



Certificate of Analysis

Number: 2500-16060005-002A

Windsor Laboratory
208 Main Street – Unit A
Windsor, CO 80550

Amanda Graves
Sandridge
123 Robert Skerr Ave.
Oklahoma City, OK 73102

June 20, 2016

Station Name: Hebron
Station Number: 0780 2-18H
Sample Point: Heater Treater
Cylinder No: 4030-00789
Analyzed: 06/17/2016 10:06:47 by AH

Sampled By: Bob Burns
Sample Of: Gas Spot
Sample Date: 06/15/2016
Sample Conditions: 85 psig, @ 113 °F
Method: GPA 2286

Analytical Data

Components	Mol. %	Wt. %	GPM at 14.696 psia		
Nitrogen	1.185	1.261		GPM TOTAL C2+	8.507
Carbon Dioxide	2.121	3.546		GPM TOTAL C3+	5.694
Methane	65.491	39.914		GPM TOTAL iC5+	0.760
Ethane	10.483	11.975	2.813		
Propane	11.068	18.541	3.059		
Iso-butane	1.397	3.085	0.459		
n-Butane	4.477	9.886	1.416		
Iso-pentane	0.989	2.711	0.363		
n-Pentane	1.092	2.993	0.397		
Hexanes Plus	1.697	6.088	NIL		
	100.000	100.000	8.507		

Calculated Physical Properties	Total	C6+
Relative Density Real Gas	0.9136	3.2454
Calculated Molecular Weight	26.32	94.00
Compressibility Factor	0.9942	

GPA 2172-09 Calculation:

Calculated Gross BTU per ft³ @ 14.696 psia & 60°F

Real Gas Dry BTU	1495	5075
Water Sat. Gas Base BTU	1469	4986

Comments: H₂O Mol% : 1.744 ; Wt% : 1.201
H₂S 0 ppm

Hydrocarbon Laboratory Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.



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Components	Mol. %	Wt. %	GPM at 14.696 psia		
Nitrogen	1.185	1.261		GPM TOTAL C2+	8.779
Carbon Dioxide	2.121	3.546		GPM TOTAL C3+	5.966
Methane	65.491	39.914		GPM TOTAL iC5+	1.032
Ethane	10.483	11.975	2.813		
Propane	11.068	18.541	3.059		
Iso-Butane	1.397	3.085	0.459		
n-Butane	4.477	9.886	1.416		
Iso-Pentane	0.989	2.711	0.363		
n-Pentane	1.092	2.993	0.397		
Hexanes	0.670	2.164	0.272		
Heptanes Plus	1.027	3.924	NIL		
	100.000	100.000	8.779		

Calculated Physical Properties	Total	C7+
Relative Density Real Gas	0.9136	3.4540
Calculated Molecular Weight	26.32	100.04
Compressibility Factor	0.9942	

GPA 2172-09 Calculation:

Calculated Gross BTU per ft³ @ 14.696 psia & 60°F

Real Gas Dry BTU	1495	5342
Water Sat. Gas Base BTU	1469	5249

Comments: H₂O Mol% : 1.744 ; Wt% : 1.201
H₂S 0 ppm

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Analytical Data

Components	Mol. %	Wt. %	GPM at 14.696 psia
Nitrogen	1.185	1.261	
Carbon Dioxide	2.121	3.546	
Methane	65.491	39.914	
Ethane	10.483	11.975	2.813
Propane	11.068	18.541	3.059
Iso-Butane	1.397	3.085	0.459
n-Butane	4.477	9.886	1.416
Iso-Pentane	0.989	2.711	0.363
n-Pentane	1.092	2.993	0.397
i-Hexanes	0.417	1.334	0.167
n-Hexane	0.253	0.830	0.105
Benzene	0.024	0.071	0.007
Cyclohexane	0.078	0.249	0.027
i-Heptanes	0.423	1.488	0.169
n-Heptane	0.082	0.318	0.039
Toluene	0.027	0.093	0.009
i-Octanes	0.223	0.898	0.100
n-Octane	0.034	0.144	0.017
Ethylbenzene	0.006	0.023	0.002
Xylenes	0.013	0.054	0.005
i-Nonanes	0.061	0.266	0.029
n-Nonane	0.011	0.053	0.006
Decane Plus	0.045	0.267	NIL
	100.000	100.000	9.189

Calculated Physical Properties	Total	C10+
Calculated Molecular Weight	26.32	141.64
GPA 2172-09 Calculation:		
Calculated Gross BTU per ft³ @ 14.696 psia & 60°F		
Real Gas Dry BTU	1495.1	7372.4
Water Sat. Gas Base BTU	1469.0	7243.8
Relative Density Real Gas	0.9136	4.8833
Compressibility Factor	0.9942	

Comments: H2S 0 ppm

Hydrocarbon Laboratory Manager

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