

GC/MS BATCH NUMBER: T20102

ESSENTIAL OIL: TEA TREE

BOTANICAL NAME: MELALEUCA ALTERNIFOLIA

ORIGIN: AUSTRALIA

KEY CONSTITUENTS PRESENT IN THIS BATCH OF TEA TREE OIL	%
TERPINEN-4-OL	38.9
γ-TERPINENE	20.8
α-TERPINENE	9.6
1,8-CINEOLE + β-PHELLANDRENE	3.8
TERPINOLENE	3.4
p-CYMENE	3.1
α-TERPINEOL	3.0
α-PINENE	2.7
LEDENE (VIRIDIFLORENE)	1.2
Δ-CADINENE	1.2
AROMADENDRENE	1.2
LIMONENE	1.0
GLOBULOL	0.4
SABINENE	0.3
VIRIDIFLOROL	0.2

Comments from Robert Tisserand: This is an excellent tea tree oil, and it conforms to the ISO standard for Australian Tea Tree Oil.

Date : September 8, 2015

SAMPLE IDENTIFICATION

Internal code : 15I01-PTH3-1-HM

Customer identification : Tea Tree – Australia – T2010251

Type : Essential Oil

Source : *Melaleuca alternifolia*

Customer : Plant Therapy

ANALYSIS

Method : PC-PA-001-15E06, "Analysis of the composition of a liquid essential oil by GC-FID" (in French).

Analyst : Hubert Marceau, B. Sc.

Analysis date : 2015-09-02

IDENTIFIED COMPOUNDS

Identification	Colonne: BP5			Colonne: WAX			Molecular Class
	R.T.	R.I.	%	%	R.I.	R.T.	
Ethanol	0.28	476	0.05	0.05	893	0.65	Aliphatic alcohol
<i>cis</i> -Hex-3-en-1-ol	2.00	865	0.01	0.01	1349	5.45	Aliphatic alcohol
α -Thujene	2.72	921	0.93	0.96	995	1.11	Monoterpene
α -Pinene	2.81	926	2.67	2.64	985	1.06	Monoterpene
Camphene	3.07*	942	0.02	0.01	1023	1.34	Monoterpene
α -Fenchene	3.07*	942	[0.02]	0.01	1017	1.28	Monoterpene
Sabinene	3.48	969	0.32	0.33	1082	1.86	Monoterpene
β -Pinene	3.53	972	0.74	0.73	1063	1.69	Monoterpene
Myrcene	3.83	991	0.86	0.80	1135	2.45	Monoterpene
α -Phellandrene	4.07	1006	0.43	0.44	1125	2.34	Monoterpene
α -Terpinene	4.28	1018	9.56	9.43	1142	2.55	Monoterpene
β -Phellandrene	4.47*†	1028	7.88	3.59	1164	2.82*	Monoterpene
<i>para</i> -Cymene	4.47*†	1028	[7.88]	3.13	1230	3.70	Monoterpene
Limonene	4.47*†	1028	[7.88]	0.97	1158	2.74	Monoterpene
1,8-Cineole	4.53†	1032	[7.88]	[3.59]	1164	2.82*	Monoterp. ether
<i>trans</i> - β -Ocimene	4.85	1050	0.01	0.01	1221	3.58	Monoterpene
γ -Terpinene	5.07	1063	20.80	20.45	1212	3.44	Monoterpene
<i>cis</i> -Sabinene hydrate	5.34	1078	0.04	0.05	1423	6.69*	Monoterp. alcohol
Terpinolene	5.48	1086	3.44	3.37	1242	3.88	Monoterpene
<i>para</i> -Cymenene	5.67	1097	0.06	0.08	1390	6.07	Monoterpene
<i>trans</i> -Sabinene hydrate	5.89	1108	0.06	0.07	1504	8.42	Monoterp. alcohol
Linalool	5.92	1109	0.06	0.05	1516	8.82	Monoterp. alcohol
<i>cis</i> - <i>para</i> -Menth-2-en-1-ol	6.31	1127	0.24	0.24	1514	8.76	Monoterp. alcohol
<i>cis</i> - <i>para</i> -Mentha-2,8-dien-1-ol	6.56	1138	0.02				Monoterp. alcohol
<i>trans</i> - <i>para</i> -Menth-2-en-1-ol	6.77	1148	0.14	0.19	1578	10.83	Monoterp. alcohol
<i>cis</i> - β -Terpineol	6.84	1151	0.02	0.06	1585	11.07	Monoterp. alcohol
Terpinen-4-ol	7.76	1193	38.89	40.05	1553	10.03*	Monoterp. alcohol
<i>para</i> -Cymen-8-ol	8.05	1204	0.04	0.05	1791	21.94	Monoterp. alcohol
α -Terpineol	8.16	1207	2.99	2.98	1642	13.58	Monoterp. alcohol
<i>trans</i> -Piperitol	8.50	1216	0.10	0.09	1690	15.84	Monoterp. alcohol
α -Cubebene	13.37	1331	0.04	0.07	1417	6.58	Sesquiterpene
α -Ylangene	14.45	1350	0.05	[0.05]	1423	6.69*	Monoterp. ester
α -Copaene	14.81	1356	0.18	0.18	1439	7.04	Sesquiterpene
α -Gurjunene	16.47	1385	0.33	0.40	1475	7.77	Sesquiterpene
β -Caryophyllene	17.28	1399	0.42	0.51	1532	9.34	Sesquiterpene
Aromadendrene	18.54	1416	1.23	[40.05]	1553	10.03*	Sesquiterpene
<i>cis</i> -Cadina-1(6),4-diene	19.42	1428	0.08	0.64	1572	10.65*	Sesquiterpene
α -Humulene	19.76	1432	0.03	0.40	1596	11.44*	Sesquiterpene
allo-Aromadendrene	19.98	1435	0.51	[0.64]	1572	10.65*	Sesquiterpene
<i>trans</i> -Cadina-1(6),4-diene	21.30	1452	0.29	[0.40]	1596	11.44*	Sesquiterpene

Viridiflorene	22.55	1469	1.24	1.14	1623	12.65	Sesquiterpene
Bicyclogermacrene	22.91	1474	0.66	0.59	1651	13.99	Sesquiterpene
α -Muurolene	23.67	1484	0.15	0.16	1654	14.12	Sesquiterpene
δ -Cadinene	25.30*	1504	1.55	1.24	1686	15.67	Sesquiterpene
Zonarene	25.30*	1504	[1.55]	0.28	1680	15.36	Sesquiterpene
<i>trans</i> -Calamenene	25.63	1508	0.13	0.12	1746	19.13	Sesquiterpene
<i>trans</i> -Cadina-1,4-diene	26.30	1516	0.20	0.19	1702	16.42	Sesquiterpene
Globulol	30.74	1569	0.38	0.50	1983	34.58	Sesquiterp. alcohol
Viridiflorol	31.72	1581	0.22	0.21	1989	34.95	Sesquiterp. alcohol
1,10-diepi-Cubenol	33.67	1607	0.18	0.17	1968	33.70	Sesquiterp. alcohol
1-epi-Cubenol?	33.95	1613	0.24				Sesquiterp. alcohol
Total identified			98.49%	97.64%			

*: Two or more compounds are coeluting on this column

†: The peak apexes were resolved, but overlapping occurred and they were summed for analysis.

[xx]: Duplicate percentage due to coelutions, not taken account in the identified total

Note: no correction factor was applied

OTHER DATA

Physical aspect : Clear liquid

Refractive index : 1.4775 \pm 0.0003 (20 °C)

CONCLUSION

No adulterant, contaminant or diluent were detected using this method.

Checked and approved by :

Alexis St-Gelais, M. Sc., chimiste 2013-174

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