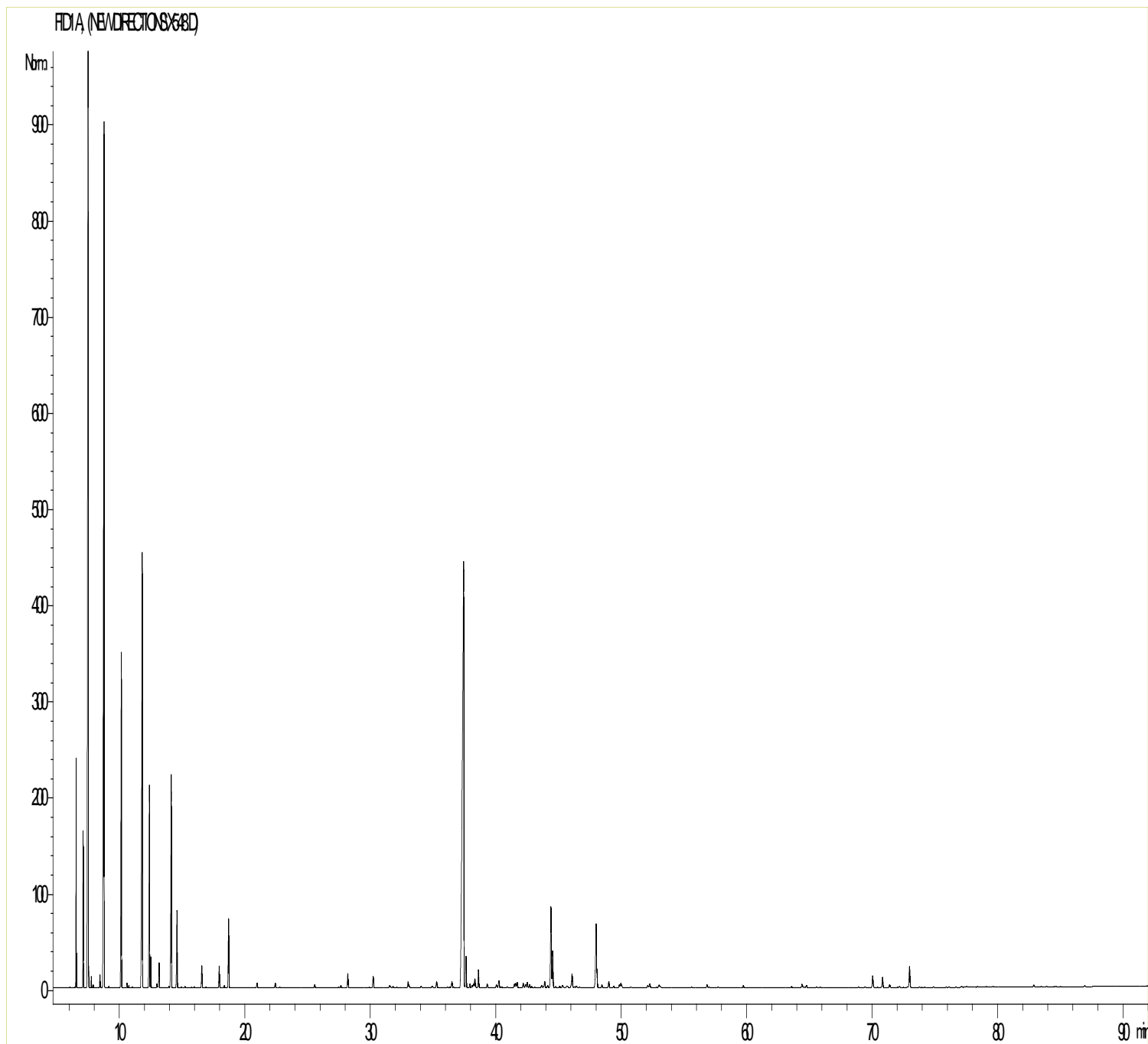


GCMS ANALYSIS

PRODUCT NAME: SPRUCE BLACK ORGANIC ESSENTIAL OIL - 50047

DATE: May 24, 2019



Due to volume turnover, this report is not lot specific. It is representative of the quality of this oil produced by the manufacturer of this product. Specific lots may vary slightly as is the case in natural products.

GCMS ANALYSIS (cont'd.)

PRODUCT NAME: SPRUCE BLACK ORGANIC ESSENTIAL OIL - 50047

Peak	RT (min)	Compound name	%
1	4,5	ACETONE	0,13
2	6,4	TERPENE ISOMER	0,01
3	6,5	SANTENE	2,27
4	7,1	TRICYCLENE	1,80
5	7,5	alpha-PINENE	20,78
6	7,6	alpha-THUYENE	0,15
7	7,7	COMPOUND Mw=122	0,12
8	7,9	TOLUENE	0,04
9	8,4	alpha-FENCHENE	0,18
10	8,8	CAMPHENE	15,97
11	9,1	HEXANAL	0,02
12	10,1	beta-PINENE	5,33
13	10,6	SABINENE	0,07
14	10,7	PINADIENE	0,04
15	11,0	delta2-CARENE	0,01
16	11,8	delta3-CARENE	9,13
17	12,4	beta-MYRCENE	3,45
18	12,5	alpha-PHELLANDRENE	0,40
19	12,6	psi-LIMONENE	0,01
20	12,9	o-CYMENE	0,06
21	13,0	MENTHATRIENE ISOMER	0,02
22	13,1	alpha-TERPINENE	0,39
23	13,9	ISOSYLVESTRENE	0,03
24	14,1	LIMONENE	4,01
25	14,6	1,8-CINEOLE	0,32
26	14,7	beta-PHELLANDRENE	1,13
27	14,8	TERPENIC COMPOUND	0,01
28	14,9	1,3,8-p-MENTHARIENE	0,01
29	15,2	COMPOUND Mw=152	0,03
30	15,7	FURAN, 2-PENTYL	0,01

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GCMS ANALYSIS (cont'd.)

PRODUCT NAME: SPRUCE BLACK ORGANIC ESSENTIAL OIL - 50047

Peak	RT (min)	Compound name	%
31	15,9	Cis-beta-OCIMENE	0,02
32	16,5	gamma-TERPINENE	0,39
33	16,9	Trans-beta-OCIMENE	0,02
34	17,7	m-CYMENE	0,01
35	17,9	p-CYMENE	0,40
36	18,3	ISOTERPINOLENE	0,04
37	18,7	TERPINOLENE	1,32
38	20,9	PINOL	0,10
39	22,4	CAMPHOLENE ALDEHYDE ISOMER	0,10
40	22,8	1-HEXANOL	0,02
41	24,0	HEXENYLIC ESTER	0,02
42	25,5	FENCHONE	0,09
43	27,4	COMPOUND Mw=152	0,02
44	27,6	DIMETHYLSTYRENE ISOMER	0,06
45	28,2	alpha,p-DIMETHYLSTYRENE	0,30
46	29,6	alpha-CUBEBENE	0,01
47	29,9	alpha-LONGIPINENE + COMPOUND Mw=152	0,02
48	30,2	FENCHYL ACETATE	0,25
49	31,5	alpha-CAMPHOLENAL	0,07
50	31,7	alpha-COPAENE	0,03
51	32,1	LONGICYCLENE	0,02
52	33,0	CAMPHOR	0,15
53	33,1	alpha-PINOCAMPHONE	0,04
54	34,0	CAMPHOLENIC ALCOHOL	0,04
55	34,9	ISOPINOCAMPHONE	0,05
56	35,3	LINALOOL	0,16
57	36,1	NEOISOPULEGOL	0,02
58	36,3	PINOCARVONE	0,02
59	36,4	LONGIFOLENE	0,16
60	36,6	ISOPULEGOL	0,02

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GCMS ANALYSIS (cont'd.)

PRODUCT NAME: SPRUCE BLACK ORGANIC ESSENTIAL OIL - 50047

Peak	RT (min)	Compound name	%
61	37,4	BORNYL ACETATE	18,89
62	37,6	ISOBORNYL ACETATE	0,63
63	37,9	beta-ELEMENE	0,08
64	38,1	METHYL THYMOL ETHER	0,06
65	38,2	CAMPHENE HYDRATE	0,09
66	38,3	beta-CARYOPHYLLENE	0,22
67	38,6	TERPINENE-4-OL	0,40
68	39,3	TERPENIC ACETATE	0,10
69	40,0	MYRTENAL + ALIPHATIC ALCOHOL	0,09
70	40,2	TERPENIC ESTER	0,19
71	40,4	CADINA-3,5-DIENE	0,04
72	40,8	GERMACRENE A	0,03
73	41,4	Cis-PINOCARVYL ACETATE	0,09
74	41,5	TERPENIC ESTER	0,11
75	41,7	Trans-PINOCARVEOL	0,13
76	42,1	ZONARENE	0,11
77	42,3	CITRONELLYL ACETATE	0,10
78	42,4	ISOBORNEOL	0,13
79	42,6	alpha-HUMULENE	0,08
80	42,8	delta-TERPINEOL	0,04
81	43,6	TERPENIC ESTER	0,08
82	43,8	gamma-MUUROLENE	0,16
83	44,1	TERPENYL ACETATE	0,06
84	44,3	alpha-TERPINEOL	1,93
85	44,5	BORNEOL	0,88
86	44,7	GERMACRENE D	0,03
87	45,0	CADINENE ISOMER	0,04
88	45,3	beta-SELINENE	0,06
89	45,4	SESQUITERPENE	0,01
90	45,6	alpha-SELINENE	0,07

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GCMS ANALYSIS (cont'd.)

PRODUCT NAME: SPRUCE BLACK ORGANIC ESSENTIAL OIL - 50047

Peak	RT (min)	Compound name	%
91	46,0	alpha-MUUROLENE	0,35
92	46,3	TERPENIC ACEATE	0,04
93	46,6	Trans-CARVYL ACETATE	0,02
94	47,9	delta-CADINENE	1,70
95	48,0	GERANYL ACETATE	0,25
96	48,4	CITRONELLOL	0,07
97	49,0	alpha-BISABOLENE	0,15
98	49,3	CADINA-1,4-DIENE	0,05
99	49,8	MYRTENOL	0,02
100	49,9	alpha-AMORPHENE	0,15
101	50,0	CAMPHOLENOL	0,07
102	50,8	TERPENIC COMPOUND	0,02
103	52,1	Cis-CALAMENENE + AROMATIC COMPOUND	0,07
104	52,2	Trans-CALAMENENE	0,11
105	52,8	p-CYMENE-8-OL	0,02
106	53,0	CAPROIC ACID	0,11
107	53,1	GERANIOL	0,02
108	55,5	ALIPHATIC ESTER	0,03
109	56,8	alpha-CALACORENE	0,07
110	56,9	ALIPHATIC ALCOHOL	0,03
111	57,7	TERPENIC KETONE	0,02
112	59,7	1-DODECANOL	0,06
113	63,5	NEROLIDOL	0,03
114	64,3	EPI-CUBENOL	0,10
115	64,7	CUBENOL	0,05
116	65,5	ALIPHATIC ESTER	0,02
117	70,0	T-CADINOL	0,30
118	70,8	alpha-MUUROLOL	0,26
119	71,4	delta-CADINOL	0,08
120	72,1	ALIPHATIC ALCOHOL	0,03

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GCMS ANALYSIS (cont'd.)

PRODUCT NAME: SPRUCE BLACK ORGANIC ESSENTIAL OIL - 50047

Peak	RT (min)	Compound name	%
121	72,8	AROMATIC COMPOUND	0,02
122	72,9	alpha-CADINOL	0,51
123	77,1	DITERPENE Mw=272	0,03
124	77,5	SANDAROCOPIMARADIENE Mw=272	0,03
125	78,3	MANOYL OXIDE	0,03
126	79,1	ALIPHATIC ESTER	0,02
127	79,5	AROMATIC COMPOUND	0,01
128	79,6	AROMATIC COMPOUND	0,03
129	82,8	AROMATIC COMPOUND	0,06
130	83,4	AROMATIC COMPOUND	0,01
131	83,9	AROMATIC COMPOUND	0,02
132	86,9	GERANYLLINALOOL ISOMER	0,03
133	92,2	MANOOL	0,06
		TOTAL	99,99

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