ated in this report corre	Pertinent Informatio been found and/or left within the compliance when the correction p ates an out-of-compliance reading. Incertainty exceed 95% of the maxi nagnetism) were evaluated accord artifacts designated cl	n maximum permissible er lus the measurement un It is the decision of the imum permissible error. ing to ASTM E617 (2018) ass. Λ), also known as "appar	rror for the spec neertainty is eque Laboratory to a All of the tole and/or NIST HI rent mass", scal	ual to or less than the adjust the artifact(s) erances and design B 105-1 (2019) for the
 except as noted. An armaximum permissible when the sum of the specifications (except of a constraint) and the specifications (except of a constraint). All corrections state It is the end user's response to the specification of the spe	n this document have t rtifact is considered in- e error. RED print indica ne correction and the u density, hardness and r ated in this report corr reference esponsibility to verify th	Pertinent Informatio been found and/or left within the compliance when the correction p ates an out-of-compliance reading. Incertainty exceed 95% of the maxi magnetism) were evaluated accord artifacts designated cl elate to a "Conventional Mass" (CA ce mass density and an air density on hat the weights meet the accuracy s, when using the weights for calibr	n maximum permissible er lus the measurement un It is the decision of the imum permissible error. ing to ASTM E617 (2018) ass. A), also known as "appar of 1.2 mg/cm ³ at 20 °C. requirements outlined i ration of commercial (Le	rror for the spec acertainty is eque 2 Laboratory to a All of the tole) and/or NIST HI rent mass", scal	ual to or less than the adjust the artifact(s) erances and design B 105-1 (2019) for the le verses 8.0 g/cm ³ ok 44 (2020), Appendia
 The artifact(s) listed i except as noted. An armaximum permissible when the sum of the specifications (except of a All corrections state). All corrections state. It is the end user's read A Fundational content of the second state. A fundational content of the secon	n this document have b rtifact is considered in- e error. RED print indica ne correction and the u density, hardness and r ated in this report corr reference esponsibility to verify th amental Considerations	Pertinent Informatio been found and/or left within the compliance when the correction p ates an out-of-compliance reading. Incertainty exceed 95% of the maxi magnetism) were evaluated accord artifacts designated cl elate to a "Conventional Mass" (CA ce mass density and an air density of hat the weights meet the accuracy s, when using the weights for calibri	n maximum permissible er lus the measurement un It is the decision of the imum permissible error. ing to ASTM E617 (2018) ass. Λ), also known as "appar of 1.2 mg/cm ³ at 20 °C. requirements outlined i ration of commercial (Le nt	rror for the spec neertainty is eque 2 Laboratory to a All of the tole) and/or NIST HI rent mass", scal in NIST Handboo egal for Trade) s	ual to or less than the adjust the artifact(s) erances and design B 105-1 (2019) for the le verses 8.0 g/cm ³ ok 44 (2020), Appendia scales.
 The artifact(s) listed i except as noted. An armaximum permissible when the sum of the specifications (except of a All corrections state) All corrections state It is the end user's react A Fundation The artifact(s) description (Secretable) 	n this document have b rtifact is considered in- error. RED print indica ne correction and the u density, hardness and r ated in this report corre- reference esponsibility to verify the amental Considerations bed in this certificate 1 e to the International S /e measurement assura d by this laboratory. The	Pertinent Informatio been found and/or left within the compliance when the correction p ates an out-of-compliance reading. Incertainty exceed 95% of the maxi magnetism) were evaluated accord artifacts designated cl elate to a "Conventional Mass" (CA ce mass density and an air density on hat the weights meet the accuracy s, when using the weights for calibr	n maximum permissible er lus the measurement un It is the decision of the imum permissible error. ing to ASTM E617 (2018) ass. A), also known as "appar of 1.2 mg/cm ³ at 20 °C. requirements outlined i ration of commercial (Le nt urds of the State of Nebr ational Institute of Stand ed accuracy and measure ificate is the only unique	rror for the spec neertainty is eque Laboratory to a All of the tole and/or NIST HI rent mass", scal in NIST Handboo egal for Trade) s raska. The Stanc dards and Techr ement traceabil e calibration nu	ual to or less than the adjust the artifact(s) erances and design B 105-1 (2019) for the le verses 8.0 g/cm ³ ok 44 (2020), Appendi: scales. dards of the State of nology (NIST) and are ity within the level of
 The artifact(s) listed i except as noted. An armaximum permissible when the sum of the specifications (except of a constant) and the sum of the specifications (except of a comprehensive uncertainty reported). It is the end user's react the artifact(s) description of a comprehensive uncertainty reported. 	n this document have b rtifact is considered in- e error. RED print indica ne correction and the u density, hardness and r ated in this report corre- reference esponsibility to verify the amental Considerations bed in this certificate f e to the International S we measurement assura d by this laboratory. The referencing measure	Pertinent Informatio been found and/or left within the r compliance when the correction p ates an out-of-compliance reading, incertainty exceed 95% of the maxi magnetism) were evaluated accord artifacts designated clu- elate to a "Conventional Mass" (CA ce mass density and an air density of the weights meet the accuracy s, when using the weights for calibre <u>Traceability Statemen</u> have been compared to the Standa System of Units (SI) through the Na ince program for ensuring continue the calibration number for this cert	n maximum permissible er lus the measurement un It is the decision of the imum permissible error. ing to ASTM E617 (2018) ass. A), also known as "appar of 1.2 mg/cm ³ at 20 °C. requirements outlined i ration of commercial (Le nt ational Institute of Stand ed accuracy and measure ificate is the only unique ct(s) described in this ce	rror for the spec neertainty is equ Laboratory to a All of the tole and/or NIST Hi rent mass", scal in NIST Handboo egal for Trade) s raska. The Stanc dards and Techr ement traceabil e calibration nu ertificate.	ual to or less than the adjust the artifact(s) erances and design B 105-1 (2019) for the le verses 8.0 g/cm ³ ok 44 (2020), Appendi scales. dards of the State of nology (NIST) and are ity within the level o umber to be used in



Good Life. Great Roots.

Nebraska Standards Laboratory

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

DEPARTMENT OF AGRICULTURE

Calibration Date: May 18, 2023				Certifica	te Numbe	er: 2023-069	9-2		
	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	0.044	n	0.044	0.011	2	0.091	7.84	
2 lb	2	0.041	n	0.041	0.011	2	0.091	7.84	
2 lb	3	0.032	n	0.032	0.011	2	0.091	7.84	
2 lb	4	0.045	n	0.045	0.011	2	0.091	7.84	
2 lb	5	0.042	n	0.042	0.011	2	0.091	7.84	
2 lb	6	0.029	n	0.029	0.011	2	0.091	7.84	
2 lb	7	0.012	n	0.012	0.011	2	0.091	7.84	
2 lb	8	0.010	n	0.010	0.011	2	0.091	7.84	
2 lb	9	0.045	n	0.045	0.011	2	0.091	7.84	
2 lb	10	0.024	n	0.024	0.011	2	0.091	7.84	
2 lb	11	0.027	n	0.027	0.011	2	0.091	7.84	
2 lb	12	0.041	n	0.041	0.011	2	0.091	7.84	
2 lb	13	0.014	n	0.014	0.011	2	0.091	7.84	
2 lb	14	0.015	n	0.015	0.011	2	0.091	7.84	
1 lb	15	0.0245	n	0.0245	0.0083	2	0.07	7.84	
1 lb	16	0.0038	n	0.0038	0.0083	2	0.07	7.84	
0.2 lb		0.0082	n	0.0082	0.0022	2	0.018	7.84	
0.2 lb	*	0.0093	n	0.0093	0.0022	2	0.018	7.84	
0.1 lb		0.0043	n	0.0043	0.0011	2	0.0091	7.84	
0.05 lb		0.00292	n	0.00292	0.00054	2	0.0045	7.84	
0.02 lb		0.00080	n	0.00080	0.00022	2	0.0018	7.84	
0.02 lb	*	0.00075	n	0.00075	0.00022	2	0.0018	7.84	
0.01 lb		0.00078	n	0.00078	0.00018	2	0.0015	7.84	
0.005 lb		0.00066	n	0.00066	0.00014	2	0.0012	2.7	
0.002 lb		0.00008	n	0.00008	0.00011	2	0.00087	2.7	
0.002 lb	*	-0.00019	n	-0.00019	0.00011	2	0.00087	2.7	
0.001 lb		0.000136	n	0.000136	0.000083	2	0.0007	2.7	
8 oz		0.0041	n	0.0041	0.0054	2	0.045	7.84	
4 oz		0.0021	n	0.0021	0.0028	2	0.023	7.84	
2 oz		0.0015	n	0.0015	0.0013	2	0.011	7.84	
1 oz		0.00105	n	0.00105	0.00064	2	0.0054	7.84	
1/2 oz		0.00125	n	0.00125	0.00034	2	0.0028	7.84	
1/4 oz		0.00099	n	0.00099	0.00021	2	0.0017	7.84	
1/8 oz		0.00055	n	0.00055	0.00016	2	0.0013	7.84	

Conversion Factors

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

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

Jone P. 3

Joel P. Lavicky Metrologist

5/24/2023 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.

NEBRASKA

Good Life, Great Roots.

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

-069-3

DEPARTMENT OF AGRICULTURE

	Calibratio	n Certificate	e of Mass	
Calibration Date:	May 18, 2023		Certificate Num	ber: 2023-069-
<u>Submitted By</u> :	FSCP Area 65		Point of Contact:	Brian Maser
	3721 West Cuming St.			Ph. 402-471-3422
	Lincoln, NE 68524		<u>email:</u>	brian.maser@nebraska.gov
			PO Number:	N/A
Test Item(s)	: Metric Weight Kit	Artifact(s) Description:		Date Received: 5/12/2023
Serial Number(s)	: WM-G89-9		ID /	Asset Number: Area 65

	ccellent (little wear) ainless Steel				pecification: ASTM 4 Nanufacture: Troemner
Reference Standards Us	ed:		Procedure Used:		Equipment Used:
NSL & /Den Metric		NIST	- HB 6969, SOP 8 (2	019) Sart	orius CC 1201
Voland-1707			Metrologist:	Me	ttler XPR 205
			JPL	S	artorius CCE6
Environmental Cond.	Temp: 21.24 °C	Pressure:	728.1 mmHg	Relative Humidity:	49.9 %
		P	ertinent Informatio	on	

• 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. It is the decision of the Laboratory to adjust the artifact(s) when the sum of the correction and the uncertainty exceed 95% of the maximum permissible error. All of the tolerances and design specifications (except density, hardness and magnetism) were evaluated according to ASTM E617 (2018) and/or NIST HB 105-1 (2019) for the artifacts designated class.

• 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.

• The Artifacts in "red" do not meet ASTM 4 tolerances but do meet ASTM 5 tolerances and should be evaluated before use.

• It is the end user's responsibility to verify that the weights meet the accuracy requirements outlined in NIST Handbook 44 (2020), Appendix A Fundamental Considerations, when using the weights for calibration of commercial (Legal for Trade) scales.

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.



Nebraska Standards Laboratory

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

Good Life. Great Roots.

DEPARTMEN	IT OF AGRICULTUR	RE						0
Calibratio	Calibration Date: May 18, 2023				Certificat	te Number:	2023-069-3	
			Cal	ibration 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	ASTM 4 MPE ± (g)	Assumed Density (g/cm ³)
300 g		0.00542	n	0.00542	0.00089	2	0.006	7.95
200 g		0.00089	n	0.00089	0.00064	2.004	0.004	7.84
100 g		0.00028	n	0.00028	0.00025	2.001	0.002	7.84
50 g		-0.00008	n	-0.00008	0.00015	2.003	0.0012	7.84
30 g		-0.00008	n	-0.00008	0.00012	2.003	0.0009	7.84
20 g		0.000611	n	0.000611	0.000091	2.003	0.0007	7.84
10 g		0.000312	n	0.000312	0.000064	2.009	0.0005	7.84
5 g		0.000146	n	0.000146	0.000045	2.001	0.00036	7.84
3 g		0.000162	n	0.000162	0.000038	2.001	0.0003	7.84
2 g		0.000043	n	0.000043	0.000033	2.002	0.00026	7.84
1 g		0.000016	n	0.000016	0.000025	2.004	0.0002	7.84

Conversion Factors

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

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

me P. 3 Joel P. Lavicky Metrologist

5/24/2023 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.

NEBRASKA

Nebraska Standards Laboratory

3721 West Cuming St. Lincoln, NE 68524 (402) 471-2087 Director of Agriculture Sherry Vinton P.O. Box 94947 Lincoln, NE 68509-4947 (402) 471-2341

DEPARTMENT OF AGRICULTURE

Good Life. Great Roots.

PARTMENT OF AGRICULT	URE					www.nda.nebraska.gov
Calibration Date:	5/16/2023		Certificate of Calibration of Volume Transfer		Certificate Number:	2023-069-5
]	
		Items Submitted:	:	Submitted By:	FSCP Area 65	
					3721 West Cuming St	

Quantity	Nominal Volume	Manufacturer	Туре	Lincoln, NE 68524
3	5 gal	SMI	"Special" J Prover	POC: Brian Maser
				402-471-3422 brian.maser@nebraska.gov

Test Results

	lest 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	9038 034	SS	0.0000265	4.9999 gal	4.9999 gal	0.0010 gal	2.01			
5 gal	9038 035	SS	0.0000265	4.9974 gal	4.9974 gal	0.0010 gal	2.01			
5 gal	9038 036	SS	0.0000265	5.0009 gal	5.0009 gal	0.0010 gal	2.01			

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 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. It is the decision of the Laboratory to adjust the artifact(s) when the sum of the correction and uncertainty exceed 95% of the maximum permissible error. All of the tolerances and specifications were evaluated according to NIST HB 105-3 (2010).

Condition of Item	(s) Submitted Good	for Calibration:			Laboratory Reference Standard Used; 5 gal SP NE 1586
Treatment of Item	(s) before Ca Tested as Fo				Procedure Used: NISTIR 7383, SOP 19 (2019)
Environmental co Temp °C	onditions at tin 21.7	ne of calibration: Humidity %	44.4	1	<u>Water temperature at time of calibration:</u> 69.93 ⁰F
Pressure mmHg	734.60	Turnicity 78	44.4	1	03.35
Date Submitted:	5/12/2023				
gone	P.3			5/24/2023	
Joel P. Lavicky, N	letrologist		-	Issue Date:	—
This document	does not repre			of Nebraska, the Nebraska Sta vritten permission of the Nebras	ndards Laboratory or NIST. This document may not be reproduced, ska Standards Laboratory