



**PLANT THERAPY**  
100% PURE ESSENTIAL OILS

## GC/MS BATCH NUMBER: T30106

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**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	38.8
γ-TERPINENE	19.4
α-TERPINENE	9.4
TERPINOLENE	3.9
β-PHELLANDRENE	3.6
1,8-CINEOLE	2.6
α-TERPINEOL	2.6
α-PINENE	2.4
p-CYMENE	1.9
AROMADENDRENE	1.6
VIRIDIFLORENE	1.5
δ-CADINENE	1.4
BICYCLOGERMACRENE	1.3

Comments from Robert Tisserand: Clear, metallic-green odor quality. All 15 key constituents conform to the ISO standard.

**Date :** March 31, 2017

*SAMPLE IDENTIFICATION*

**Internal code :** 17C20-PTH1-1-DM

**Customer identification :** Tea Tree organic - T3010665R

**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 :** Benoit Roger Ph. D.

**Analysis date :** 2017-03-28

Checked and approved by :

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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	0.35	632	0.06				Aliphatic alcohol
<i>cis</i> -Hex-3-en-1-ol	2.46	863	0.04	0.04	1324	5.52	Aliphatic alcohol
$\alpha$ -Thujene	3.30	922	0.87	0.88	955	1.21	Monoterpene
$\alpha$ -Pinene	3.41	928	2.37	2.30	945	1.16	Monoterpene
Camphene	3.69	945	0.01	0.01	996	1.45	Monoterpene
Sabinene	4.11	970	0.24	0.23	1056	1.98	Monoterpene
$\beta$ -Pinene	4.17	974	0.70	0.68	1039	1.81	Monoterpene
Myrcene	4.45	990	0.78	0.76	1115	2.56	Monoterpene
$\alpha$ -Phellandrene	4.72	1006	0.48	0.47	1109	2.47	Monoterpene
$\alpha$ -Terpinene	4.94	1018	9.39	9.30	1125	2.68	Monoterpene
<i>para</i> -Cymene	5.10	1027	1.89	1.90	1208	3.80	Monoterpene
$\beta$ -Phellandrene	5.17*	1030	1.75	3.56	1147	2.97*	Monoterpene
Limonene	5.17*	1030	[1.75]	0.84	1140	2.88	Monoterpene
1,8-Cineole	5.21	1033	2.64	[3.56]	1147	2.97*	Monoterp. ether
<i>cis</i> - $\beta$ -Ocimene	5.32	1039	0.01	19.49	1193	3.58*	Monoterpene
<i>trans</i> - $\beta$ -Ocimene	5.50	1048	0.01	[19.49]	1193	3.58*	Monoterpene
$\gamma$ -Terpinene	5.74	1062	19.59	[19.49]	1193	3.58*	Monoterpene
Terpinolene	6.18	1085	3.86	3.80	1224	4.03	Monoterpene
<i>para</i> -Cymenene	6.35	1095	0.04	0.04	1366	6.18	Monoterpene
Linalool	6.59	1105	0.09	0.34	1494	8.94*	Monoterp. alcohol
<i>cis</i> - <i>para</i> -Menth-2-en-1-ol	7.11	1125	0.24	[0.34]	1494	8.94*	Monoterp. alcohol
<i>trans</i> -Limonene oxide	7.25	1130	0.01	0.01	1394	6.63	Monoterp. ether
<i>cis</i> - <i>para</i> -Mentha-2,8-dien-1-ol	7.45	1137	0.02	0.01	1598	12.61	Monoterp. alcohol
<i>trans</i> - <i>para</i> -Menth-2-en-1-ol	7.66	1145	0.14	0.86	1558	11.13*	Monoterp. alcohol
Terpinen-4-ol	8.88	1189	38.83	41.09	1534	10.25*	Monoterp. alcohol
<i>para</i> -Cymen-8-ol	9.15	1199	0.03	0.02	1767	22.00	Monoterp. alcohol
$\alpha$ -Terpineol	9.32	1203	2.57	2.66	1624	13.82*	Monoterp. alcohol
<i>trans</i> -Piperitol	9.76	1213	0.09	1.54	1672	16.26*	Monoterp. alcohol
Nerol	10.39	1227	0.02	0.02	1723	19.11	Monoterp. alcohol
Piperitone	11.63	1254	0.04	0.10	1630	14.10*	Monoterp. ketone
Phellandral	12.86	1282	0.02	[2.66]	1624	13.82*	Monoterp. aldehyde
$\alpha$ -Cubebene	15.83	1333	0.08	0.09	1406	6.82	Sesquiterpene
$\alpha$ -Ylangene	17.14	1352	0.09	0.09	1411	6.94	Sesquiterpene
$\alpha$ -Copaene	17.54	1359	0.25	0.16	1428	7.36	Sesquiterpene
1,5-diepi- $\beta$ -Bourbonene	17.86	1363	0.04	0.02	1480	8.60	Sesquiterpene
$\beta$ -Elemene	18.70	1376	0.03	[41.09]	1534	10.25*	Sesquiterpene
$\alpha$ -Gurjunene	19.49	1388	0.53	0.59	1459	8.11	Sesquiterpene
$\beta$ -Caryophyllene	20.36	1401	0.76	0.84	1520	9.69*	Sesquiterpene
$\beta$ -Gurjunene	20.99	1409	0.12	[0.84]	1520	9.69*	Sesquiterpene
Aromadendrene	21.76	1418	1.59	[41.09]	1534	10.25*	Sesquiterpene

<i>trans</i> - $\alpha$ -Bergamotene	21.91	1420	0.20	0.35	1537	10.34*	Sesquiterpene
$\alpha$ -Guaiene	22.15	1423	0.07	[0.35]	1537	10.34*	Sesquiterpene
Seychellene	22.43	1426	0.20	[0.86]	1558	11.13*	Sesquiterpene
<i>cis</i> -Muurolo-3,5-diene	22.73	1430	0.17	0.18	1549	10.83	Sesquiterpene
<i>cis</i> -Cadin-1(6),4-diene	22.95	1432	0.04	0.15	1556	11.04	Sesquiterpene
$\alpha$ -Humulene	23.11	1434	0.13	0.57	1579	11.92*	Sesquiterpene
allo-Aromadendrene	23.38	1437	0.78	[0.86]	1558	11.13*	Sesquiterpene
<i>trans</i> -Cadin-1(6),4-diene	24.79	1454	0.46	[0.57]	1579	11.92*	Sesquiterpene
$\alpha$ -Amorphene	25.15	1459	0.03	0.03	1608	12.98	Sesquiterpene
$\delta$ -Selinene	25.73	1466	0.12				Sesquiterpene
$\beta$ -Selinene	25.89	1468	0.12	[0.10]	1630	14.10*	Sesquiterpene
Viridiflorene	26.15	1471	1.52	1.48	1613	13.25	Sesquiterpene
Bicyclgermacrene	26.56*	1476	1.35	1.25	1639	14.57*	Sesquiterpene
$\alpha$ -Selinene	26.56*	1476	[1.35]	[1.25]	1639	14.57*	Sesquiterpene
$\alpha$ -Muurolole	27.29	1484	0.19	0.20	1642	14.72	Sesquiterpene
$\gamma$ -Cadinene	28.31	1497	0.03	0.01	1659	15.66	Sesquiterpene
$\delta$ -Cadinene	29.03	1506	1.43	[1.54]	1672	16.26*	Sesquiterpene
Zonarene	29.20*	1509	0.45	0.36	1665	15.93	Sesquiterpene
<i>trans</i> -Calamenene	29.20*	1509	[0.45]	0.08	1732	19.71	Sesquiterpene
<i>trans</i> -Cadin-1,4-diene	30.09	1521	0.24	0.24	1688	17.12	Sesquiterpene
$\alpha$ -Elemol	32.39	1553	0.09	0.07	2000	36.35	Sesquiterp. alcohol
Palustrol	32.71	1557	0.08	0.03	1816	25.23	Sesquiterp. alcohol
Spathulenol	33.48	1568	0.09	0.09	2018	37.13	Sesquiterp. alcohol
Globulol	33.92	1574	0.30	0.32	1970	35.01	Sesquiterp. alcohol
Viridiflorol	34.41	1581	0.16	0.14	1978	35.37	Sesquiterp. alcohol
Cubeban-11-ol	34.64	1584	0.12	0.15	1952	34.22	Sesquiterp. alcohol
1,10-diepi-Cubenol	36.34	1614	0.16	0.18	1955	34.36	Sesquiterp. alcohol
1-epi-Cubenol	36.66	1622	0.03	0.01	1965	34.77	Sesquiterp. alcohol
Cubenol	36.96	1629	0.08	0.08	1946	33.92	Sesquiterp. alcohol
$\tau$ -Cadinol	37.29	1637	0.02	0.01	2073	38.91	Sesquiterp. alcohol
$\tau$ -Muurolo	37.43	1641	0.03	0.02	2089	39.39	Sesquiterp. alcohol
$\alpha$ -Muurolo	37.70*	1647	0.01	0.01	2107	39.97	Sesquiterp. alcohol
$\alpha$ -Cadinol	37.70*	1647	[0.01]	0.01	2134	40.73	Sesquiterp. alcohol
<b>Total identified</b>			<b>99.02%</b>	<b>98.76%</b>			

\*: 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 :** 1.4780  $\pm$  0.0003 (20 °C)

#### CONCLUSION

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



