

Certificate of Composition  
 Part #: SD-053-060  
 Alkylate

ASTM D6730 with Helium Carrier

### Summary by Group

<u>Group</u>	<u>%Wgt</u>	<u>%Vol</u>	<u>%Mol</u>	<u>Avg MW</u>	<u>Avg SG</u>
Paraffin	1.033	1.233	1.857	1.120	0.007
I-Paraffins	97.632	97.665	97.139	105.871	0.684
Aromatics	0.179	0.143	0.142	0.194	0.001
<i>Mono-Aromatics</i>	0.179	0.143	0.142	0.194	0.001
<i>Naphthalenes</i>	0.000	0.000	0.000	0.000	0.000
<i>Indanes</i>	0.000	0.000	0.000	0.000	0.000
<i>Indenes</i>	0.000	0.000	0.000	0.000	0.000
Naphthenes	0.443	0.389	0.372	0.480	0.003
<i>Mono-Naphthenes</i>	0.443	0.389	0.372	0.480	0.003
<i>Di/Bicyclo-Naphthenes</i>	0.000	0.000	0.000	0.000	0.000
Olefins	0.000	0.000	0.000	0.000	0.000
<i>n-Olefins</i>	0.000	0.000	0.000	0.000	0.000
<i>Iso-Olefins</i>	0.000	0.000	0.000	0.000	0.000
<i>Naphtheno-Olefins</i>	0.000	0.000	0.000	0.000	0.000
<i>Di-Olefins</i>	0.000	0.000	0.000	0.000	0.000
Oxygenates	0.000	0.000	0.000	0.000	0.000
Unidentified	0.714	0.570	0.490	0.774	0.005
Plus	0.000	0.000	0.000	0.000	0.000
	<b>100.000</b>	<b>100.000</b>	<b>100.000</b>	<b>108.439</b>	<b>0.701</b>

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## Component List

<u>Pk#</u>	<u>Time</u>	<u>C#</u>	<u>Component</u>	<u>%Wgt</u>	<u>%Vol</u>	<u>%Mol</u>
1	10.195	4	n-Butane	0.886	1.072	1.653
2	10.720	5	2,2-Dimethylpropane	0.008	0.010	0.012
3	13.965	5	i-Pentane	5.244	5.929	7.881
4	15.748	5	n-Pentane	0.126	0.141	0.190
5	20.653	6	2,3-Dimethylbutane	3.675	3.892	4.624
6	21.052	6	2-Methylpentane	0.742	0.796	0.934
7	22.245	6	3-Methylpentane	0.384	0.405	0.483
8	26.767	7	2,4-Dimethylpentane	8.218	8.558	8.893
9	27.248	7	2,2,3-Trimethylbutane	0.095	0.097	0.103
10	31.072	7	2-Methylhexane	0.296	0.306	0.320
11	31.287	7	2,3-Dimethylpentane	16.612	16.743	17.977
12	32.152	7	3-Methylhexane	0.236	0.241	0.256
13	34.010	8	2,2,4-Trimethylpentane	18.602	18.836	17.659
14	41.147	8	2,5-Dimethylhexane	1.976	1.996	1.876
15	41.388	8	2,2,3-Trimethylpentane	0.894	0.875	0.849
16	41.522	8	2,4-Dimethylhexane	1.943	1.944	1.844
17	44.810	8	2,3,4-Trimethylpentane	9.009	8.778	8.552
18	45.748	8	2,3,3-Trimethylpentane	9.470	9.136	8.990
19	47.227	8	2,3-Dimethylhexane	2.098	2.064	1.991
20	47.517	8	2-Methyl-3-ethylpentane	0.080	0.079	0.076
21	48.678	8	2-Methylheptane	0.051	0.051	0.048
22	49.338	8	3-Methyl-3-ethylpentane	0.193	0.190	0.184
23	49.475	8	3,4-Dimethylhexane	0.226	0.220	0.215
24	50.603	8	3-Methylheptane	0.035	0.034	0.033
25	53.550	9	2,2,5-Trimethylhexane	3.216	3.186	2.719
26	60.562	8	1t,2-Dimethylcyclohexane	0.079	0.072	0.077
27	63.878	9	2,3,4-Trimethylhexane	0.569	0.540	0.481
28	66.782	9	2,4-Dimethylheptane	0.071	0.069	0.060
29	69.407	9	2,2,3-Trimethylhexane	0.059	0.058	0.050
30	71.883	9	2,5-Dimethylheptane	0.208	0.204	0.176
31	78.738	9	2,3-Dimethylheptane	0.157	0.152	0.133
32	84.067	9	4-Ethylheptane	0.161	0.157	0.136
33	84.483	9	3,4-Dimethylheptane	0.144	0.137	0.121
34	85.273	10	C10 - IsoParaffin - 1	0.104	0.100	0.079
35	85.475	10	C10 - Isoparaffin - 2	0.804	0.774	0.612
36	87.173	10	2,2,4-trimethylheptane	1.443	1.390	1.100
37	90.185	10	3,3,5-TrimethylHeptane	1.068	1.029	0.814
38	93.235	9	1,1-Methylethylcyclohexane	0.087	0.076	0.075
39	93.445	9	i-Propylcyclohexane	0.082	0.072	0.070
40	94.365	10	2,3,6-trimethylheptane	0.799	0.560	0.609
41	94.727	10	2,2-Dimethyloctane	0.224	0.217	0.171
42	96.413	10	2,5-Dimethyloctane	0.046	0.044	0.035
43	97.285	10	C10 - IsoParaffin - 3	0.134	0.129	0.102
44	98.270	10	Diethylcyclohexane	0.034	0.030	0.027

Recovery = 100.000

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45	102.217	10	C10 MonoNaph - 1	0.031	0.027	0.024
46	103.745	10	2-Methylnonane	2.414	2.328	1.839
47	105.987	11	Heptane, 2,2,3,5-tetramethyl-	0.729	0.511	0.506
48	106.608	10	Octane, 2,4,6-trimethyl-	0.153	0.147	0.117
49	106.737	10	C10_I-Paraffins(1)	0.148	0.141	0.113
50	107.082	10	C10 MonoNaph - 3a	0.029	0.025	0.022
51	107.357	10	C10 - IsoParaffin - 7	0.221	0.212	0.169
52	107.507	10	C10 - IsoParaffin - 8	0.185	0.176	0.141
53	107.753	10	C10 - MonoNaph - 2b	0.037	0.033	0.029
54	109.022	10	3-Ethyl-3-methylheptane	0.380	0.358	0.264
55	109.353	?	Unidentified	0.047	0.044	0.032
56	109.488	11	2,3,3-trimethyloctane	0.134	0.126	0.093
57	109.668	11	Heptane, 5-ethyl-2-methyl-	0.180	0.169	0.125
58	110.097	?	Unidentified	0.023	0.016	0.018
59	110.523	11	Octane, 2,6,6-trimethyl-	0.204	0.192	0.142
60	111.422	10	1-Methyl-3-i-propylbenzene	0.027	0.022	0.022
61	111.578	10	1-Methyl-4-i-propylbenzene	0.029	0.024	0.023
62	112.215	11	C11 Isoparaffin-1	0.042	0.040	0.029
63	112.642	11	C11 Isoparaffin-2	0.099	0.093	0.069
64	112.973	11	Octane, 2,3,7-trimethyl-	0.099	0.093	0.068
65	113.417	10	sec-Butylcyclohexane	0.063	0.055	0.049
66	113.612	11	2,5-dimethylnonane	0.096	0.090	0.066
67	114.570	11	3-Ethylnonane	0.331	0.311	0.229
68	115.620	11	C11 IsoParaffin - 5	0.107	0.101	0.074
69	116.247	11	Nonane, 3,7-dimethyl-	0.463	0.436	0.321
70	116.845	11	C11_I-Paraffins(1)	0.070	0.066	0.048
71	118.515	10	1-Methyl-2-n-propylbenzene	0.034	0.027	0.027
72	118.932	11	Octane, 5-ethyl-2-methyl-	0.046	0.043	0.032
73	119.128	11	C11 - IsoParaffin - 7	0.425	0.400	0.295
74	119.412	11	C11 - IsoParaffin - 8	0.066	0.062	0.046
75	119.673	11	C11 - IsoParaffin - 9	0.048	0.045	0.033
76	120.353	11	C11 - IsoParaffin - 10	0.312	0.294	0.216
77	120.517	12	C12 - IsoParaffin - 1	0.035	0.032	0.022
78	120.825	11	C11 - IsoParaffin - 11	0.028	0.027	0.020
79	121.215	10	1,2-Dimethyl-4-ethylbenzene	0.038	0.030	0.030
80	122.148	11	C11 - IsoParaffin - 12b	0.338	0.318	0.234
81	123.932	10	1,2-Dimethyl-3-ethylbenzene	0.021	0.016	0.017
82	124.598	11	1-Ethyl-2-i-propylbenzene	0.031	0.024	0.023
83	124.937	11	n-Undecane	0.021	0.019	0.014
84	125.148	?	Unidentified	0.058	0.046	0.043
85	127.982	12	C12 - IsoParaffin - 3b	0.080	0.074	0.051
86	128.112	?	Unidentified	0.027	0.021	0.022
87	128.532	12	C12 - IsoParaffin - 5	0.236	0.223	0.150
88	128.867	?	Unidentified	0.033	0.026	0.024

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89	130.122	?	Unidentified	0.017	0.016	0.011
90	130.347	?	Unidentified	0.044	0.030	0.026
91	132.267	?	Unidentified	0.037	0.030	0.027
92	132.443	?	Unidentified	0.029	0.028	0.019
93	132.563	?	Unidentified	0.027	0.026	0.017
94	132.893	?	Unidentified	0.052	0.041	0.035
95	133.882	12	C12_I-Paraffins(2)	0.369	0.349	0.235
96	134.205	12	C12_I-Paraffins(1)	0.204	0.193	0.130
97	135.463	12	C12_I-Paraffins(3)	0.097	0.092	0.062
98	137.232	?	Unidentified	0.017	0.012	0.013
99	137.812	?	Unidentified	0.019	0.015	0.013
100	138.373	?	Unidentified	0.020	0.014	0.014
101	140.167	?	Unidentified	0.046	0.034	0.031
102	140.553	?	Unidentified	0.044	0.034	0.029
103	142.090	?	Unidentified	0.017	0.012	0.011
104	145.047	?	Unidentified	0.019	0.014	0.013
105	145.207	?	Unidentified	0.024	0.016	0.018
106	145.402	?	Unidentified	0.031	0.021	0.023
107	146.668	?	Unidentified	0.022	0.016	0.015
108	147.057	?	Unidentified	0.038	0.035	0.022
109	152.875	?	Unidentified	0.023	0.021	0.013

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### Sample Chromatogram



































