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Governor

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DEPARTMENT OF AGRICULTURE
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Nebraska Standards Laboratory
3721 West Cuming Street
Lincoln, NE 68524

CERTIFICATION FOR STANDARDS OF MEASUREMENT

Agency: Food Safety & Consumer Protection
Area 70

Date: 9/4/2012
Agency ID: 70
NE Cert No: 20120108
P.O. No:

Submitted By: Scott Arner

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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

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Nebraska Standards Laboratory
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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: 20120108

Date: 9/4/2012

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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	67.5 °F	0.998259	0 in3

Test Measure Information

Water Temperature: 67.5 °F
Water Density: 0.998259 g/cm³
Scale Reading: -3 cu.in.

Test Results

Test Measure Volume @ 60° F at zero scale reading: 100.0002 gal.

Tolerance: 0.0519 gal.

Uncertainty: 0.0223 gal.

Accepted/Rejected: A

1 cubic meter = 264.172 gallons

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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	67.7 °F	0.998237	0 in3

Test Measure Information

Water Temperature: 67.6 °F
Water Density: 0.998237 g/cm³
Scale Reading: -2 cu.in.

Test Results

Test Measure Volume @ 60° F at zero scale reading: 99.9950 gal.
Tolerance: 0.0519 gal.
Uncertainty: 0.0223 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	70.7 °F	0.997881	0 in3

Test Measure Information

Water Temperature: 69.9 °F
Water Density: 0.997881 g/cm³
Scale Reading: -4 cu.in.

Test Results

Test Measure Volume @ 60° F at zero scale reading: 99.9969 gal.
Tolerance: 0.0519 gal.
Uncertainty: 0.0223 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	69.9 °F	0.997979	0 in3

Test Measure Information

Water Temperature: 70.1 °F
Water Density: 0.997979 g/cm³
Scale Reading: -5 cu.in.

Test Results

Test Measure Volume @ 60° F at zero scale reading: 100.0107 gal.

Tolerance: 0.0519 gal.

Uncertainty: 0.0223 gal.

Accepted/Rejected: A

1 cubic meter = 264.172 gallons

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SOP 21 - Pressure Volume (LPG) Test Results

Agency ID: 70
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NE Cert No: 20120108
Date: 9/4/2012
P.O. No:

Form No.: NE04LF14-R00

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Serial No: 88220	Eq Vol/gal: 20 gal
Retest No: 0	Tolerance Class: VP
Denomination: 20 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	5gal	4.9991	MS	0.0000265 /°F	71.3 °F	0.997807	0 gal.
2	5gal	4.9991	MS	0.0000265 /°F	70.4 °F	0.997918	0 gal.
3	5gal	4.9991	MS	0.0000265 /°F	69.5 °F	0.998027	0 gal.
4	5gal	4.9991	MS	0.0000265 /°F	68.4 °F	0.998156	0 gal.

Test Measure Information

Water Temp: 72 °F
Water Density: 0.997718 g/cm³

Reading @ 0 psi 0.07 gal.
Reading @ 50 psi 0.05 gal.
Reading @ 100 psi 0.03 gal.
Reading @ 150 psi 0.02 gal.
Reading @ 200 psi 0.01 gal.

Final Test Results

Z60 Delivery: 20.002 gal.
Prover error @ 100 psi: -0.034 gal.
Uncertainty of measurement: 0.002 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

Agency ID: 70
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Serial No: A-4-L6998	Eq Vol/gal: 103 gal
Retest No: 0	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	67.7 °F	0.998237	0 gal.
2	1gal	1	MS	0.00001 /°F	67.7 °F	0.998237	0 gal.
3	1gal	1	MS	0.00001 /°F	67.7 °F	0.998237	0 gal.
4	1gal	1	MS	0.00001 /°F	67.7 °F	0.998237	0 gal.

Test Measure Information

Water Temp: 68 °F
Water Density: 0.998202 g/cm³

Reading @ 0 psi 0.27 gal.
Reading @ 50 psi 0.11 gal.
Reading @ 100 psi 0 gal.
Reading @ 150 psi -0.07 gal.
Reading @ 200 psi -0.17 gal.

Final Test Results

Z60 Delivery: 102.996 gal.
Prover error @ 100 psi: -0.037 gal.
Uncertainty of measurement: 0.022 gal.
Tolerance: 0.200 gal.
Accept/Reject: A

Prover Reading Corrections*

Press Corr @ 0 psi:	-0.237 gal.
Press Corr @ 50 psi:	-0.093 gal.
Press Corr @ 100 psi:	0.000 gal.
Press Corr @ 150 psi:	0.053 gal.
Press Corr @ 200 psi:	0.137 gal.

1 cubic meter = 264.172 gallons

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