

GC/MS BATCH NUMBER: T30105

ESSENTIAL OIL: TEA TREE ORGANIC
BOTANICAL NAME: MELALEUCA ALTERNIFOLIA
ORIGIN: AUSTRALIA

KEY CONSTITUENTS PRESENT IN THIS BATCH OF TEA TREE ORGANIC OIL	%
TERPINEN-4-OL	40.7
γ-TERPINENE	20.4
α-TERPINENE	7.2
p-CYMENE	4.9
1,8-CINEOLE	3.4
α-TERPINEOL	3.4
TERPINOLENE	2.8
α-PINENE	2.8
AROMADENDRENE	1.3
δ-CADINENE	1.0
VIRIDIFLORENE	0.9
LIMONENE	0.7
GLOBULOL	0.6
VIRIDIFLOROL	0.3
SABINENE	0.03

Comments from Robert Tisserand: Excellent clean, green odor quality, and all 15 key ISO constituents conform to the standard.

Date : December 14, 2016

SAMPLE IDENTIFICATION

Internal code : 16L06-PTH5-1-DM

Customer identification : Organic Tea Tree - T3010561R

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 : Alexis St-Gelais, M. Sc., chimiste

Analysis date : 2016-12-09

Checked and approved by :

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

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IDENTIFIED COMPOUNDS

Identification	Column: BP5			Column: WAX			Molecular Class
	R.T.	R.I.	%	%	R.I.	R.T.	
Ethanol	0.33	497	0.09	0.09	786	0.50	Aliphatic alcohol
Ethyl acetate	0.42	529	0.02				Aliphatic ester
2-Methylbutyral	0.68	620	0.01				Aliphatic aldehyde
<i>cis</i> -Hex-3-en-1-ol	2.52	867	0.01	0.01	1311	4.48	Aliphatic alcohol
α -Thujene	3.27	919	0.82	1.26	957	0.91	Monoterpene
α -Pinene	3.38	926	2.78	2.34	951	0.88	Monoterpene
Camphene	3.66	943	0.02	0.01	1003	1.10	Monoterpene
Sabinene	4.09	969	0.03	0.03	1058	1.51	Monoterpene
β -Pinene	4.15	973	0.70	0.69	1042	1.39	Monoterpene
Myrcene	4.44	990	0.77	0.82	1116	1.99	Monoterpene
α -Phellandrene	4.71	1005	0.25	0.17	1112	1.95	Monoterpene
α -Terpinene	4.92	1017	7.18	7.26	1127	2.11	Monoterpene
para-Cymene	5.12	1028	4.92	4.87	1209	3.07*	Monoterpene
Limonene	5.14	1029	0.71	4.51	1146	2.35*	Monoterpene
1,8-Cineole	5.19	1032	3.42	[4.51]	1146	2.35*	Monoterp. ether
<i>trans</i> - β -Ocimene	5.49	1049	0.01	[4.87]	1209	3.07*	Monoterpene
γ -Terpinene	5.73	1062	20.35	20.37	1197	2.94	Monoterpene
Terpinolene	6.16	1085	2.80	2.79	1227	3.32	Monoterpene
para-Cymenene	6.38	1097	0.09	0.08	1365	5.25	Monoterpene
Linalool	6.69	1108	0.07	0.39	1485	7.27*	Monoterp. alcohol
<i>cis</i> -para-Menth-2-en-1-ol	7.21	1128	0.18	[0.39]	1485	7.27*	Monoterp. alcohol
<i>trans</i> -para-Menth-2-en-1-ol	7.74	1148	0.06	0.03	1567	9.32	Monoterp. alcohol
Unknown (m/z = 109, 124 (39), 119 (35), 43 (35), 91 (31)...))	7.80	1150	0.05				
Terpinen-4-ol	8.99	1195	40.67	41.40	1533	8.27*	Monoterp. alcohol
α -Terpineol	9.53	1207	3.39	3.49	1621	10.91*	Monoterp. alcohol
<i>trans</i> -Piperitol	10.00	1218	0.06	0.19	1660	12.56	Monoterp. alcohol
Piperitone	11.75	1257	0.03	[3.49]	1621	10.91*	Monoterp. ketone
α -Ylangene	17.09	1351	0.07	0.08	1433	6.30	Sesquiterpene
α -Copaene	17.51	1357	0.15				Sesquiterpene
β -Elemene	18.52	1373	0.05	[41.40]	1533	8.27*	Sesquiterpene
α -Gurjunene	19.46	1387	0.30	0.11	1453	6.66	Sesquiterpene
β -Caryophyllene	20.38	1400	0.32	[41.40]	1533	8.27*	Sesquiterpene
Methyleugenol	21.33	1411	0.08				Phenylpropanoid
Aromadendrene	21.79	1417	1.25	1.06	1547	8.72	Sesquiterpene
<i>trans</i> - α -Bergamotene	21.94	1419	0.17	[41.40]	1533	8.27*	Sesquiterpene
<i>cis</i> -Muurolo-3,5-diene	22.44	1425	0.15	0.44	1549	8.78	Sesquiterpene
α -Humulene	23.18	1434	0.07	0.07	1594	10.10	Sesquiterpene
allo-Aromadendrene	23.43	1437	0.60	0.56	1575	9.57	Sesquiterpene
<i>trans</i> -Cadina-1(6),4-diene	24.84	1454	0.18	0.17	1597	10.20	Sesquiterpene

α-Amorphene	25.82	1466	0.10	0.19	1602	10.36	Sesquiterpene
β-Selinene	26.00	1468	0.13	0.18	1640	11.69	Sesquiterpene
Viridiflorene	26.22	1470	0.91	0.90	1631	11.29	Sesquiterpene
Bicyclgermacrene	26.63	1474	0.32	0.19	1653	12.26	Sesquiterpene
α-Muurolene	27.41	1484	0.16	0.11	1647	11.99	Sesquiterpene
δ-Cadinene	29.15	1506	1.00	1.03	1686	13.70	Sesquiterpene
Zonarene	29.31	1509	0.22	0.22	1680	13.45	Sesquiterpene
<i>trans</i> -Calamenene	29.53	1512	0.19	0.20	1743	16.40	Sesquiterpene
α-Cadinene	30.26	1522	0.17	0.18	1705	14.57	Sesquiterpene
α-Elemol	32.84	1557	0.15	0.15	2006	32.72	Sesquiterp. alcohol
Spathulenol	33.00	1559	0.18	0.18	2023	33.74	Sesquiterp. alcohol
Caryophyllene oxide	33.95	1572	0.17	0.02	1853	22.93	Sesquiterp. ether
Globulol	34.30	1577	0.58	0.60	1973	30.81	Sesquiterp. alcohol
Viridiflorol	34.79	1584	0.35	0.31	1983	31.35	Sesquiterp. alcohol
Guaiol	34.94	1586	0.26	0.24	2015	33.30	Sesquiterp. alcohol
1,10-diepi-Cubenol	36.38	1614	0.26	0.30	1958	29.98*	Sesquiterp. alcohol
1-epi-Cubenol	36.55	1618	0.28	0.41	1954	29.69	Sesquiterp. alcohol
Cubenol	36.70	1622	0.02	[0.30]	1958	29.98*	Sesquiterp. alcohol
τ-Cadinol	37.04	1630	0.05	0.05	2089	36.55	Sesquiterp. alcohol
τ-Muurolol	37.16	1633	0.11	0.07	2105	37.07	Sesquiterp. alcohol
α-Muurolol	37.60	1643	0.04	0.02	2118	37.50	Sesquiterp. alcohol
α-Cadinol	37.74	1647	0.05	0.07	2126	37.78	Sesquiterp. alcohol
Total identified			98.53%	98.91%			

*: Two or more compounds are coeluting on this column

[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 : 1.4770 ± 0.0003 (20 °C)

CONCLUSION

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



