

## GC/MS BATCH NUMBER: S30101

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**ESSENTIAL OIL:** SPEARMINT  
**BOTANICAL NAME:** MENTHA SPICATA  
**ORIGIN:** USA

KEY CONSTITUENTS IN THIS BATCH OF SPEARMINT OIL	%
CARVONE	69.3
LIMONENE	12.7
β-MYRCENE	1.4
1,8-CINEOLE + β-PHELLANDRENE	1.3
cis-DIHYDROCARVONE	1.2
β-BOURBONENE	0.9
3-OCTANOL	0.6
trans-THUJANOL [(E)-SABINENE HYDRATE]	0.5
DIHYDROCARVYL ACETATE	0.5
MENTHONE	0.3
cis-CARVYL ACETATE	0.2
JASMONE	0.2
VIRIDIFLOROL	0.1

Comments from Robert Tisserand: An excellent odor profile. The 11 key constituents conform to the ISO standard for *Mentha spicata*, except that menthone is very slightly high and beta-bourbonene is very slightly low. These do no concern me.

**CUSTOMER :**

**PLANT THERAPY  
126 Locust Street South  
Twin Falls, ID 83 301  
USA**

**Sample nature:** ESSENTIAL OIL  
**Botanical species:** MENTHA SPICATA  
**Reference name:** SPEARMINT NATIVE  
**Batch number:** S30101  
**Origin:** USA  
**Part:** LEAF/FLOWER  
**Pyre<sup>o</sup>ssences reference:** A279  
**Date of reception:** 04/05/2014  
**Date analysis:** 04/29/2014  
**Packaging:** Amber flask of 5 mL – ambient temperature  
**Analysis:** Classic

**Validated report by :**

**Daniel DANTIN**



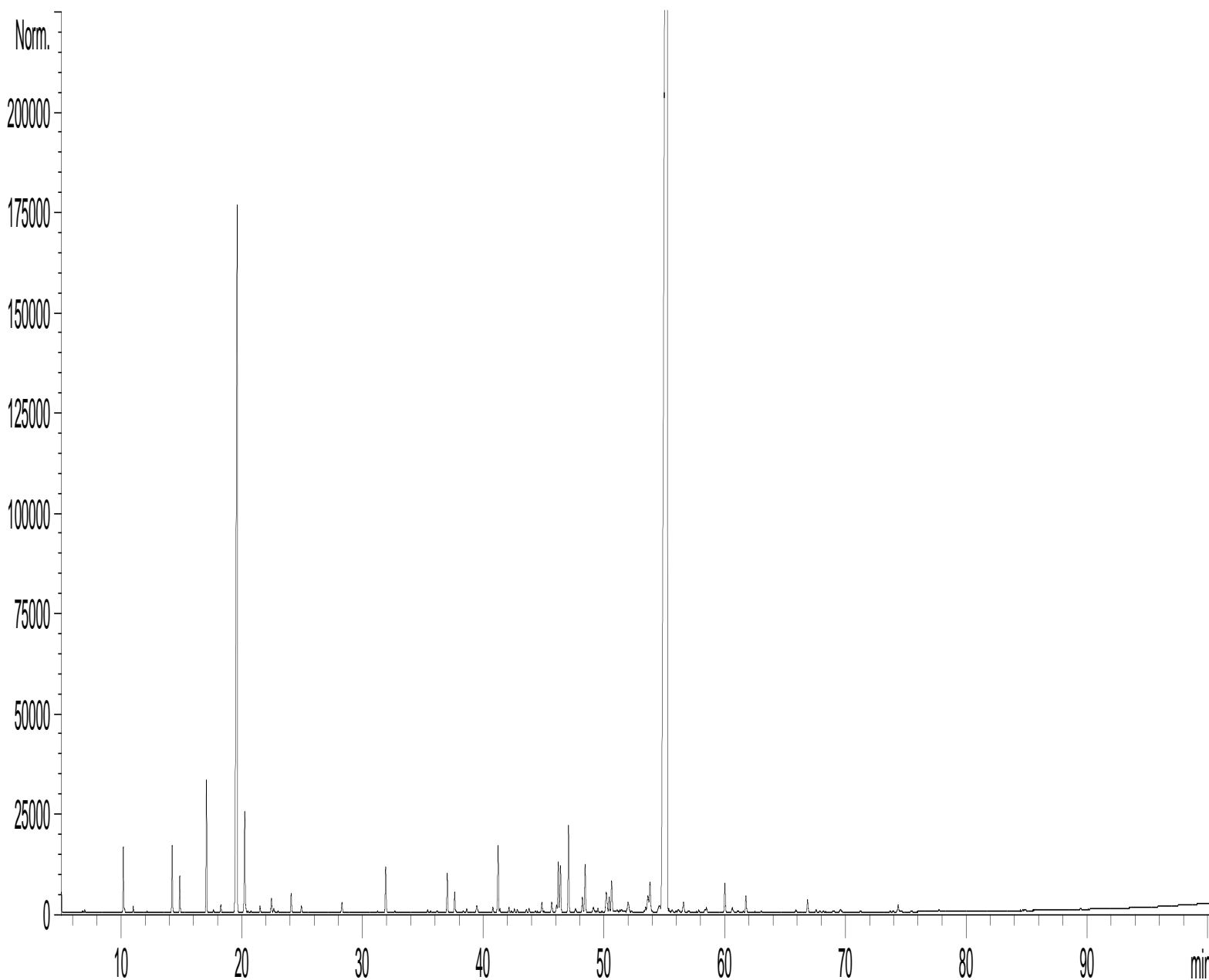
**GAS CHROMATOGRAPHY** norm NF ISO 11024

**Analysis conditions :**

CPG 6890 / MS 5973 – Column : VF WAX polar 60 m × 0,25 mm × 0,5 µm  
CPG 5890 FID - Column : : HP INNOWAX polar 60 m × 0,25 mm × 0,5 µm  
Temperature program : 6 mn to 60 °C –2 °C/mn→250 °C – 20 mn to 250 °C  
Carrier gas He : 23 psis/MS – 30 psis/FID  
Sample injection / split : 1 µl of 10 % solution in hexane,  
Mass range : 30 to 350, Oil compounds are identified by a combination of retention times  
(our own database) and mass spectra library NKS 75 000 records,  
Percentages are calculated from GC/FID peaks areas without using corrections factors,

**Chromatographic profile (GC/FID)**

FID1 A, (PLANTHERIMSCAA279.D)



**Identification results 1 : SPEARMINT NATIVE BATCH S30101**

Peak	RT (min)	Compound name	%	Norm (%)	Allergens (%)
1	5,1	ACETONE	0,09		
2	6,7	BUTANAL 2-METHYL	0,01		
3	6,9	ISOVALERALDEHYDE	0,01		
4	7,0	ETHANOL	0,02		
5	7,7	FURAN, 2-ETHYL	0,01		
6	9,5	TRICYCLENE	0,01		
7	10,2	$\alpha$ -PINENE	0,63		
8	10,3	$\alpha$ -THUYENE	0,04		
9	11,0	Trans-2,5-DIETHYLTETRAHYDROFURAN	0,06		
10	11,3	ETHYL 2-METHYLBUTYRATE	0,01		
11	12,2	CAMPHENE	0,02		
12	14,2	$\beta$ -PINENE	0,75		
13	14,9	SABINENE	0,39		
14	15,1	PINADIENE	0,01		
15	15,7	P-MENTH-2-ENE	0,01		
16	16,4	$\Delta$ 3-CARENE	0,01		
17	17,1	$\beta$ -MYRCENE	1,40		
18	17,4	$\alpha$ -PHELLENDRENE	0,01		
19	17,7	$\psi$ -LIMONENE	0,03		
20	18,3	$\alpha$ -TERPINENE	0,09		
21	19,6	<b>LIMONENE</b>	<b>12,68</b>		12,68
22	20,2	1,8-CINEOLE + $\beta$ -PHELLANDRENE	1,32		
23	20,5	1,3,8-p-MENTHATRIENE	0,02		
24	20,8	2-HEXENAL	0,02		
25	21,5	Cis- $\beta$ -OCIMENE	0,08		
26	22,4	$\gamma$ -TERPINENE	0,19		
27	22,6	Trans- $\beta$ -OCIMENE	0,06		
28	23,0	3-OCTANONE	0,02		
29	24,1	p-CYMENE	0,26		
30	24,6	2-METHYLBUTYL 2-METHYLBUTYRATE	0,01		
31	24,9	TERPINOLENE	0,08		
32	25,3	OCTANAL	0,01		
33	28,3	1-ETHYLHEXYL ACETATE	0,15		
34	28,5	6-METHYL-5-HEPTEN-2-ONE	0,02		
35	29,1	1-HEXANOL	0,01		
36	31,2	3-HEXEN-1-OL	0,02		
37	31,9	3-OCTANOL	0,61		
38	32,7	2-HEXEN-1-OL	0,02		
39	34,1	PERILLENE	0,01		
40	34,6	HEXYL 2-METHYLBUTYRATE	0,01		
41	35,4	$\alpha$ ,p-DIMETHYLSTYRENE	0,03		
42	35,6	1-OCTEN-3-OL	0,02		
43	35,7	HEXYL 3-METHYLBUTYRATE	0,01		
44	36,2	LIMONENE Cis-1,2-EPOXIDE	0,03		
45	37,0	Trans-THUYANOL	0,45		

**Identification results 2 : SPEARMINT NATIVE BATCH S30101**

Peak	RT (min)	Compound name	%	Norm (%)	Allergens (%)
46	37,1	LIMONENE Trans-1,2-EPOXIDE	0,04		
47	37,6	MENTHONE	0,27		
48	37,8	OCTYL ACETATE	0,01		
49	38,3	CITRONELLAL	0,02		
50	38,6	cis-3-HEXENYL ISOVALERATE	0,05		
51	39,5	ISOMENTHONE	0,14		
52	40,8	$\alpha$ -BOURBONENE	0,07		
53	41,2	$\beta$ -BOURBONENE	0,91		
54	41,4	DIHYDROEDULAN ISOMER	0,04		
55	42,1	LINALOOL	0,06		0,06
56	42,3	Cis-THUYANOL	0,02		
57	42,6	1-OCTANOL	0,04		
58	42,8	LINALYL ACETATE	0,04		
59	43,2	ISOPINOCAMPHONE	0,01		
60	43,6	Trans-p-MENTH-2-EN-1-OL	0,04		
61	43,8	MENTHYL ACETATE	0,06		
62	44,3	ISOPULEGOL	0,03		
63	44,8	$\epsilon$ -CADINENE	0,15		
64	45,0	BORNYL ACETATE	0,02		
65	45,7	$\beta$ -ELEMENE	0,17		
66	46,1	$\beta$ -CUBEBENE	0,10		
67	46,2	TERPINENE-4-OL	0,64		
68	46,4	$\beta$ -CARYOPHYLLENE	0,71		
69	46,7	TERPENIC ACETATE	0,01		
70	47,1	Cis-DIHYDROCARVONE	1,17		
71	47,6	Cis-p-2,8-MENTHADIEN-1-OL	0,07		
72	48,0	FARNESENE ISOMER	0,02		
73	48,2	Trans-DIHYDROCARVONE	0,19		
74	48,4	MENTHOL	0,67		
75	49,1	CADINA-3,5-DIENE	0,11		
76	49,3	CADINADIENE ISOMERE	0,02		
77	49,5	ALLO-AROMADENDRENE + PULEGONE	0,07		
78	49,8	Trans-PINOCARVEOL	0,02		
79	50,2	E- $\beta$ -FARNESENE	0,43		
80	50,3	Trans-p-2,8-MENTHADIEN-1-OL	0,05		
81	50,4	ESTRAGOL	0,20		
82	50,6	DIHYDROCARVYL ACETATE	0,54		
83	50,8	Cis-PIPERITOL	0,04		
84	51,0	$\alpha$ -HUMULENE	0,06		
85	51,4	Cis-4,5-MUUROLADIENE	0,06		
86	52,0	$\alpha$ -TERPINEOL	0,26		
87	52,3	BORNEOL	0,03		
88	53,4	VERBENONE	0,10		
89	53,6	GERMACRENE D	0,36		
90	53,8	DIHYDROCARVEOL	0,57		

**Identification results 3 : SPEARMINT NATIVE BATCH S30101**

Peak	RT (min)	Compound name	%	Norm (%)	Allergens (%)
91	54,5	SESQUITERPENE	0,10		
92	54,6	PIPERITONE	0,11		
93	55,2	<b>CARVONE</b>	<b>69,30</b>		
94	55,4	GERANYL ACETATE	0,05		
95	55,6	FARNESENE ISOMER	0,05		
96	56,2	δ-CADINENE	0,07		
97	56,6	cis-CARVYL ACETATE	0,21		
98	57,0	p-METHYLACETOPHENONE	0,04		
99	57,8	NEROL	0,05		
100	58,4	trans-p-1,7-MENTHA-8,9-DIEN-2-OL	0,04		
101	58,5	TERPENIC ALCOHOL	0,07		
102	60,0	Trans-CARVEOL	0,40		
103	60,6	NEOISODIHYDROCARVEOL	0,08		
104	60,7	ISOPIPERITENONE + p-CYMENE-8-OL	0,01		
105	61,1	E-GERANYL ACETONE	0,03		
106	61,7	Cis-CARVEOL	0,25		
107	62,5	MYRCENOL	0,02		
108	63,0	Cis-p-1,7-MENTHA-8,9-DIEN-2-OL	0,01		
109	64,4	COMPOUND Mw=220	0,02		
110	65,9	PIPERITENONE	0,04		
111	66,9	Trans-JASMONE	0,18		
112	67,6	TERPENIC COMPOUND	0,04		
113	67,9	SESQUITERPENOL	0,02		
114	68,2	PHENYLETHYLIC ESTER	0,02		
115	69,0	ISOCARYOPHYLLENE OXYDE	0,03		
116	69,6	CARYOPHYLLENE OXYDE	0,07		
117	71,2	NEROLIDOL	0,01		
118	74,3	VIRIDIFLOROL	0,12		
119	76,2	SPATHULENOL	0,02		
120	77,0	OXYGENED COMPOUND	0,01		
121	77,7	EUGENOL	0,04		0,04
122	78,2	THYMOL	0,01		
123	84,9	AROMATIC COMPOUND	0,02		
124	89,5	PHENOL-2-METHYL-6-PROPENYL	0,01		
		<b>TOTAL</b>	<b>99,99</b>		<b>12,78</b>