

its

DHA

Data file : C:\HPCHEM\1\DATA\8492\102F0201.D  
 Sample name : 8492-4 (Sample) Seq. Line # : 2  
 Date injection : 11/30/2010 9:29:24 AM Vial # : 102  
 Date report : 11/30/10 03:19:08 PM Inj : 1  
 Database : fastdha Injection volume :  
 Sequence name : 8492.S Peaks # : 164 (164)  
 Operator :  
 Method : fastdha.M  
 Sample info :

Composite report  
 Total by group type & carbon number  
 (in volume percent)

	n-Paraffins:	i-Paraffins:	Olefins:	Naphtenes:	Aromatics:	Oxygenates:	Total:
C1:	-	-	-	-	-	-	0.000
C2:	-	-	-	-	-	-	0.000
C3:	0.062	-	-	-	-	-	0.062
C4:	0.041	-	-	-	-	-	0.041
C5:	0.285	0.085	-	0.150	-	-	0.520
C6:	5.523	3.257	-	4.451	0.355	-	13.585
C7:	7.166	7.253	-	8.754	1.924	-	25.096
C8:	5.270	9.415	-	4.318	4.084	-	23.087
C9:	4.340	8.498	-	4.503	5.221	-	22.562
C10:	1.035	4.796	-	2.676	1.887	-	10.395
C11:	0.650	3.069	-	0.691	0.107	-	4.517
C12:	-	0.136	-	-	-	-	0.136
C13:	-	-	-	-	-	-	0.000
C14:	-	-	-	-	-	-	0.000
C15:	-	-	-	-	-	-	0.000
C16:	-	-	-	-	-	-	0.000
C17:	-	-	-	-	-	-	0.000
C18:	-	-	-	-	-	-	0.000
C19:	-	-	-	-	-	-	0.000
Total:	24.373	36.508	0.000	25.542	13.577	0.000	100.000
Total C14+:	0.000						
						Total unknowns:	0.000
						Grand total	100.000

its

DHA

Sample name : 8492-4 (Sample)

Date injection : 11/30/2010 9:29:24 AM

## Molecular weight and specific gravity

Group:	Ave. Mw:	Specific gravity:
C1:	0.000	0.000
C2:	0.000	0.000
C3:	44.100	0.500
C4:	58.125	0.579
C5:	71.502	0.660
C6:	85.172	0.699
C7:	98.762	0.715
C8:	112.192	0.746
C9:	127.461	0.767
C10:	145.439	0.767
C11:	158.695	0.753
C12:	170.300	0.753
C13:	0.000	0.000
C14:	0.000	0.000
C15:	0.000	0.000
C16:	0.000	0.000
C17:	0.000	0.000
C18:	0.000	0.000
C19:	0.000	0.000
Total:	111.000	0.738

Composite report  
Total by group type & carbon number  
(in mass percent)

	n-Paraffins:	i-Paraffins:	Olefins:	Naphtenes:	Aromatics:	Oxygenates:	Total:
C1:	-	-	-	-	-	-	0.000
C2:	-	-	-	-	-	-	0.000
C3:	0.042	-	-	-	-	-	0.042
C4:	0.032	-	-	-	-	-	0.032
C5:	0.242	0.071	-	0.151	-	-	0.464
C6:	4.932	2.906	-	4.605	0.422	-	12.865
C7:	6.636	6.725	-	9.039	1.908	-	24.307
C8:	5.014	8.989	-	4.519	4.800	-	23.322
C9:	4.218	8.294	-	4.785	6.127	-	23.425
C10:	1.024	4.764	-	2.816	2.193	-	10.796
C11:	0.655	3.077	-	0.748	0.126	-	4.607
C12:	-	0.139	-	-	-	-	0.139
C13:	-	-	-	-	-	-	0.000
C14:	-	-	-	-	-	-	0.000
C15:	-	-	-	-	-	-	0.000
C16:	-	-	-	-	-	-	0.000
C17:	-	-	-	-	-	-	0.000
C18:	-	-	-	-	-	-	0.000
C19:	-	-	-	-	-	-	0.000
Total:	22.795	34.964	0.000	26.665	15.576	0.000	100.000
Total C14+:	0.000					Total unknowns:	0.000
						Grand total	100.000

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DHA

Sample name : 8492-4 (Sample)

Date injection : 11/30/2010 9:29:24 AM

Composite report  
Total by group type & carbon number  
(in mole percent)

	n-Paraffins:	i-Paraffins:	Olefins:	Naphtenes:	Aromatics:	Oxygenates:	Total:
C1:	-	-	-	-	-	-	0.000
C2:	-	-	-	-	-	-	0.000
C3:	0.105	-	-	-	-	-	0.105
C4:	0.062	-	-	-	-	-	0.062
C5:	0.372	0.109	-	0.240	-	-	0.721
C6:	6.351	3.742	-	6.073	0.600	-	16.766
C7:	7.350	7.449	-	10.218	2.302	-	27.319
C8:	4.873	8.711	-	4.471	5.020	-	23.075
C9:	3.650	7.176	-	4.208	5.365	-	20.399
C10:	0.799	3.716	-	1.920	1.805	-	8.240
C11:	0.465	2.185	-	0.477	0.095	-	3.222
C12:	-	0.090	-	-	-	-	0.090
C13:	-	-	-	-	-	-	0.000
C14:	-	-	-	-	-	-	0.000
C15:	-	-	-	-	-	-	0.000
C16:	-	-	-	-	-	-	0.000
C17:	-	-	-	-	-	-	0.000
C18:	-	-	-	-	-	-	0.000
C19:	-	-	-	-	-	-	0.000
Total:	24.027	33.179	0.000	27.607	15.187	0.000	100.000
Total C14+:	0.000					Total unknowns:	0.000
						Grand total	100.000

## True boiling point distribution

	Mass percent:		Volume percent:	
	deg C:	deg F:	deg C:	deg F:
IBP	46.0	114.7	38.5	101.3
5.0	65.0	149.0	64.4	147.9
10.0	71.0	159.8	69.6	157.2
15.0	89.2	192.5	87.2	188.9
20.0	91.7	197.1	91.6	196.8
25.0	93.8	200.8	92.4	198.4
30.0	98.5	209.4	97.0	206.6
35.0	100.9	213.6	100.1	212.2
40.0	117.6	243.7	115.2	239.3
45.0	118.2	244.8	117.8	244.1
50.0	124.2	255.5	119.3	246.8
55.0	125.9	258.7	125.1	257.1
60.0	135.6	276.1	135.0	275.0
65.0	139.6	283.2	138.2	280.8
70.0	146.7	296.0	144.2	291.6
75.0	150.6	303.1	150.3	302.5
80.0	160.0	320.0	158.4	317.1
85.0	166.7	332.1	165.1	329.1
90.0	173.2	343.8	173.2	343.7
95.0	179.6	355.3	178.5	353.2
FBP	195.2	383.4	195.1	383.3

its

DHA

Sample name : 8492-4 (Sample)

Date injection : 11/30/2010 9:29:24 AM

Research octane number = 87.843  
Calculated from the individual component contributions)

Contributions subdivided into:

n-Paraffins:	12.63
i-Paraffins:	30.23
Olefins:	0.00
Naphtenes:	20.91
Aromatics:	14.26
Oxygenates:	0.00

its

DHA

Sample name : 8492-4 (Sample)

Date injection : 11/30/2010 9:29:24 AM

## Components listed in chromatographic order

Time	Index	Component	Mass %	Vol %	Mol %
2.238	299.8	Propane	0.0418	0.0617	0.1053
2.695	400.0	n-Butane	0.0324	0.0413	0.0618
3.465	469.9	i-Pentane	0.0711	0.0847	0.1093
3.861	500.0	n-Pentane	0.2417	0.2850	0.3716
5.236	560.9	cyclopentane	0.1513	0.1499	0.2396
5.260	561.9	2,3-dimethylbutane	0.1701	0.1898	0.2190
5.366	565.8	2-methylpentane	1.3687	1.5474	1.7625
5.793	581.2	3-methylpentane	1.3670	1.5194	1.7603
6.365	600.0	n-Hexane	4.9324	5.5230	6.3515
7.320	624.3	2,2-dimethylpentane	0.0972	0.1065	0.1077
7.462	627.7	methylcyclopentane	2.1994	2.1693	2.9008
7.585	630.5	2,4-dimethylpentane	0.3466	0.3804	0.3840
8.571	651.8	benzene	0.4221	0.3546	0.5998
8.835	657.1	3,3-dimethylpentane	0.0646	0.0689	0.0716
9.067	661.6	cyclohexane	2.4055	2.2815	3.1726
9.474	669.2	2-methylhexane	2.2343	2.4310	2.4751
9.579	671.1	2,3-dimethylpentane	1.0545	1.1202	1.1682
9.752	674.3	1,1-dimethylcyclopentane	0.3087	0.3021	0.3490
9.947	677.7	3-methylhexane	2.9272	3.1456	3.2427
10.318	684.1	1c,3-dimethylcyclopentane	0.6523	0.6467	0.7374
10.473	686.7	1t,3-dimethylcyclopentane	0.9053	0.8927	1.0234
10.622	689.1	1t,2-dimethylcyclopentane	1.1154	1.0960	1.2608
11.306	700.0	n-heptane	6.6356	7.1660	7.3504
12.529	721.2	methylcyclohexane	5.2686	5.0560	5.9553
12.669	723.5	2,2-dimethylhexane	0.3388	0.3598	0.3293
13.217	732.3	ethylcyclopentane	0.7891	0.7602	0.8920
13.356	734.4	2,5-dimethylhexane	0.5129	0.5461	0.4985
13.787	741.0	3,3-dimethylhexane	0.4270	0.4404	0.4151
13.856	742.0	2,2,3-trimethylpentane	0.0907	0.0935	0.0881
14.303	748.6	1t,2c,3-trimethylcyclopentane	0.4298	0.4120	0.4252
14.493	751.3	2,3,3 trimethylpentane	0.1329	0.1365	0.1292
14.809	755.8	Toluene	1.9077	1.9237	2.3016
15.300	762.5	2,3-dimethylhexane	0.3806	0.3947	0.3700
15.422	764.2	1,1,2-trimethylcyclopentane	0.3413	0.3262	0.3377
15.787	769.0	2-methylheptane	2.6139	2.7654	2.5407
15.904	770.5	4-methylheptane	0.8013	0.8397	0.7789
16.071	772.7	3,4-dimethylhexane	0.2185	0.2244	0.2124
16.412	777.0	3-methylheptane	1.7415	1.8218	1.6927
16.498	778.1	1c,2t,3-trimethylcyclopentane	0.3030	0.2904	0.2997
16.622	779.7	3-ethylhexane	1.4846	1.5361	1.4430
16.759	781.4	1t,4-dimethylcyclohexane	0.6089	0.5897	0.6024
17.182	786.5	2,2,5-trimethylhexane	0.2461	0.2570	0.2130
17.395	789.1	3c-ethylmethylcyclopentane	0.1966	0.1893	0.1945
17.549	790.9	1-ethyl-3-methyl cyclopentane	0.1809	0.1712	0.1789
17.643	792.0	2,2,4-trimethylhexane	0.4387	0.4382	0.3795
17.806	793.9	1,1-methylethylcyclopentane	0.0462	0.0444	0.0457
18.022	796.4	1t,3-dimethylcyclohexane	0.7756	0.7380	0.7674
18.341	800.0	n-octane	5.0144	5.2704	4.8725
18.419	801.7	N802	0.1251	0.1189	0.1237
18.499	803.4	i-propylcyclopentane	0.4282	0.4072	0.4236
18.928	812.4	2,4,4-trimethylhexane	0.1010	0.1009	0.0874

its

DHA

Sample name : 8492-4 (Sample)

Date injection : 11/30/2010 9:29:24 AM

## Components listed in chromatographic order

Time	Index	Component	Mass %	Vol %	Mol %
19.359	821.2	2,3,4-trimethylhexane	0.1123	0.1122	0.0972
19.548	825.1	2,3,5-trimethylhexane	0.1547	0.1582	0.1338
19.789	829.9	2,2-dimethylheptane	0.3463	0.3599	0.2997
19.934	832.8	1,1,4-trimethylcyclohexane	0.2398	0.2293	0.2109
20.159	837.2	n-propylcyclopentane	1.0835	1.0305	1.0719
20.230	838.6	2,6-dimethylheptane	1.4344	1.4940	1.2409
20.376	841.4	Napthene 842	0.0267	0.0255	0.0235
20.527	844.3	2,5-dimethylheptane	1.4504	1.4942	1.2548
20.603	845.8	3,5-dimethylheptane	0.1036	0.1058	0.0896
20.657	846.8	3,3 diethyl pentane	0.1829	0.1782	0.1580
20.754	848.6	1,1,3-trimethylcyhexane	0.0705	0.0661	0.0620
20.820	849.9	1c,2t,4t-trimethylcyhexane	0.0833	0.0788	0.0732
20.896	851.3	2,3,3-trimethylhexane	0.1110	0.1142	0.0960
21.165	856.3	ethylbenzene	0.9580	0.8159	1.0016
21.338	859.6	1,3,5-trimethylcyclohexane	0.3516	0.3329	0.3093
21.482	862.2	Isoparaffin 860	0.0418	0.0423	0.0362
21.620	864.7	p-xylene	2.2409	1.9217	2.3429
21.668	865.6	m-xylene	0.4212	0.3598	0.4403
21.847	868.8	2-methyloctane	0.1043	0.1079	0.0902
21.991	871.4	4-methyloctane	1.0281	1.0540	0.8895
22.039	872.3	3,4-dimethylheptane	1.0003	1.0098	0.8654
22.312	877.1	1t,2c,4-trimethylcyC6	0.2180	0.2124	0.1918
22.373	878.2	3-methyloctane	1.3049	1.3373	1.1290
22.497	880.3	Styrene	0.1135	0.0922	0.1210
22.578	881.8	1c,2t,4c-trimethylcyclohexane	0.1401	0.1340	0.1233
22.740	884.6	o-xylene	1.0662	0.8944	1.1147
22.836	886.2	1,1,2-trimethylcyclohexane	0.1844	0.1702	0.1622
22.990	888.9	3,3-diethylpentane	0.3796	0.3906	0.3292
23.076	890.3	1t,2-Diethylcyclopentane	0.6789	0.6427	0.5969
23.185	892.2	1-Methyl-2&3c&t-i&n-propylCyC5	0.3091	0.2926	0.2718
23.276	893.7	Napthene 894	0.1487	0.1373	0.1308
23.336	894.8	1-Methyl-4t-EthylCyclohexane	0.1107	0.1022	0.0973
23.649	900.0	n-nonane	4.2180	4.3400	3.6504
23.759	903.6	Napthene 90	0.2101	0.1939	0.1847
23.943	909.5	1-Methyl-2c-n-propylCyC5	0.4844	0.4527	0.4259
24.077	913.8	i-propylbenzene	0.1546	0.1325	0.1428
24.208	917.9	sec-butylcyclopentane	0.2586	0.2417	0.2274
24.313	921.2	2,2-dimethyloctane	0.0356	0.0363	0.0278
24.392	923.7	n-PropylCycloHexane	0.0798	0.0736	0.0702
24.448	925.5	a Methylstyrene	0.6136	0.4984	0.5763
24.489	926.8	2,6-dimethyloctane	0.1749	0.1775	0.1364
24.569	929.3	2,5-dimethyloctane	0.1262	0.1276	0.0985
24.703	933.4	Napthene 939	0.1913	0.1765	0.1682
24.735	934.4	Tetramethylcypentane	0.1956	0.1840	0.1720
24.784	935.9	Napthene 944	0.1126	0.1039	0.0990
24.855	938.1	Isoparaffin 943	0.1003	0.1015	0.0782
24.907	939.8	n-butylcyclopentane	0.8035	0.7562	0.7065
25.022	943.3	3,3-dimethyloctane	0.3978	0.3974	0.3103
25.106	945.8	Isoparaffin 942	0.9187	0.9292	0.7167
25.195	948.6	Napthene 958	0.3120	0.2879	0.2743
25.259	950.5	Napthene 960	0.0862	0.0795	0.0758

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DHA

Sample name : 8492-4 (Sample)

Date injection : 11/30/2010 9:29:24 AM

## Components listed in chromatographic order

Time	Index	Component	Mass %	Vol %	Mol %
25.337	952.9	n-propylbenzene	0.2716	0.2326	0.2508
25.422	955.5	1,2,4 Trimethyl Benzene	0.9859	0.8464	0.9119
25.568	959.8	Isoparaffin 946	0.2433	0.2461	0.1898
25.704	963.9	1-Ethyl-3-methylbenzene	0.6327	0.5376	0.5843
25.789	966.4	1-Methyl-4-ethylbenzene	0.3056	0.2620	0.2822
25.898	969.7	Napthene 977	0.5903	0.6226	0.3766
25.995	972.5	135-trimethylbenzene	0.2562	0.2556	0.1999
26.067	974.7	3-ethyloctane	0.4823	0.4813	0.3762
26.143	976.9	5-methylnonane	0.8151	0.8215	0.6359
26.233	979.6	4-methylnonane	0.7694	0.7746	0.6002
26.388	984.1	3methylnonane	0.5482	0.5519	0.4277
26.483	986.8	Napthene 980	0.6870	0.6341	0.4382
26.555	988.9	Isoparaffin 989	0.0369	0.0368	0.0288
26.627	991.0	Napthene 16	0.1917	0.1770	0.1223
26.689	992.8	Napthene 982	0.0783	0.0722	0.0499
26.754	994.6	I19	0.1149	0.1146	0.0896
26.942	1000.0	n-Decane	1.0237	1.0355	0.7986
26.983	1001.2	i-butylbenzene	0.2239	0.1938	0.1852
27.016	1002.2	Napthene 1002	0.1964	0.1813	0.1253
27.101	1004.6	DiethylcycloHexane	0.3598	0.3321	0.2295
27.214	1007.9	Isoparaffin 1011	0.1192	0.1189	0.0846
27.404	1013.4	Isoparaffin 38	0.1036	0.1033	0.0735
27.476	1015.5	a1013	2.9395	2.5179	2.4313
27.587	1018.7	I27	0.2229	0.2224	0.1583
27.738	1023.0	sec-butylcyclohexane	0.0706	0.0640	0.0450
27.925	1028.3	Isoparaffin 1016	0.7023	0.7008	0.4987
28.012	1030.8	3-ethylnonane	0.3201	0.3177	0.2273
28.080	1032.7	1-methyl-2-i-propylbenzene	0.0660	0.0553	0.0546
28.137	1034.3	I28	0.0709	0.0707	0.0503
28.181	1035.5	I31	0.1251	0.1248	0.0888
28.229	1036.9	Pentylcyclopentane	0.0851	0.0785	0.0543
28.280	1038.3	1-methyl-4-i-propylbenzene	0.6346	0.5436	0.5248
28.443	1042.8	2,5-Dimethylstyrene	0.2975	0.2430	0.2497
28.634	1048.1	I33	0.4902	0.4891	0.3481
28.711	1050.3	I34	0.1602	0.1598	0.1138
28.805	1052.8	Napthene 1044	0.2436	0.2248	0.1554
28.880	1054.9	1,4-diethylbenzene	0.2258	0.1934	0.1867
28.921	1056.0	Napthene 1056	0.0611	0.0564	0.0390
29.015	1058.6	Isoparaffin 1051	0.1079	0.1077	0.0766
29.069	1060.0	Napthene 1052	0.2041	0.1884	0.1302
29.205	1063.7	1,2-dimethyl-4-ethylbenzene	0.1439	0.1215	0.1190
29.263	1065.3	Napthene 1066	0.0686	0.0633	0.0437
29.342	1067.4	5 methyl decane	0.1913	0.1909	0.1359
29.407	1069.2	Napthene 1070	0.1313	0.1212	0.0838
29.437	1070.0	1,4-dimethyl-2-ethylbenzene	0.1713	0.1421	0.1418
29.493	1071.5	I39	0.0765	0.0763	0.0543
29.545	1072.9	4-Methyldecane	0.2057	0.2052	0.1461
29.638	1075.4	Napthene 1077	0.0392	0.0362	0.0250
29.699	1077.0	2-methyldecane	0.0998	0.0996	0.0709
29.753	1078.4	1,3-dimethyl-5-ethylbenzene	0.2880	0.2417	0.2382
29.945	1083.5	I42	0.0817	0.0815	0.0580

its

DHA

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Date injection : 11/30/2010 9:29:24 AM

## Components listed in chromatographic order

Time	Index	Component	Mass %	Vol %	Mol %
30.022	1085.5	Napthene 24	0.0260	0.0240	0.0166
30.075	1086.9	Napthene 1087	0.0209	0.0193	0.0133
30.277	1092.2	1,2-dimethyl-3-ethylbenzene	0.1034	0.0856	0.0855
30.477	1097.4	2 methyl butyl benzene	0.0944	0.0805	0.0707
30.577	1100.0	n-undecane	0.6549	0.6499	0.4650
30.673	1103.7	1,4-ethyl-i-propylbenzene	0.0321	0.0266	0.0240
30.733	1106.0	I44	0.0485	0.0476	0.0316
30.936	1113.7	Isoparaffin 1113	0.0190	0.0186	0.0124
31.037	1117.6	1,2,3,5 Tetramethyl Benzene	0.0062	0.0051	0.0051
31.415	1131.8	Isoparaffin 1132	0.0326	0.0320	0.0212
31.735	1143.7	Isoparaffin 50	0.0386	0.0378	0.0252