

Supplementary Material

1. Adaptation of the Essential Oil Analysis Bulletins provided by the company florame® (Saint-Rémy-de-Provence, France).

1.1 Tea Tree Essential Oil Analysis Report Lot 903025

Identification:

- **Name (International Nomenclature of Cosmetic Ingredients (INCI)/CTFA):** *Melaleuca alternifolia* (Tea tree) leaf oil
- **Latin name:** *Melaleuca alternifolia*
- **N° CAS:** 85085-48-9
- **N° EINECS (European Inventory of Existing Commercial Chemical Substances):** 285-377-1

General characteristics:

- **Botanical family:** Myrtaceae
- **Product acquisition:** Steam distillation of leaves and terminal branches
- **Main molecules :** Terpinen-4-ol, γ -terpinene, α -terpinene
- **Shelf life:** Contains no preservatives, can be stored in its original state away from light, air and heat according to the best before end (BBE).

Lot characteristics:

- **Origin:** South Africa
- **Quality:** Organic (certified by Ecocert SAS F32600)
- **Texture / Color / Odor:** Clear fluid liquid / colorless / characteristic
- **Refractive index (20°C):** 1.4775
- **Density (20°C):** 0.893
- **Rotary power (20°C):** 9.9°

Lot information:

- **Distillation date:** 12/2018
- **BBE:** 12/2023

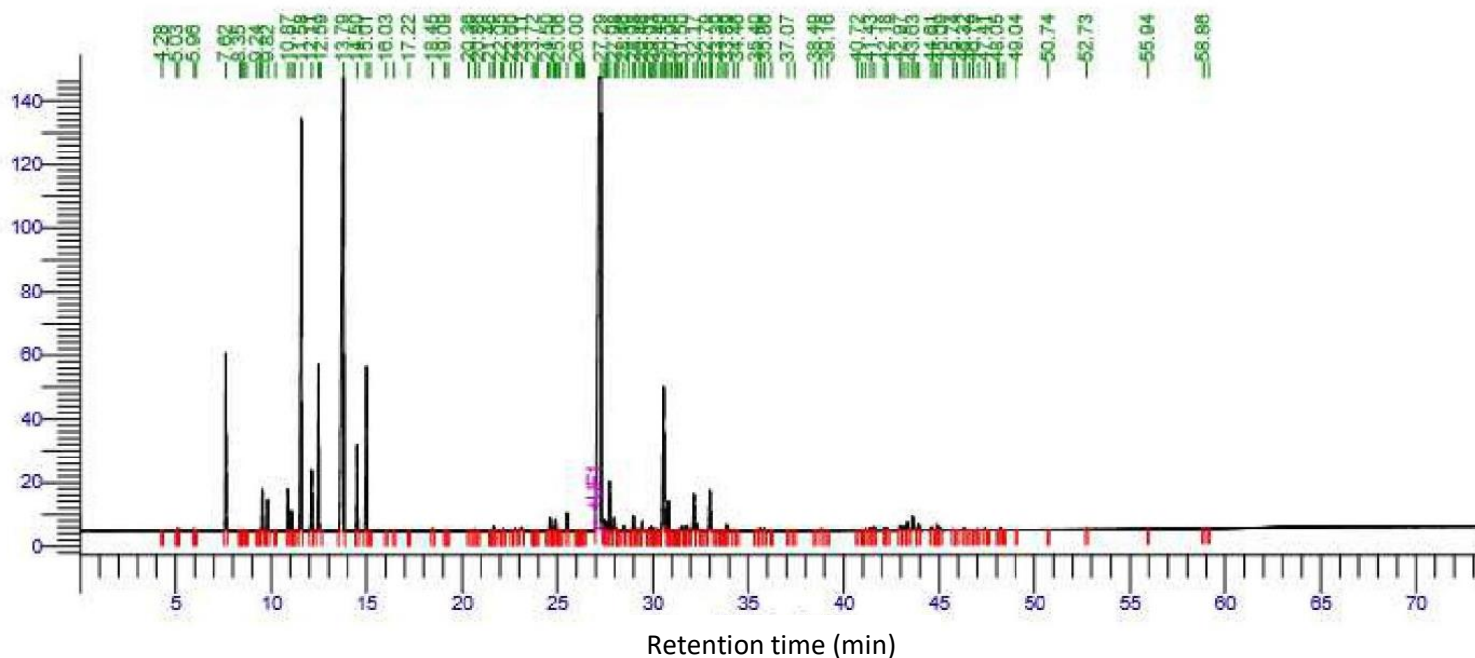
Chromatographic analysis conditions:

- **Device:** GC with dual FID detection
- **Carrier gas:** Hydrogen
- **Polar column:** Elite Vax (100% polyethylene glycol) 60 m / 0.25 mm / 0.25 μ m
- **Nonpolar Column:** Elite 5 (5% diphenyl 95% dimethylpolysiloxane) 60 m/0.25 mm/0.25 μ m

Analysis date: 03/09/2019

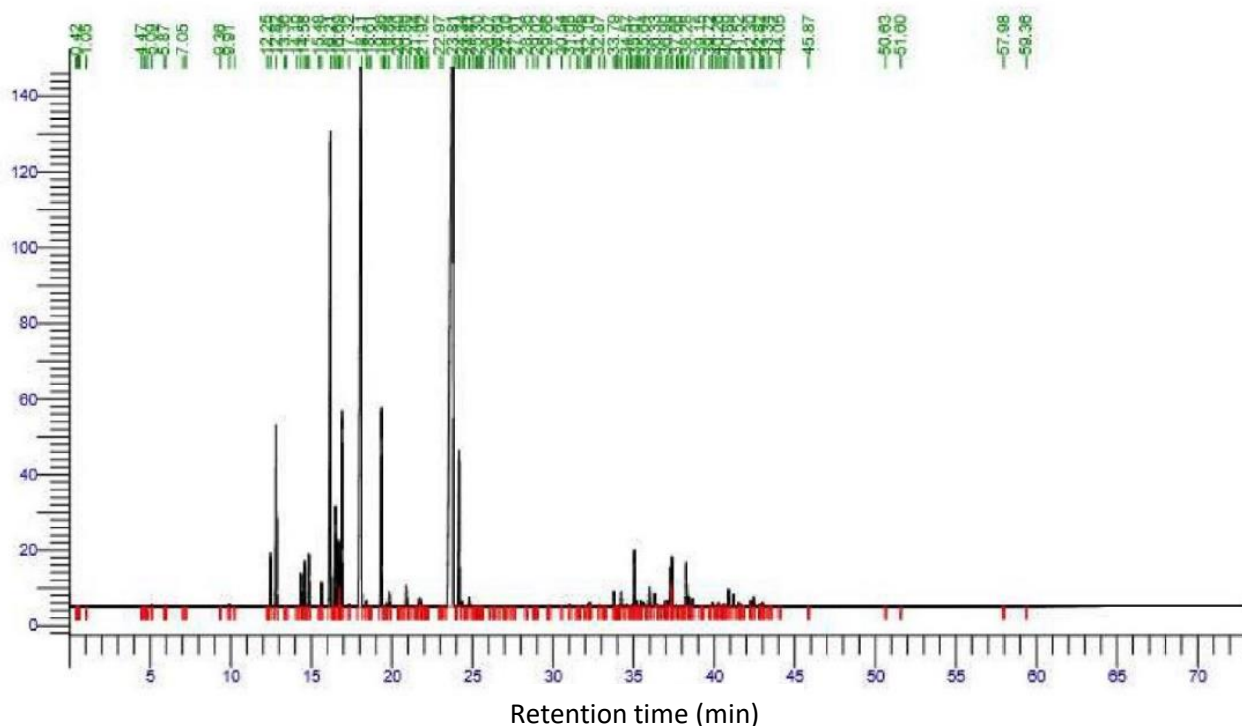
Chromatographic profiles:

- Polar column analysis results**



Order peaks	Molecules name	Retention time (min)	Area (uV*sec)	Area (%)	Order peaks	Molecules name	Retention time (min)	Area (uV*sec)	Area (%)
6	ALPHA THUYENE+ALPHA PINENE	7.621	174708.63	3.23	48	ALPHA GURGUJENE	24.626	13106.23	0.24
13	BETA PINENE	9.537	35106.71	0.65	49		24.798	2908.32	0.05
14	MYRCENE	9.816	25279.06	0.47	50		24.914	12694.02	0.23
16	ALPHA PHELLANDRENE	10.874	38765.73	0.72	53	LINALOL	25.510	19292.58	0.36
17		11.063	18977.32	0.35	59	TERPINENE-4-OL	27.292	2304102.68	42.54
19	ALPHA TERPINENE	11.580	554375.94	10.24	60		27.445	9472.94	0.17
20	LIMONENE	12.108	56530.77	1.04	61		27.578	8815.55	0.16
21	1.8 cineole + beta phellandren	12.496	199528.39	3.68	62	TRANS BETA CARYOPHYLLENE	27.720	47390.94	0.87
23	GAMMA TERPINENE	13.790	1171977.05	21.64	63		27.982	18393.72	0.34
24	PARA CYMENE	14.505	78064.17	1.44	66		28.456	5128.79	0.09
25	TERPINOLENE	15.011	182273.45	3.37	68	AROMADENDRENE	28.978	16387.62	0.30
37		21.650	4934.52	0.09	69		29.064	3199.68	0.06
43		23.110	4023.26	0.07	71	ALLOAROMADENDRENE	29.464	10698.07	0.20
					73		29.818	2822.20	0.05
					74		29.932	4384.49	0.08
					78	ALPHA TERPINEOL	30.567	175826.61	3.25
					79		30.660	7470.76	0.14
					80	LEDENE	30.812	34932.93	0.64
					85		31.498	4692.54	0.09
					86		31.687	4870.87	0.09
					87		31.799	8641.04	0.16
					88		32.167	40120.63	0.74
					89	B SELINENE	32.322	7412.44	0.14
					92	DELTA CADINENE	33.007	46889.96	0.87
					97		33.886	6256.89	0.12
					101		35.628	2582.23	0.05
					113		41.623	3409.67	0.06
					116		42.971	5437.12	0.10
					117		43.126	4489.82	0.08
					118		43.345	8506.54	0.16
					119	GLOBULOL	43.629	15393.76	0.28
					121	VIRIDIFLOROL	43.928	7175.49	0.13
					122		44.614	3101.44	0.06
					124		44.903	5668.28	0.10
							1288.910	5416221.91	100.00

- Nonpolar column analysis results



Order peaks	Molecules name	Retention time (min)	Area (uV*sec)	Area (%)
18	ALPHA THUYENE	12.457	38299.14	0.71
19	ALPHA PINENE	12.819	135751.17	2.52
23	SABINENE	14.344	25385.25	0.47
24	BETA PINENE	14.578	35441.41	0.66
26	MYRCENE	14.856	39017.45	0.72
28	ALPHA PHELLANDRENE	15.621	19700.14	0.37
29	ALPHA TERPINENE	16.206	548966.31	10.19
31	PARA CYMENE	16.493	80344.96	1.49
32	LIMONENE	16.688	58398.53	1.08
33	BETA PHELLANDRENE	16.763	36761.26	0.68
34	1,8-CINEOLE	16.904	163213.77	3.03
35		17.324	2588.68	0.05
36	GAMMA TERPINENE	18.108	1151919.23	21.38
37		18.424	5192.96	0.10
40	TERPINOLENE	19.365	186181.18	3.46
42		19.657	2961.01	0.05
43		19.837	12369.57	0.23
46	LINALOL	20.891	19478.89	0.36
50		21.741	13795.86	0.26
51		21.829	3605.85	0.07
57	TERPINEN-4-OL	23.810	2273456.35	42.20
59	ALPHA TERPINEOL	24.176	174851.30	3.25
60	ALPHA COPAENE	24.343	5309.95	0.10
62		24.813	7490.93	0.14
87		32.286	3013.81	0.06
92	ALPHA GURJUNENE	33.788	13362.52	0.25
96	TRANS BETA CARYOPHYLLENE	34.249	13469.54	0.25
100	AROMADENDRENE	35.069	53710.14	1.00
101		35.192	4590.32	0.09
103		35.451	4960.53	0.09
104		35.645	4202.51	0.08
106	ALLOAROMADENDRENE	35.970	17044.86	0.32
107		36.333	12709.77	0.24
111		36.990	4829.62	0.09
112		37.085	8570.32	0.16
113	LEDENE	37.302	44215.27	0.82
114	BICYCLOGERMACRENE	37.388	45525.47	0.85
119	DELTA CADINENE	38.276	42044.94	0.78
120		38.422	8865.37	0.16
121		38.681	6841.61	0.13
125		39.902	4160.48	0.08
127		40.259	3170.96	0.06
131	GLOBULOL	40.887	15687.58	0.29
132	VIRIDIFLOROL	41.218	13036.92	0.24
133		41.525	2967.01	0.06
136		42.296	5763.16	0.11
137		42.444	8740.30	0.16
139		42.977	4836.16	0.09
		1351.683	5386800.33	100.00

1.2 Cajeput Essential Oil Analysis Report Lot 801736

Identification:

- **Name (INCI/CTFA):** *Melaleuca leucadendra* Cajeput oil
- **Latin name:** *Melaleuca cajaputi*
- **N° CAS :** 85480-37-1
- **N° EINECS:** 287-316-4

General characteristics:

- **Botanical family:** Myrtaceae
- **Product acquisition:** Steam distillation of organic cajeput leaves
- **Main molecules:** 1,8-cineole, α -terpineol, Terpinolene
- **Allergens:** Limonene, linalool, geraniol
- **Shelf life:** Contains no preservatives, can be stored in its original state away from light, air and heat according to the BBE. (5 years from the date of distillation)

Lot characteristics:

- **Origin:** South Africa
- **Quality:** Organic (certified by Ecocert SAS F32600)
- **Texture / Color / Odor:** Clear liquid/ pale yellow/ nice fresh
- **Refractive index (20°C):** 1.4676
- **Density (20°C):** 0,914
- **Rotary power (20°C):** -1.2°

Lot information:

- **Distillation date:** 09/2017
- **BBE:** 09/2022

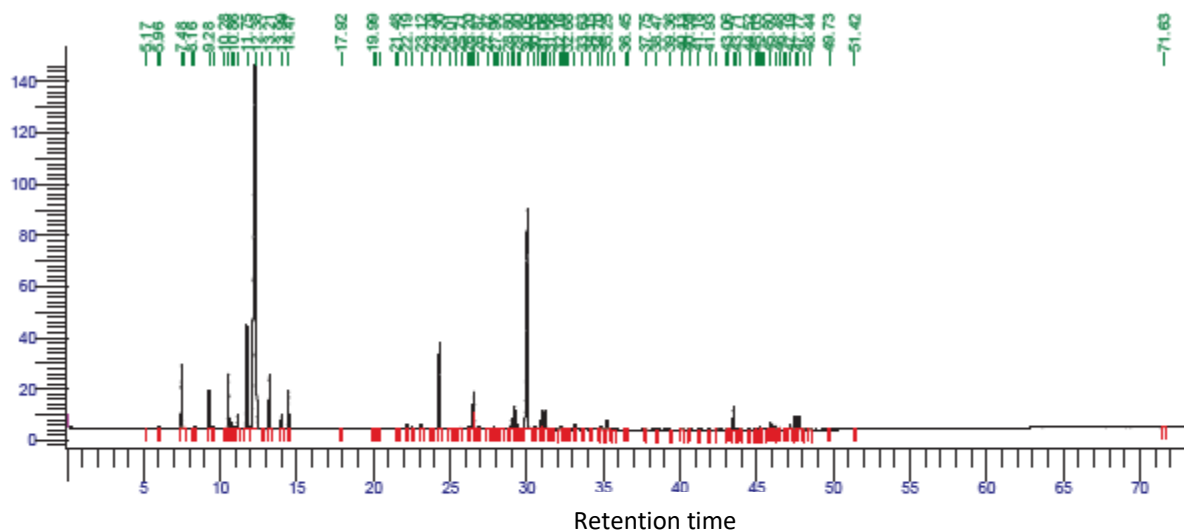
Chromatographic analysis conditions:

- **Device:** GC with dual FID detection
- **Carrier gas:** Hydrogen
- **Polar column:** Elite Vax (100% polyethylene glycol) 60 m / 0.25 mm / 0.25 μ m
- **Nonpolar Column:** Elite 5 (5% diphenyl 95% dimethylpolysiloxane) 60 m/0.25 mm/0.25 μ m

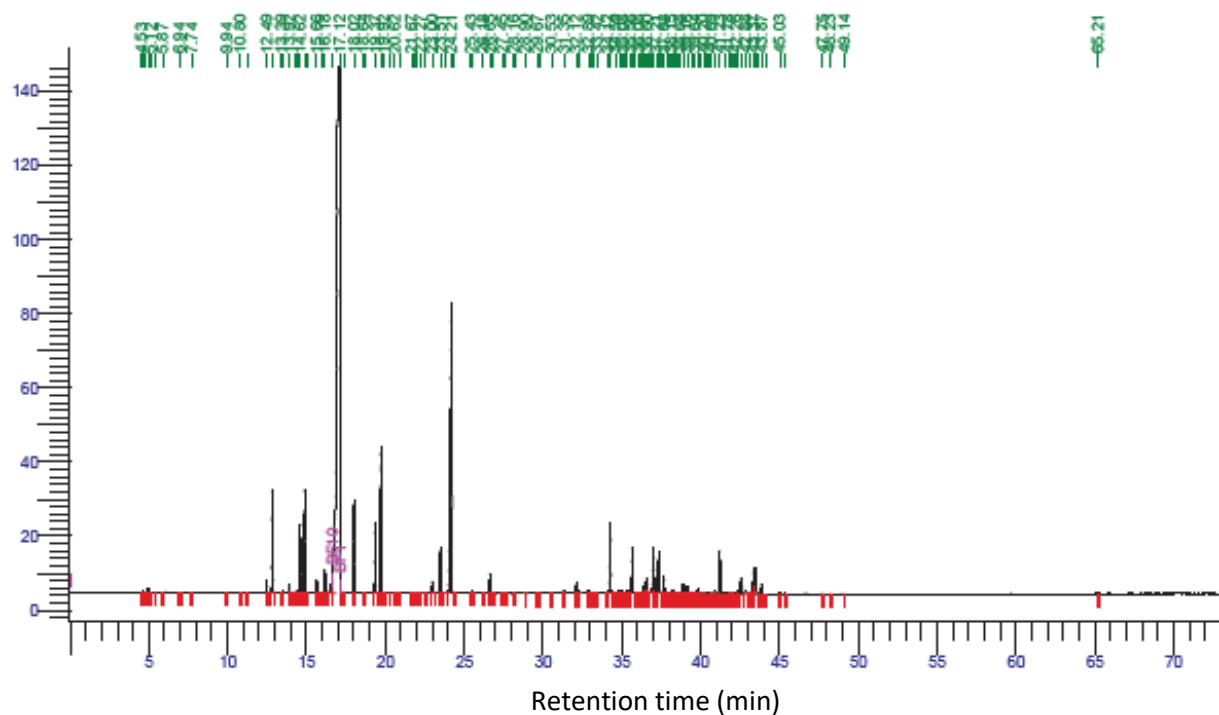
Analysis date: 12/02/2019

Chromatographic profiles:

- Polar column analysis results**



- Nonpolar column analysis results



Order peaks	Molecules name	Retention time (min)	Area (uV*sec)	Area (%)	Order peaks	Molecules name	Retention time (min)	Area (uV*sec)	Area (%)
14	ALPHA THUYENE	12.487	9033.82	0.20	45	TERPINEN-4-OL	23.513	41001.50	0.91
15	ALPHA PINENE	12.846	76696.78	1.71	47	ALPHA TERPINEOL	24.214	503307.28	11.19
18	BENZALDEHYDE	13.924	7044.73	0.16	52		26.649	16114.28	0.36
21	SABINENE	14.618	55361.99	1.23	62		31.347	2917.49	0.06
22	MYRCENE	14.900	81407.53	1.81	63	ACETATE DE GERANYLE	32.122	11159.22	0.25
24	ALPHA PHELLANDRENE	15.657	11717.37	0.26	65	ALPHA COPAENE	32.887	2836.07	0.06
26	ALPHA TERPINENE	16.180	24474.28	0.54	70		34.280	66868.64	1.49
27	PARA CYMENE	16.597	19413.07	0.43	72		34.853	2884.59	0.06
28	CINEOLE	17.124	2916315.41	64.83	75		35.350	4473.88	0.10
30	GAMMA TERPINENE	18.022	76858.90	1.71	76		35.564	3046.56	0.07
33	TERPINOLENE	19.368	58775.31	1.31	77	ALPHA CARYOPHYLLENE	35.673	41300.17	0.92
34	LINALOL	19.737	147078.71	3.27	83		36.430	7138.92	0.16
44	BORNEOL	22.999	11096.17	0.25	84		36.511	9610.44	0.21
					85	D GERMACRENE	36.602	14717.22	0.33
					87		36.917	4758.68	0.11
					88	BETA SELINENE	37.010	57450.39	1.28
					89		37.207	4083.18	0.09
					90	ALPHA SELINENE	37.336	40054.39	0.89
					93		37.678	17929.24	0.40
					97		38.258	3407.42	0.08
					102		38.902	7708.87	0.17
					103		39.180	6670.64	0.15
					107		39.828	3944.15	0.09
					115	OXYDE DE CARYOPHYLLENE	41.231	39900.20	0.89
					123	10 EPI GAMMA EUDESMOL	42.345	4291.27	0.10
					124	ALPHA EUDESMOL	42.580	24934.28	0.55
					127		43.369	25386.05	0.56
					128	BETA EUDESMOL	43.458	25799.75	0.57
					130		43.869	9213.11	0.20
							1269.604	4498182.15	100.00

1.3 Niaouli Essential Oil Analysis Report Lot 100378

Identification:

- **Name (INCI/CTFA):** *Melaleuca viridiflora* leaf oil
- **Latin name:** *Melaleuca quinquenervia*
- **N° CAS:** 132940-73-9
- **N° EINECS:** 310-217-5

General characteristics:

- **Botanical family:** Myrtaceae
- **Product acquisition:** Steam distillation of leaves
- **Main molecules:** 1,8-cineole, Viridiflorol
- **Allergens:** Limonene, linalool, Citronellol
- **Shelf life:** Contains no preservatives, can be kept as is for 5 years away from light, air and heat.

Lot characteristics:

- **Origin:** Madagascar
- **Quality:** Organic (certified by Ecocert SAS F32600)
- **Texture / Color / Odor:** Clear fluid liquid / colorless / characteristic
- **Refractive index (20°C):** 1,464
- **Density (20°C):** 0,910

Lot information:

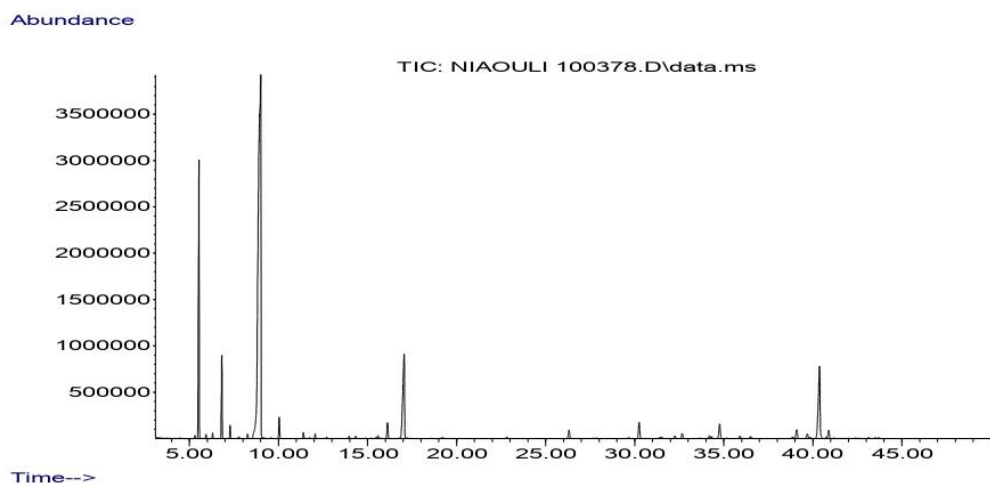
- **Distillation date:** 09/2017
- **BBE:** 09/2022

Chromatographic analysis conditions:

- **Device:** GC 6890 MS 5975
- **Mass range:** 40-450 uma
- **Column:** HP5ms/ 30 m/ 0.25 mm/ 0.25 µm
- **Injection divided:** 1 EL - ratio 1/200
- **Carrier gas:** Helium / Flow rate: 1 mL/min
- **Oven:** 2°/min, 60-250°C for 5 min
- **Acquisition time:** 100 min

Analysis date: 14/03/11

Chromatographic profiles:



Identification	Area (%)
α -Thuyène	0,11
α -Pinène	12,00
Camphène	0,18
Benzaldéhyde	0,22
β -Pinène	3,46
β -Myrcène	0,56
α -Phellandrène	0,11
α -Terpinène	0,26
p-Cymène	57,14
Limonène*	
1,8-Cinéole	
trans- β -Ocimène	0,04
γ -Terpinène	1,04
Terpinolène	0,34
Benzoate de méthyle	0,05
Linalol*	0,24
Alcool fenchylique	0,07
Isopulegol	0,13
Bornéol	0,06
Terpinèn-4-ol	1,01
α -Terpinéol	8,55
Citronellol*	0,07
Patchoulène	0,06
β -Caryophyllène	1,22
α -Caryophyllène	0,20
Alloaromadendrène	0,38
β -Sélinène	0,20
Lédène	1,19
γ -Cadinène	0,18
δ -Cadinène	0,16
Nérolidol	0,73
Viridiflorol	7,29
Ledol	0,73

1.4 White thyme Essential Oil Analysis Report Lot 800180

Identification:

- **Name (INCI/CTFA):** *Thymus satureioides* (White thyme) oil
- **Latin name:** *Thymus satureioides*

General characteristics:

- **Botanical family:** Lamiaceae
- **Product acquisition:** Steam distillation of flowered tops
- **Main molecules:** Borneol, thymol, carvacrol
- **Allergens:** Limonene, linalool
- **Shelf life:** Contains no preservatives, can be stored in its original state away from light, air and heat according to the BBE. (5 years from the date of distillation)

Lot characteristics:

- **Origin:** Morocco
- **Quality:** Organic (certified by Ecocert SAS F32600)
- **Texture / Color / Odor:** Clear liquid/light yellow/characteristic
- **Refractive index (20°C):** 1,4843
- **Density (20°C):** 0,938
- **Rotary power (20°C):** -6.0°

Lot information:

- **Distillation date:** 06/2016
- **BBE:** 06/2022

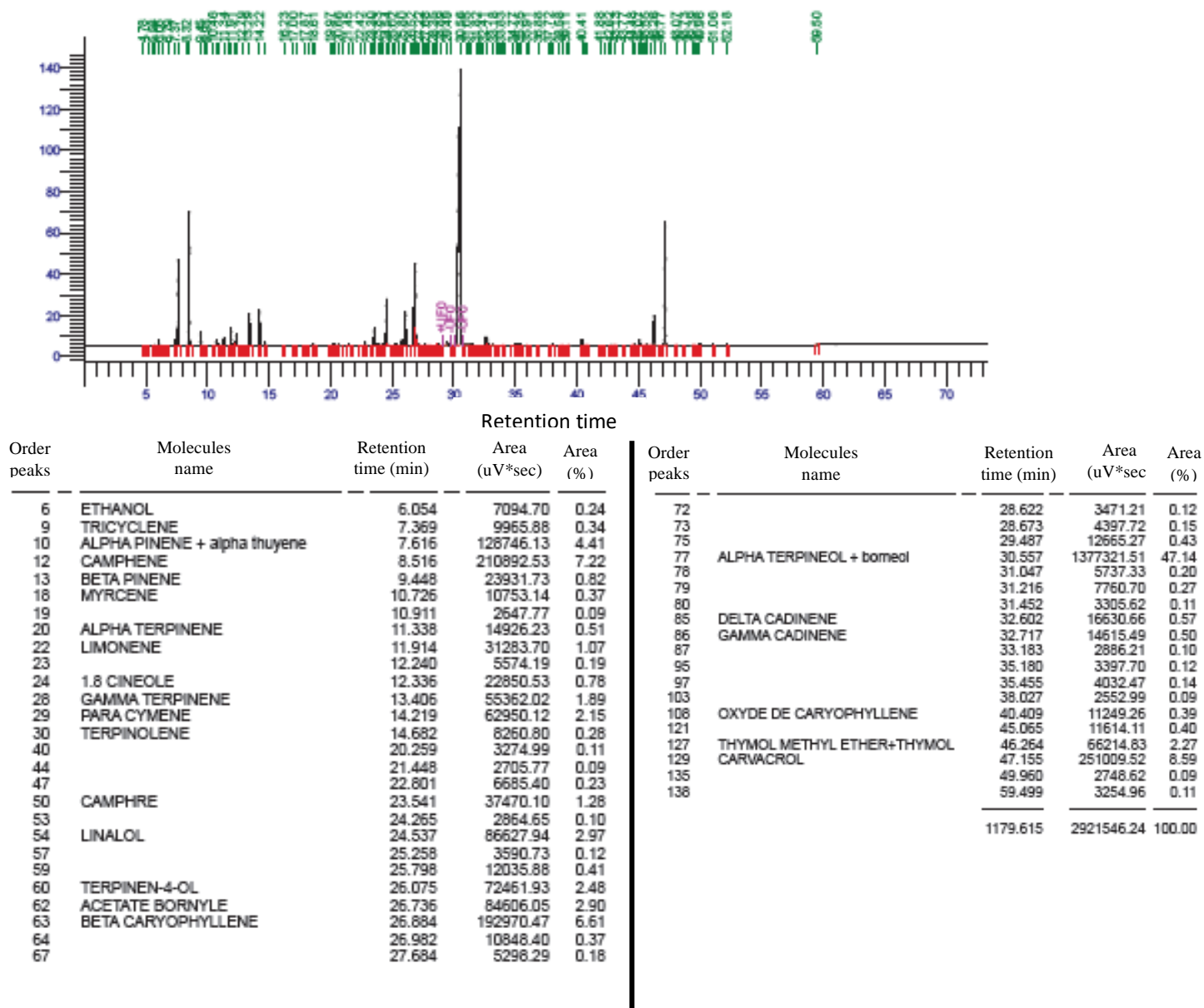
Chromatographic analysis conditions:

- **Device:** GC with dual FID detection
- **Carrier gas:** Hydrogen
- **Polar column:** Elite Vax (100% polyethylene glycol) 60 m / 0.25 mm / 0.25 µm
- **Nonpolar Column:** Elite 5 (5% diphenyl 95% dimethylpolysiloxane) 60 m/0.25 mm/0.25 µm

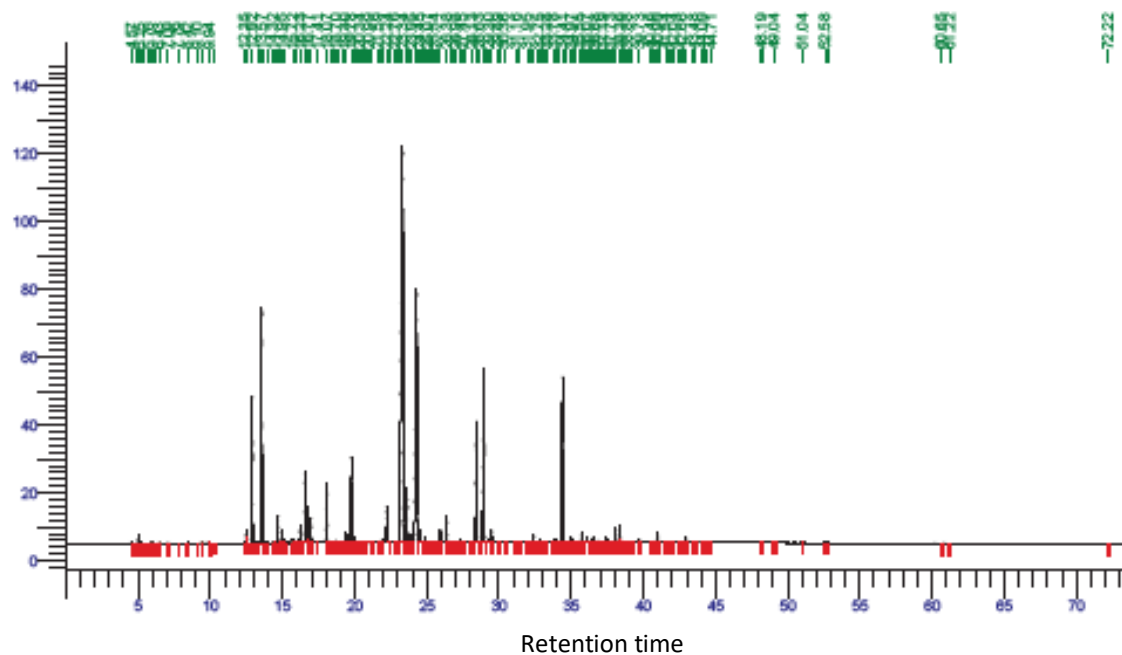
Analysis date: 19/01/2018

Chromatographic profiles:

- Polar column analysis results**



- Nonpolar column analysis results**



Order peaks	Molecules name	Retention time (min)	Area (uV*sec)	Area (%)	Order peaks	Molecules name	Retention time (min)	Area (uV*sec)	Area (%)
3	ETHANOL	5.014	5059.16	0.17	44	GAMMA TERPINENE	18.070	53448.21	1.83
21	TRICYCLEN	12.492	9749.14	0.33	51	TERPINOLENE	19.424	12054.45	0.41
22	ALPHA THUYENE	12.550	7304.25	0.25	52	LINALOL	19.784	85282.77	2.92
24	ALPHA PINENE	12.915	120496.01	4.12	53		19.982	6941.29	0.24
26	CAMPHENE	13.574	212341.40	7.26	64		21.930	3976.25	0.14
31	BETA PINENE	14.680	22948.70	0.78	65	CAMPHERE	22.242	37158.00	1.27
33	MYRCENE	14.949	10346.93	0.35	70	BORNEOL	23.339	932162.15	31.88
34		15.105	2665.07	0.09	71	TERPINEN-4-OL	23.639	54082.31	1.85
36		15.719	3331.22	0.11	73		23.951	12391.28	0.42
38	ALPHA TERPINENE	16.229	14216.65	0.49	74	ALPHA TERPINEOL	24.308	466443.32	15.95
39	PARA CYMENE	16.580	62538.70	2.14	76		24.527	11005.95	0.38
40	LIMONENE	16.771	31166.63	1.07	78		24.893	4514.00	0.15
41		16.847	3899.89	0.13	85		25.939	11722.05	0.40
42	1.8 CINEOLE	16.975	21380.12	0.73	86	THYMOL METHYL ETHER	26.378	24022.21	0.82
					90		27.311	3788.42	0.13
					94	ACETATE BORNYLE + THYMOL	28.431	132755.89	4.54
					96	CARVACROL	28.975	252284.74	8.63
					98		29.297	4294.88	0.15
					99		29.497	11246.06	0.38
					109		32.398	6204.34	0.21
					116		33.896	2856.04	0.10
					118	TRANS BETA CARYOPHYLLENE	34.413	193689.83	6.62
					120		34.972	5691.97	0.19
					124		35.757	9420.71	0.32
					126		36.074	4891.25	0.17
					129		36.532	4701.20	0.16
					136		37.455	4538.33	0.16
					140	GAMMA CADINENE	38.081	13674.37	0.47
					141	DELTA CADINENE	38.355	13002.49	0.44
					151	OXYDE DE CARYOPHYLLENE	40.986	10665.14	0.36
					161		42.936	7401.58	0.25
							1104.173	2923755.33	100.00