



Receipt Date: January 24, 2017
Cal. Date: January 24, 2017
Report Date: January 24, 2017

Report No.: 337125
Serial No.: 38086
Barcode: 201128

Calibration Certificate

HOBBS, INC.
2389 BUSINESS LOOP I-94
MANDAN, ND 58554
Contact: Jeff Engel
Phone: 701-663-6363
PO Number: None
SOP: 19
Technician ID: 19

Item(s) Submitted: 5 Gallon Measure
Manufacturer: Seraphin
Material: Stainless Steel
Type: Measure
Condition: Excellent
Temperature: 19.1 °C
Pressure: 733.9 mmHg
Relative Humidity: 47.8 %
Standard H₂O Temp.: 9.7 °C
Artifact H₂O Temp.: 9.9 °C

Nominal Volume (gal)		Calibrated		k	U (in ³)	CCE (°F)
		Volume (gal)	Error (in ³)			
5	As Found	4.9997	-0.08	2.06	0.25	0.0000265
	As Left	4.9997	-0.08			

Neck Calibration: No neck calibration was performed at this time.

This measure has been calibrated as a "to contain after wet down" vessel with a pour time of 30 seconds followed by a drain time of 10 seconds after cessation of full flow.

The vessel listed above has been compared by volumetric transfer methods to the standards of the State of Minnesota using water as the calibration medium. The standards are traceable to the SI through NIST. Statistical process control charts indicate standards are currently in control. All gauges were sealed in place.

All tolerances and specifications were evaluated according to NIST Handbook 105-3 (2010). Uncertainty calculations contain the components in NIST SOP 19 and conform to the ISO/IEC Guide to the Expression of Uncertainty in Measurement (2008), including coverage factors (k) calculated at the approximate 95.45 % confidence level. Results apply to item identified in this report only.

CCE is the cubical coefficient of thermal expansion, and the reference temperature is 60 °F
Conversion to SI unit: 1 gallon = 231 in³ = 0.00378541 m³.

Erik Alfvin

Metrologist

Reviewed by:
Pete Whebbe

Metrologist



Receipt Date: January 24, 2017
Cal. Date: January 24, 2017
Report Date: January 24, 2017

Report No.: 337126
Serial No.: 45206
Barcode: 201129

Calibration Certificate

HOBBS, INC.
2389 BUSINESS LOOP I-94
MANDAN, ND 58554
Contact: Jeff Engel
Phone: 701-663-6363
PO Number: None
SOP: 19
Technician ID: 19

Item(s) Submitted: 5 Gallon Measure
Manufacturer: Seraphin
Material: Mild Steel
Type: Measure
Condition: Excellent
Temperature: 19.1 °C
Pressure: 733.9 mmHg
Relative Humidity: 47.8 %
Standard H₂O Temp.: 9.6 °C
Artifact H₂O Temp.: 9.7 °C

Nominal Volume (gal)		Calibrated		<i>k</i>	U (in ³)	CCE (°F)
		Volume (gal)	Error (in ³)			
5	As Found	4.9985	-0.35	2.06	0.25	0.0000186
	As Left	4.9993	-0.16			

Neck Calibration: No neck calibration was performed at this time.

This measure has been calibrated as a "to contain after wet down" vessel with a pour time of 30 seconds followed by a drain time of 10 seconds after cessation of full flow.

The vessel listed above has been compared by volumetric transfer methods to the standards of the State of Minnesota using water as the calibration medium. The standards are traceable to the SI through NIST. Statistical process control charts indicate standards are currently in control. All gauges were sealed in place.

All tolerances and specifications were evaluated according to NIST Handbook 105-3 (2010). Uncertainty calculations contain the components in NIST SOP 19 and conform to the ISO/IEC Guide to the Expression of Uncertainty in Measurement (2008), including coverage factors (*k*) calculated at the approximate 95.45 % confidence level. Results apply to item identified in this report only.

CCE is the cubical coefficient of thermal expansion, and the reference temperature is 60 °F
Conversion to SI unit: 1 gallon = 231 in³ = 0.00378541 m³.

Erik Alfvin

Metrologist

Reviewed by:

Pete Whebbe

Metrologist



Receipt Date: January 24, 2017
Cal. Date: January 24, 2017
Report Date: January 24, 2017

Report No.: 337127
Serial No.: 40713
Barcode: 201131

Calibration Certificate

HOBBS, INC.
2389 BUSINESS LOOP I-94
MANDAN, ND 58554

Contact: Jeff Engel
Phone: 701-663-6363
PO Number: None
SOP: 19
Technician ID: 19

Item(s) Submitted: 5 Gallon Measure
Manufacturer: Seraphin
Material: Mild Steel
Type: Measure
Condition: Excellent
Temperature: 19.1 °C
Pressure: 733.9 mmHg
Relative Humidity: 47.8 %
Standard H₂O Temp.: 9.8 °C
Artifact H₂O Temp.: 10.0 °C

Nominal Volume (gal)		Calibrated Volume (gal)	Error (in ³)	<i>k</i>	\bar{U} (in ³)	CCE (1/°F)
5	As Found	4.9955	-1.04	2.06	0.25	0.0000186
	As Left	4.9992	-0.19			

Neck Calibration: No neck calibration was performed at this time.

This measure has been calibrated as a "to contain after wet down" vessel with a pour time of 30 seconds followed by a drain time of 10 seconds after cessation of full flow.

The vessel listed above has been compared by volumetric transfer methods to the standards of the State of Minnesota using water as the calibration medium. The standards are traceable to the SI through NIST. Statistical process control charts indicate standards are currently in control. All gauges were sealed in place.

All tolerances and specifications were evaluated according to NIST Handbook 105-3 (2010). Uncertainty calculations contain the components in NIST SOP 19 and conform to the ISO/IEC Guide to the Expression of Uncertainty in Measurement (2008), including coverage factors (*k*) calculated at the approximate 95.45 % confidence level. Results apply to item identified in this report only.

CCE is the cubical coefficient of thermal expansion, and the reference temperature is 60 °F
Conversion to SI unit: 1 gallon = 231 in³ = 0.00378541 m³.

Erik Alfvin

Metrologist

Reviewed by:

Pete Whebbe

Metrologist



Receipt Date: January 24, 2017
Cal. Date: January 24, 2017
Report Date: January 24, 2017

Report No.: 337128
Serial No.: 35213-8
Barcode: 201130

Calibration Certificate

HOBBS, INC.
2389 BUSINESS LOOP I-94
MANDAN, ND 58554

Contact: Jeff Engel
Phone: 701-663-6363
PO Number: None
SOP: 19
Technician ID: 19

Item(s) Submitted: 5 Gallon Measure
Manufacturer: Seraphin
Material: Stainless Steel
Type: Measure
Condition: Excellent
Temperature: 19.1 °C
Pressure: 733.9 mmHg
Relative Humidity: 47.8 %
Standard H₂O Temp.: 9.7 °C
Artifact H₂O Temp.: 9.8 °C

Nominal		Calibrated				
Volume (gal)		Volume (gal)	Error (in ³)	<i>k</i>	U (in ³)	CCE (°F)
5	As Found	4.9997	-0.06	2.06	0.25	0.0000265
	As Left	4.9997	-0.06			

Neck Calibration: No neck calibration was performed at this time.

This measure has been calibrated as a "to contain after wet down" vessel with a pour time of 30 seconds followed by a drain time of 10 seconds after cessation of full flow.

The vessel listed above has been compared by volumetric transfer methods to the standards of the State of Minnesota using water as the calibration medium. The standards are traceable to the SI through NIST. Statistical process control charts indicate standards are currently in control. All gauges were sealed in place.

All tolerances and specifications were evaluated according to NIST Handbook 105-3 (2010). Uncertainty calculations contain the components in NIST SOP 19 and conform to the ISO/IEC Guide to the Expression of Uncertainty in Measurement (2008), including coverage factors (*k*) calculated at the approximate 95.45 % confidence level. Results apply to item identified in this report only.

CCE is the cubical coefficient of thermal expansion, and the reference temperature is 60 °F
Conversion to SI unit: 1 gallon = 231 in³ = 0.00378541 m³.

Erik Alfvin

Metrologist

Reviewed by:
Pete Whebbe

Metrologist



Receipt Date: January 24, 2017
Cal. Date: January 24, 2017
Report Date: January 24, 2017

Report No.: 337129
Serial No.: 1362
Barcode: 201127

Calibration Certificate

HOBBS, INC.
2389 BUSINESS LOOP I-94
MANDAN, ND 58554
Contact: JEFF ENGEL
Phone: 701-663-6363
PO Number: NONE
SOP: 19
Technician ID: 11

Item(s) Submitted: 100 Gallon Prover
Manufacturer: Gas Service & Supply
Material: Stainless Steel
Type: No Bottom Zero
Condition: Good
Temperature: 19.3 °C
Pressure: 734.5 mmHg
Relative Humidity: 42.4 %
Standard H₂O Temp.: 7.2 °C
Artifact H₂O Temp.: 7.4 °C

Nominal		Calibrated				
Volume (gal)		Volume (gal)	Error (in ³)	<i>k</i>	U (in ³)	CCE (°F)
100	As Found	100.003	0.7	2.00	2.3	0.0000265
	As Left	100.003	0.7			

Neck Calibration: No neck calibration was performed at this time.

This prover has been calibrated as a "to contain after wet down" vessel with a drain time of 30 seconds after cessation of full flow.

The vessel listed above has been compared by volumetric transfer methods to the standards of the State of Minnesota using water as the calibration medium. The standards are traceable to the SI through NIST. Statistical process control charts indicate standards are currently in control. All gauges were sealed in place.

All tolerances and specifications were evaluated according to NIST Handbook 105-3 (2010). Uncertainty calculations contain the components in NIST SOP 19 and conform to the ISO/IEC Guide to the Expression of Uncertainty in Measurement (2008), including coverage factors (*k*) calculated at the approximate 95.45 % confidence level. Results apply to item identified in this report only.

CCE is the cubical coefficient of thermal expansion, and the reference temperature is 60 °F
Conversion to SI unit: 1 gallon = 231 in³ = 0.00378541 m³.

Pete Whelbe

Metrologist

Reviewed by:

Erik Alfvin

Metrologist

United States Department of Commerce

National Institute of Standards and Technology

Certificate of Metrological Traceability For:

Minnesota

This laboratory has demonstrated evidence of an unbroken chain of metrological traceability of its standards to the international system of units (SI), documented measurement uncertainties, uses documented measurement procedures, successfully completed training and proficiency tests, documented calibration intervals, submitted a quality management system, and demonstrated suitable measurement assurance for the Scope listed on this certificate.

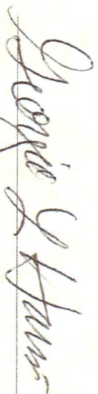
The Office of Weights and Measures Program assesses laboratories to NIST Handbook 143 - Program Handbook for State Weights and Measures Laboratories and ISO/IEC 17025:2005.

Scope

Mass Echelon I	Mass Echelon III	Volume Gravimetric, I
10 kg to 1 mg	50 kg to 1 mg	20 L to 10 mL
Mass Echelon II	5000 lb to 0.001 lb	100 gal to 0.25 qt
50 kg to 1 mg	4 oz to 0.03125 oz	Volume Transfer, II
1000 lb to 0.001 lb	Weight Carts	1500 gal to 5 gal
4 oz to 0.03125 oz	10 000 lb to 2000 lb	100 gal to 25 gal LPG
	Wheel Load Weighers	
	20 000 lb to 2000 lb	
	Railroad Test Cars	
	110 000 lb to 80 000 lb	



2017


Georgia L. Harris, Acting Chief
NIST Office of Weights and Measures

Effective Dates: 2017-01-01 to 2017-12-31

Amended: 2016-12-31
Scope modified for 2017.