



GAS MEASUREMENT EMISSIONS TESTING LABORATORY  
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**EXTENDED HYDROCARBON LIQUID STUDY  
CERTIFICATE OF ANALYSIS**

<b>Company:</b>	<b>Synergy Resources</b>	<b>Sample Name:</b>	<b>Wolfson #23-15 Unpressurized Liquid</b>
Sample Date:	5/26/2016	Sample Number:	16060108-07
Sample Facility:	Wolfson #23-15	Date Tested:	6/6/2016
Sample Equipment:	Sight Glass	Test Method:	GPA 2186M
Sample Location:	Not Indicated	Date Reported:	6/7/2016
Sample Pressure:	Ambient		
Sample Temperature:	82°F		
Sampling Method:	GPA-2174		
Type Sample:	Spot		

Components	Mole %	Weight %	Liq. Vol. %
Carbon Dioxide	0.015	0.004	0.004
Nitrogen	0.509	0.094	0.086
Methane	0.227	0.024	0.059
Ethane	0.655	0.129	0.269
Propane	2.630	0.761	1.113
iso-Butane	1.741	0.664	0.875
n-Butane	6.418	2.522	3.191
iso-Pentane	3.530	1.672	1.983
n-Pentane	3.349	1.586	1.865
2-Methylpentane	2.102	1.189	1.348
3-Methylpentane	0.838	0.474	0.537
Heptanes	6.945	4.568	4.998
Octanes	6.941	5.205	5.526
Nonanes	4.307	3.569	3.379
Decanes+	51.434	72.335	69.828
Benzene	0.491	0.252	0.211
Toluene	1.991	1.204	1.024
Ethylbenzene	0.152	0.106	0.090
m-Xylene	1.645	1.147	0.978
p-Xylene	0.266	0.185	0.158
o-Xylene	0.421	0.293	0.246
n-Hexane	2.862	1.619	1.808
2,2,4-Trimethylpentane	0.531	0.398	0.424
<b>Totals</b>	<b>100.000</b>	<b>100.000</b>	<b>100.000</b>

**TOTAL C31+ EXTENDED REPORT  
CERTIFICATE OF ANALYSIS**

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m-Xylene	1.645	1.147	0.978
p-Xylene	0.266	0.185	0.158
o-Xylene	0.421	0.293	0.246
Nonanes	4.307	3.569	3.379
Decanes	3.092	2.847	2.582
Undecanes (C11)	6.073	5.671	5.761
Dodecanes (C12)	7.656	7.999	8.016
Tridecanes (C13)	4.425	4.849	4.795
Tetradecanes (C14)	3.691	4.806	4.715
Pentadecanes (C15)	5.865	8.178	7.949
Hexadecanes (C16)	2.476	3.680	3.549
Heptadecanes (C17)	3.832	6.049	5.803
Octadecanes (C18)	2.479	4.141	3.952
Nonadecanes (C19)	2.332	4.110	3.923
Eicosanes (C20)	1.768	3.279	3.094
Heneicoanes (C21)	1.567	3.051	2.869
Docosanes (C22)	1.657	3.379	3.164
Tricosanes (C23)	1.395	2.973	2.834
Tetracosanes (C24)	1.170	2.602	2.421
Pentacosanes (C25)	0.981	2.271	2.113
Hexacosanes (C26)	0.490	1.178	1.091
Heptacosanes (C27)	0.104	0.259	0.247
Octacosanes (C28)	0.237	0.613	0.583
Nonacosanes (C29)	0.061	0.164	0.151
Triacosanes (C30)	0.051	0.143	0.131
Hentriacontanes Plus (C31+)	0.032	0.093	0.085
<b>Totals</b>	<b>100.000</b>	<b>100.000</b>	<b>100.000</b>

## SAMPLE CHARACTERISTICS

RELATIVE SPECIFIC GRAVITY, calculated	<b>0.74161</b>
API GRAVITY AT 60/60 F, calculated	<b>59.3</b>
TRUE VAPOR PRESSURE AT 100 F, PSIA, calculated	<b>53.683</b>
AVERAGE MOLECULAR WEIGHT	<b>152.340</b>
AVERAGE BOILING POINT, F, calculated	<b>341.197</b>
RELATIVE SPECIFIC GRAVITY OF DECANES+ (C10+) FRACTION, calculated	<b>0.76388</b>
AVERAGE MOLECULAR WEIGHT OF DECANES+ (C10+) FRACTION, calculated	<b>197.197</b>
BTU / GALLON OF LIQUID AT 14.73 PSIA, calculated	<b>75,467.28</b>
LBS / GALLON OF LIQUID, calculated	<b>6.183</b>
CUBIC FEET OF GAS / GALLON OF LIQUID, as Ideal Gas, calculated	<b>10.920</b>

NOTATION: ALL CALCULATIONS PERFORMED USING PHYSICAL CONSTANTS FROM GPA 2145-09, THE TABLES OF PHYSICAL CONSTANTS FOR HYDROCARBONS AND OTHER COMPOUNDS OF INTEREST TO THE NATURAL GAS INDUSTRY.