



Dave Heineman  
Governor

# State of Nebraska

DEPARTMENT OF AGRICULTURE  
GREGORY A. IBACH  
Director

Nebraska Standards Laboratory  
3721 West Cuming Street  
Lincoln, NE 68524

## CERTIFICATION FOR STANDARDS OF MEASUREMENT

Agency: Food Safety & Consumer Protection  
Area 70

Date: 9/2/2014  
Agency ID: 70  
NE Cert No: 20140081  
P.O. No:

Submitted By: Scott Arner

Electronic Copy Page 1

Denomination	Serial Number	Weight Number	Tolerance	Accept/Reject
100 gal	18969	1	VL	A
20 gal	88220	1	VP	A
100 gal	8851397	1	VL	A
103 gal	A-4-L6998	1	VP	A

These field standards have been compared with our reference standards and found to be within the tolerances for their class, or condemned, as prescribed by the National Institute of Standards and Technology. These field standards also meet the required specifications.

The reference standards used are traceable to the National Institute of Standards and Technology (NIST). Our traceability is maintained through control charts, regional inter-comparisons and periodic recertifications. This certificate is issued by the Nebraska Department of Agriculture / Division of Weights and Measures. Reproduction of this certificate must include the entire document (including all attached papers).

- See 'Test Results' attached
- See report/letter attached

Craig E. Olsen

Nebraska State Metrologist

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Nebraska Standards Laboratory  
3721 West Cuming Street  
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**SOP 19 - Volume Transfer Test Results**

Agency ID: 70

Agency: Food Safety & Consumer Protection  
Area 70

Form No.: NE03LF12-R00

NE Cert No: 20140081

Date: 9/2/2014

P.O. No:

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Serial #: 18969  
Retest #: 0  
Denomination: 100 gal  
Observer: CEO

Eq Vol/cu.in.: 23100 cu.in.  
Tolerance Class: VL  
Material: SS  
Coef of Expansion: 0.0000265 °F

**Test Data**

Del#	Std ID	Delivery	Material	Coef of Exp	Water Temp	Water Density	Delta
1	100gal	99.9872	SS	0.0000265 /°F	67 °F	0.998315	0 in3

**Test Measure Information**

Water Temperature: 67.3 °F  
Water Density: 0.998315 g/cm<sup>3</sup>  
Scale Reading: -4 cu.in.

**Test Results**

Test Measure Volume @ 60° F at zero scale reading: 100.0071 gal.  
Tolerance: 0.0519 gal.  
Uncertainty: 0.0225 gal.

Accepted/Rejected: A

*1 cubic meter = 264.172 gallons*

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**SOP 19 - Volume Transfer Test Results**

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Serial #: 18969  
Retest #: 1  
Denomination: 100 gal  
Observer: CEO

Eq Vol/cu.in.: 23100 cu.in.  
Tolerance Class: VL  
Material: SS  
Coef of Expansion: 0.0000265 °F

**Test Data**

Del#	Std ID	Delivery	Material	Coef of Exp	Water Temp	Water Density	Delta
1	100gal	99.9872	SS	0.0000265 /°F	67.2 °F	0.998293	0 in3

**Test Measure Information**

Water Temperature: 67.2 °F  
Water Density: 0.998293 g/cm<sup>3</sup>  
Scale Reading: -4 cu.in.

**Test Results**

Test Measure Volume @ 60° F at zero scale reading: 100.0045 gal.  
Tolerance: 0.0519 gal.  
Uncertainty: 0.0225 gal.

Accepted/Rejected: A

*1 cubic meter = 264.172 gallons*

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Serial #: 8851397  
Retest #: 0  
Denomination: 100 gal  
Observer: CEO

Eq Vol/cu.in.: 23100 cu.in.  
Tolerance Class: VL  
Material: SS  
Coef of Expansion: 0.0000265 °F

**Test Data**

Del#	Std ID	Delivery	Material	Coef of Exp	Water Temp	Water Density	Delta
1	100gal	99.9872	SS	0.0000265 /°F	66.9 °F	0.998327	0 in3

**Test Measure Information**

Water Temperature: 67.1 °F  
Water Density: 0.998327 g/cm<sup>3</sup>  
Scale Reading: -5 cu.in.

**Test Results**

Test Measure Volume @ 60° F at zero scale reading: 100.0105 gal.  
Tolerance: 0.0519 gal.  
Uncertainty: 0.0225 gal.

Accepted/Rejected: A

*1 cubic meter = 264.172 gallons*

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Serial #: 8851397  
Retest #: 1  
Denomination: 100 gal  
Observer: CEO

Eq Vol/cu.in.: 23100 cu.in.  
Tolerance Class: VL  
Material: SS  
Coef of Expansion: 0.0000265 °F

**Test Data**

Del#	Std ID	Delivery	Material	Coef of Exp	Water Temp	Water Density	Delta
1	100gal	99.9872	SS	0.0000265 /°F	66.9 °F	0.998327	0 in3

**Test Measure Information**

Water Temperature: 67 °F  
Water Density: 0.998327 g/cm<sup>3</sup>  
Scale Reading: -5 cu.in.

**Test Results**

Test Measure Volume @ 60° F at zero scale reading: 100.0097 gal.  
Tolerance: 0.0519 gal.  
Uncertainty: 0.0225 gal.

Accepted/Rejected: A

*1 cubic meter = 264.172 gallons*

**Nebraska Standards Laboratory**  
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**SOP 21 - Pressure Volume (LPG) Test Results**

**Agency ID:** 70  
**Agency:** Food Safety & Consumer Protection  
 Area 70

**NE Cert No:** 20140081  
**Date:** 9/2/2014  
**P.O. No:**

*Form No.: NE04LF14-R00*

**Submitted By:** Scott Arner

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**Serial No:** 88220  
**Retest No:** 0  
**Denomination:** 20 gal  
**Observer:** CEO

**Eq Vol/gal:** 20 gal  
**Tolerance Class:** VP  
**Material:** MS  
**Coef of Expansion:** 0.0000186 /°F

**TEST DATA**

<b>Del#</b>	<b>Std ID</b>	<b>Delivery</b>	<b>Mat</b>	<b>Coef of Exp</b>	<b>Water Temp</b>	<b>Water Density</b>	<b>Delta</b>
1	5gal	4.9991	MS	0.0000265 /°F	71.4 °F	0.997794	0 gal.
2	5gal	4.9991	MS	0.0000265 /°F	69.6 °F	0.998015	0 gal.
3	5gal	4.9991	MS	0.0000265 /°F	68.8 °F	0.998110	0 gal.
4	5gal	4.9991	MS	0.0000265 /°F	67.9 °F	0.998214	0 gal.

**Test Measure Information**

**Water Temp:** 70 °F  
**Water Density:** 0.997967 g/cm3

**Reading @ 0 psi** 0.08 gal.  
**Reading @ 50 psi** 0.06 gal.  
**Reading @ 100 psi** 0.04 gal.  
**Reading @ 150 psi** 0.03 gal.  
**Reading @ 200 psi** 0.02 gal.

**Final Test Results**

**Z60 Delivery:** 19.999 gal.  
**Prover error @ 100 psi:** -0.047 gal.  
**Uncertainty of measurement:** 0.000 gal.  
**Tolerance:** 0.040 gal.  
**Accept/Reject:** R

**Prover Reading Corrections\***

<b>Press Corr @ 0 psi:</b>	-0.034 gal.
<b>Press Corr @ 50 psi:</b>	-0.017 gal.
<b>Press Corr @ 100 psi:</b>	0.000 gal.
<b>Press Corr @ 150 psi:</b>	0.007 gal.
<b>Press Corr @ 200 psi:</b>	0.014 gal.

*1 cubic meter = 264.172 gallons*

\* This table is to be used in making pressure corrections to prover readings.

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Serial No: 88220  
 Retest No: 1  
 Denomination: 20 gal  
 Observer: CEO

Eq Vol/gal: 20 gal  
 Tolerance Class: VP  
 Material: MS  
 Coef of Expansion: 0.0000186 /°F

**TEST DATA**

Del#	Std ID	Delivery	Mat	Coef of Exp	Water Temp	Water Density	Delta
1	5gal	4.9991	MS	0.0000265 /°F	71.4 °F	0.997794	0 gal.
2	5gal	4.9991	MS	0.0000265 /°F	69.6 °F	0.998015	0 gal.
3	5gal	4.9991	MS	0.0000265 /°F	68.8 °F	0.998110	0 gal.
4	5gal	4.9991	MS	0.0000265 /°F	67.9 °F	0.998214	0 gal.

**Test Measure Information**

Water Temp: 70 °F  
 Water Density: 0.997967 g/cm3

Reading @ 0 psi: 0.04 gal.  
 Reading @ 50 psi: 0.02 gal.  
 Reading @ 100 psi: 0 gal.  
 Reading @ 150 psi: -0.01 gal.  
 Reading @ 200 psi: -0.02 gal.

**Final Test Results**

Z60 Delivery: 19.999 gal.  
 Prover error @ 100 psi: -0.007 gal.  
 Uncertainty of measurement: 0.000 gal.  
 Tolerance: 0.040 gal.  
 Accept/Reject: A

**Prover Reading Corrections\***

Press Corr @ 0 psi:	-0.034 gal.
Press Corr @ 50 psi:	-0.017 gal.
Press Corr @ 100 psi:	0.000 gal.
Press Corr @ 150 psi:	0.007 gal.
Press Corr @ 200 psi:	0.014 gal.

1 cubic meter = 264.172 gallons

\* This table is to be used in making pressure corrections to prover readings.

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**SOP 21 - Pressure Volume (LPG) Test Results**

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<b>Serial No:</b> A-4-L6998 <b>Retest No:</b> 0 <b>Denomination:</b> 103 gal <b>Observer:</b> CEO	<b>Eq Vol/gal:</b> 103 gal <b>Tolerance Class:</b> VP <b>Material:</b> MS <b>Coef of Expansion:</b> 0.0000186 /°F
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**TEST DATA**

Del#	Std ID	Delivery	Mat	Coef of Exp	Water Temp	Water Density	Delta
1	100gal	99.9872	MS	0.0000265 /°F	66.7 °F	0.998349	0 gal.
2	1gal	1	MS	0.00001 /°F	66.7 °F	0.998349	0 gal.
3	1gal	1	MS	0.00001 /°F	66.7 °F	0.998349	0 gal.
4	1gal	1	MS	0.00001 /°F	66.7 °F	0.998349	0 gal.

**Test Measure Information**

**Water Temp:** 67 °F  
**Water Density:** 0.998315 g/cm3

**Reading @ 0 psi** 0.3 gal.  
**Reading @ 50 psi** 0.17 gal.  
**Reading @ 100 psi** 0.07 gal.  
**Reading @ 150 psi** 0 gal.  
**Reading @ 200 psi** -0.1 gal.

**Final Test Results**

**Z60 Delivery:** 102.995 gal.  
**Prover error @ 100 psi:** -0.108 gal.  
**Uncertainty of measurement:** 0.000 gal.  
**Tolerance:** 0.200 gal.  
**Accept/Reject:** A

**Prover Reading Corrections\***

<b>Press Corr @ 0 psi:</b>	-0.197 gal.
<b>Press Corr @ 50 psi:</b>	-0.083 gal.
<b>Press Corr @ 100 psi:</b>	0.000 gal.
<b>Press Corr @ 150 psi:</b>	0.053 gal.
<b>Press Corr @ 200 psi:</b>	0.137 gal.

*1 cubic meter = 264.172 gallons*

\* This table is to be used in making pressure corrections to prover readings.



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Form No.: NE04LF14-R00

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Serial No: A-4-L6998	Eq Vol/gal: 103 gal
Retest No: 1	Tolerance Class: VP
Denomination: 103 gal	Material: MS
Observer: CEO	Coef of Expansion: 0.0000186 /°F

**TEST DATA**

Del#	Std ID	Delivery	Mat	Coef of Exp	Water Temp	Water Density	Delta
1	100gal	99.9872	MS	0.0000265 /°F	66.7 °F	0.998349	0 gal.
2	1gal	1	MS	0.00001 /°F	66.7 °F	0.998349	0 gal.
3	1gal	1	MS	0.00001 /°F	66.7 °F	0.998349	0 gal.
4	1gal	1	MS	0.00001 /°F	66.7 °F	0.998349	0 gal.

**Test Measure Information**

Water Temp: 67.5 °F  
 Water Density: 0.998259 g/cm3

Reading @ 0 psi	0.19 gal.
Reading @ 50 psi	0.06 gal.
Reading @ 100 psi	-0.02 gal.
Reading @ 150 psi	-0.12 gal.
Reading @ 200 psi	-0.2 gal.

**Final Test Results**

Z60 Delivery: 103.000 gal.  
 Prover error @ 100 psi: -0.013 gal.  
 Uncertainty of measurement: 0.000 gal.  
 Tolerance: 0.200 gal.  
 Accept/Reject: A

**Prover Reading Corrections\***

Press Corr @ 0 psi:	-0.177 gal.
Press Corr @ 50 psi:	-0.063 gal.
Press Corr @ 100 psi:	0.000 gal.
Press Corr @ 150 psi:	0.083 gal.
Press Corr @ 200 psi:	0.147 gal.

*1 cubic meter = 264.172 gallons*

\* This table is to be used in making pressure corrections to prover readings.