NEBRAS	$\checkmark$						Director of Agriculture	
			Nebra	I <b>ska Standards Labor</b> 3721 West Cuming St.	atory		Sherry Vinton P.O. Box 94947	
Good Life. Great F	Roots.			Lincoln, NE 68524			Lincoln, NE 68509-4947	
DEPARTMENT OF AGRIC				(402)-471-2087			(402) 471-2341	
DEPARTMENT OF AGRICULTURE WWW.nda.nebraska.gov								
Calibration Date:	September 11,				Certificate N	umber:	2023-123-1	
Submitted By:	FSCP Area 90				Point of Contact: S		2	
	3721 West Cum	-				Ph. 402-471-342		
	Lincoln, NE 685	024			PO Number: N	amuel.white@r \/A	iedraska.gov	
					<u>ro Rumber.</u> I			
	: 22-Avoirdupois	weights					: September 11, 2023	
ID / Asset Number	-			Artifact(s) Description:			: See Next Page	
Manufacture	: Cast Iron				Clas	s Specification		
	-						: Good (some wear)	
Reference Standards L	<u>Jsed:</u>			Procedure Used:			ent Used:	
NSL lb standards				NIST HB 6969, SOP 8 (2019)	) M	ettler XPR3200	3	
				<u>Metrologist:</u> JPL				
Environmental Cond.	Temp:	22.3 °C	Pressure:	735.1 mmHg	Relative Humidity:	50.4 %		
			<i>.</i>	Pertinent Information				
				/or left within the maximu e correction plus the meas		-	-	
		-		eading. It is the decision of		-		
	-		-	m permissible error. All o				
hardness and ma	agnetism) were e	valuated a	ccording to	ASTM E617 (2018) and/or	NIST HB 105-1 (2019) f	or the artifacts	designated class.	
All corrections sta	ated in this repor	t correlate	e to a "Conv	entional Mass" (CM), also k	known as "apparent ma	ass", scale verse	es 8.0 g/cm <sup>3</sup> reference	
		ma	ass density a	nd an air density of 1.2 mg	g/cm³ at 20 °C.			
				s meet the accuracy requi			(2022),	
Appendix A Fundamenta	al Considerations,	, when usii	ng the weigl	nts for calibration of comm	ercial (Legal for Trade	e) scales.		
				Traceability Statement				
				ed to the Standards of the				
	•		-	e National Institute of Star	•.			
		-		curacy and measurement t only unique calibration nu				
				fact(s) described in this cer		ierening mease		
				Uncertainty Statement				
				s reported for the standard			• •	
				e values which are less than . The combined standard u				
				.45 percent level of confid				
consistent with the	Guide to the Exp	pression of	f Uncertaint	y in Measurement (2008, r	evised 2012). Some c	components of t	he calibration can be	
_				f evaluation of uncertainty				
observations taken. A	haghetic testing l	ias not be	en pertorme	ed, therefore, there are no	components for the e	errects of it in t	ne uncertainty budget.	
L								



# 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

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DEPARTMENT OF AGRICULTURE

Calibrat	ion Date: Se	ptember 11, 2023			Certificat	e Numbe	r: 2023-123-	·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)	.,	NIST Class F MPE ± (g)	Assumed Density (g/cm <sup>3</sup> )
15 lb	WM15-7	-0.470	Y	0.260	0.085	2.01	0.68	7.2
15 lb	WM15-8	0.245	Ν	0.245	0.085	2.01	0.68	7.2
25 lb	WM-D1	0.05	N	0.05	0.14	2.01	1.1	7.2
25 lb	WM-D2	0.53	Ν	0.53	0.14	2.01	1.1	7.2
25 lb	WM-D3	0.70	N	0.70	0.14	2.01	1.1	7.2
25 lb	WM-D4	0.72	N	0.72	0.14	2.01	1.1	7.2
<u>25 lb</u>	<u>WM-D5</u>	0.88	N	0.88	0.14	2.01	1.1	7.2
<u>25 lb</u>	<u>WM-D6</u>	0.31	N	0.31	0.14	2.01	1.1	7.2
25 lb	WM-D7	-1.16	Y	-0.60	0.14	2.01	1.1	7.2
<u>25 lb</u>	WM-D8	-1.30	Y	-0.77	0.14	2.01	1.1	7.2
25 lb	WM-D9	0.97	Y	-0.78	0.14	2.01	1.1	7.2
<u>25 lb</u>	WM-D10	-0.49	N	-0.49	0.14	2.01	1.1	7.2
<u>25 lb</u>	WM-D11	-0.69	N	-0.69	0.14	2.01	1.1	7.2
<u>25 lb</u>	WM-D12	-0.94	Y	-0.49	0.14	2.01	1.1	7.2
<u>25 lb</u>	WM-D13	0.39	N	0.39	0.14	2.01	1.1	7.2
<u>25 lb</u>	<u>WM-D14</u>	0.54	N	0.54	0.14	2.01	1.1	7.2
25 lb	WM-D15	0.11	N	0.11	0.14	2.01	1.1	7.2
<u>25 lb</u>	<u>WM-D16</u>	-0.96	<u>N</u>	-0.96	0.14	2.01	1.1	7.2
25 lb	WM-D17	-0.88	Y	-0.33	0.14	2.01	1.1	7.2
<u>25 lb</u>	WM-D18	-0.66	N	-0.66	0.14	2.01	1.1	7.2
25 lb	WM-D19	-0.70	N	-0.70	0.14	2.01	1.1	7.2
25 lb	WM-D20	-0.42	N	-0.42	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

9/19/2023

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.

Director of Agriculture Sherry Vinton

Calibrati	F AGRICULTURE		r	Contifi	anto of Calibrati	00			vw.nda.nebraska.
	on Date:	9/12/2023			cate of Calibrati olume Transfer		Certifica	ate Number:	2023-123-2
			Home Cut	itted		Outwalter 1 P			
	Quantity	Nominal Volume	Items Subm Manut	facturer	Туре	Submitted By:	3721 West Cumir	•	
	2	5 gal			Test Measure 4" Neck		Lincoln, NE 68524		
	2	J gai	Seraphin		Test Measure 4 Meck	POC:	Sam White 402-471-3422		
				Te	st Results		samuel.white@ne	ebraska.gov	
	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	40702-A	SS	0.0000265	5.0009 gal	5.0009 gal	0.0012 gal	2.02	
	5 gal	40702-B	SS	0.0000265	5.0024 gal	5.0000 gal	0.0012 gal	2.02	
		1			-	pecifically listed on this	Ũ		
ts (SI) through asurement trad asurement trad	n the National Insceedulity within the ceability within the ceability for the a ceability for the a	port have been compared stitute of Standards and le level of uncertainty report intifact(s) described in this	Technology (NIS orted by this lab	ST) and are part	of a comprehensive n	neasurement assuranc	e program for ensu	uring continued	d accuracy and
n reference va , to give the ex Expression of certainty by the tinent Inform ce artifact(s) list en the correcti	lues which are le panded uncertain Uncertainty in N statistical analys ation: ed above have b on plus the meas	ty includes uncertainties ess than surveillance limit nty, which defines an inte leasurement (2008, revis sis (standard deviation) fr veen found and/or left with surement uncertainty is eve eed 95% of the maximum	is and the stand erval with a 95.4 ed 2012). Som rom the observa nin the maximun qual to or less th	lard uncertainty 5 percent level of e components of tions taken. n permissible eri nan the maximur	for any uncorrected er of confidence. The exp of the calibration can be ror for the specification n permissible error. It	rors. The combined sta anded uncertainty pres e evaluated through a n stated above, except is the decision of the L	andard uncertainty sented in this repor Fype A evaluation, as noted. An artifa aboratory to adjusi	ris multiplied by rt is consistent or the method act is considere t the artifact(s)	y a coverage fac with the Guide t of evaluation of ed in-compliance when the sum of
m reference va , to give the ex Expression of certainty by the rtinent Inform e artifact(s) list en the correcti correction and ndition of Iten Clea	lues which are le panded uncertain Uncertainty in M statistical analys ation: ed above have b on plus the meas d uncertainty exco n(s) Submitted ned and ready for	ess than surveillance limit nty, which defines an inte Aeasurement (2008, revis sis (standard deviation) fr eeen found and/or left with surement uncertainty is e eed 95% of the maximum for Calibration: or calibration	is and the stand erval with a 95.4 ed 2012). Som rom the observa nin the maximun qual to or less th	lard uncertainty 5 percent level of e components of tions taken. n permissible eri nan the maximur	for any uncorrected er of confidence. The exp of the calibration can be ror for the specification n permissible error. It	rors. The combined sta anded uncertainty pres e evaluated through a n stated above, except is the decision of the L tions were evaluated a <u>Laboratory Referent</u> 5 gal SP NE 1586	andard uncertainty sented in this repor Type A evaluation, as noted. An artifa aboratory to adjus ccording to NIST I	is multiplied by rt is consistent or the method act is considere t the artifact(s) HB 105-3 (201	y a coverage fac with the Guide t of evaluation of ed in-compliance when the sum of
m reference va , to give the ex Expression of certainty by the rtinent Inform e artifact(s) list en the correcti correction and ndition of Iten Clea	lues which are le panded uncertain Uncertainty in N statistical analys ation: ed above have b on plus the meas d uncertainty exce n(s) Submitted	ess than surveillance limit nty, which defines an inte leasurement (2008, revis sis (standard deviation) fr eeen found and/or left with surement uncertainty is e eed 95% of the maximum for Calibration: bor calibration	is and the stand erval with a 95.4 ed 2012). Som rom the observa nin the maximun qual to or less th	lard uncertainty 5 percent level of e components of tions taken. n permissible eri nan the maximur	for any uncorrected er of confidence. The exp of the calibration can be ror for the specification n permissible error. It	rors. The combined sta anded uncertainty pres e evaluated through a <sup>-</sup> n stated above, except is the decision of the L tions were evaluated a <u>Laboratory Reference</u>	andard uncertainty sented in this repor Fype A evaluation, as noted. An artifa aboratory to adjus ccording to NIST I	is multiplied by rt is consistent or the method act is considere t the artifact(s) HB 105-3 (201	y a coverage fact with the Guide tr of evaluation of ed in-compliance when the sum o
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m reference va , to give the ex . Expression of certainty by the rtinent Inform e artifact(s) list en the correcti- correction and	lues which are le panded uncertain Uncertainty in M statistical analys ation: ed above have b on plus the meas d uncertainty exce <u>m(s) Submitted</u> med and ready for <u>m(s) before Cal</u> Tested as For <u>conditions at tim</u> 22.9 732.50 9/11/2023	ess than surveillance limit nty, which defines an inte Aleasurement (2008, revis sis (standard deviation) fr ween found and/or left with surement uncertainty is eve eed 95% of the maximum for Calibration: or calibration libration: pund ne of calibration:	is and the stand rval with a 95.4 ed 2012). Som rom the observation nin the maximun qual to or less the permissible er	lard uncertainty 5 percent level of e components of tions taken.	for any uncorrected er of confidence. The exp f the calibration can be f the calibration can be ror for the specification n permissible error. It lerances and specifica	rors. The combined sta anded uncertainty pres e evaluated through a stated above, except is the decision of the L tions were evaluated a <u>Laboratory Reference</u> 5 gal SP NE 1586 <u>Procedure Used:</u> NISTIR 7383, SOP 1 <u>Water temperature a</u>	andard uncertainty sented in this repor Fype A evaluation, as noted. An artifa aboratory to adjus; ccording to NIST I ce Standard Used 9 (2019) at time of calibrat	is multiplied by rt is consistent or the method act is considere t the artifact(s) HB 105-3 (201 d:	y a coverage fact with the Guide tr of evaluation of ed in-compliance when the sum o
m reference va , to give the ex- e Expression of certainty by the rtinent Inform e artifact(s) list e orrection and clear clear clear eatment of Iter vironmental of Temp °C essure mHg te Submitted: J ac- el P. Lavicky,	lues which are le panded uncertain Uncertainty in M statistical analys attion: ed above have b on plus the meas d uncertainty exce m(s) Submitted med and ready for <u>m(s) before Cal</u> Tested as For <u>conditions at tim</u> 22.9 732.50 9/11/2023 <i>P</i> Metrologist	ss than surveillance limit nty, which defines an inte Aleasurement (2008, revis sis (standard deviation) fr ween found and/or left with surement uncertainty is eve eed 95% of the maximum for Calibration: or calibration libration: Dund me of calibration: Humidity %	s and the stand rval with a 95.4 ed 2012). Som rom the observation in the maximun qual to or less the permissible error 48.9	lard uncertainty 5 percent level of e components of tions taken. In permissible ern han the maximur ror. All of the to	for any uncorrected er of confidence. The exp of the calibration can be nor for the specification n permissible error. It erances and specification specification permissible error. It erances and specification specification permissible error. It erances and specification specification permissible error. It erances and specification permissible error. It erances and specification permissible error. It erances and specification permissible error. It erances and specification permissible error. It error be the specification permissible error. It error be specification permissible error be specification permissib	rors. The combined sta anded uncertainty pres e evaluated through a stated above, except is the decision of the L tions were evaluated a <u>Laboratory Reference</u> 5 gal SP NE 1586 <u>Procedure Used:</u> NISTIR 7383, SOP 1 <u>Water temperature a</u> 70.38	andard uncertainty sented in this repor Fype A evaluation, as noted. An artifa aboratory to adjus: ccording to NIST I ccording to NIST I	is multiplied by rt is consistent or the method act is considere t the artifact(s) HB 105-3 (201 d:	y a coverage fact with the Guide to of evaluation of ad in-compliance when the sum o 0).

# 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

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DEPARTMENT OF AGRICULTUR	E			www	w.nda.nebraska.gov
Calibration Date:	9/13/2023		f Calibration	Certificate Number:	2023-123-3
		of Volume	Transfer		
		Items Submitted:	Submitted By:	FSCP Area 90	

		Submitted By: FSCP Area 90		
Quantity	Nominal Volume	Manufacturer	Туре	3721 West Cuming St. Lincoln, NE 68524
3	5 gal	Seraphin	"Special" J Prover	POC: Sam White

POC: Sam White 402-471-3422 samuel.white@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)	( <i>k</i> )
5 gal	05-40547-04	SS	0.0000265	4.99971 gal	4.99971 gal	0.00082 gal	2.01
5 gal	05-40547-05	SS	0.0000265	4.99960 gal	4.99960 gal	0.00082 gal	2.01
5 gal	05-40547-06	SS	0.0000265	4.99982 gal	4.99982 gal	0.00082 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 m<sup>3</sup>

#### 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. 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 Clear	n(s) Submitted the state of the				<u>Laboratory Reference Standard Used;</u> 5 gal SP NE 1586
Treatment of Item(s) before Calibration: Repaired before Calibration					<u>Procedure Used:</u> NISTIR 7383, SOP 19 (2019)
Environmental co	onditions at tim	e of calibration:			Water temperature at time of calibration:
Temp °C	22.9	Humidity %	46.3		71.19 °F
Pressure mmHg	733.60				
Date Submitted:	9/11/2023				
9 - e	R3			9/21/2023	
Joel P. Lavicky,	Netrologist			Issue Date:	
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