

GC/MS BATCH NUMBER: S20102

ESSENTIAL OIL: SANDALWOOD
BOTANICAL NAME: SANTALUM SPICATUM
ORIGIN: AUSTRALIA

KEY CONSTITUENTS PRESENT IN THIS BATCH OF SANDALWOOD OIL	%
(Z)- α -SANTALOL	15.7
(2E,6E)-FARNESOL	10.4
(Z)- γ -CURCUMEN-12-OL	8.3
(Z)- β -CURCUMEN-12-OL	8.2
(Z)-NUCIFEROL	8.0
epi- α -BISABOLOL	6.0
(Z)- β -SANTALOL	5.5
(Z)-LANCEOL	2.7
(Z)- α -trans-BERGAMOTOL	2.6
(E)-NEROLIDOL	2.2
β -BISABOLOL	2.2
(E)- α -SANTALOL	2.1
(E)- β -SANTALOL	1.8
(Z)-epi- β -SANTALOL	1.4

Comments from Robert Tisserand: Excellent odor profile for Australian Sandalwood, and all 7 key constituents conform to the ISO standard.

Date : July 25, 2016

SAMPLE IDENTIFICATION

Internal code : 16G12-PTH3-1-DM

Customer identification : Sandalwood - Australia - S2010264R

Type : Essential oil

Source : *Santalum spicatum*

Customer : Plant Therapy

ANALYSIS

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

Analyst : Sylvain Mercier, M. Sc., chimiste

Analysis date : 2016-07-25

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.	
Santene	2.55	874	0.13	0.13	903	0.71	Normonoterpene
<i>Santalum</i> biomarker	14.75	1323	0.30	0.42	2122	38.43	Terpenic acid
Sesquithujene	19.68*	1398	0.17	0.06	1509	7.87*	Sesquiterpene
α -Cedrene	19.68*	1398	[0.17]	0.12	1492	7.55	Sesquiterpene
<i>cis</i> - α -Bergamotene	20.19	1406	0.04	[0.06]	1509	7.87*	Sesquiterpene
α -Santalene	20.47	1409	0.50	0.51	1515	8.00	Sesquiterpene
<i>trans</i> - α -Bergamotene	21.64	1423	0.13	0.14	1529	8.40	Sesquiterpene
(<i>Z</i>)- <i>epi</i> - β -Santalene	22.65	1435	0.27	0.29	1563	9.47	Sesquiterpene
(<i>Z</i>)- β -Santalene	23.65*	1447	0.54	0.42	1579	9.92	Sesquiterpene
α -Acoradiene	23.65*	1447	[0.54]	0.10	1588	10.21	Sesquiterpene
β -Acoradiene	24.49	1458	0.05	0.04	1596	10.46	Sesquiterpene
γ -Curcumene	25.47	1469	0.21	0.23	1624	11.41	Sesquiterpene
<i>ar</i> -Curcumene	26.31	1480	0.26	0.41	1693	14.51	Sesquiterpene
β -Curcumene	28.40	1505	0.52	0.58	1669	13.41	Sesquiterpene
(<i>E</i>)-Nerolidol	33.61*	1576	2.53	2.22	1989	32.83	Sesquiterp. alcohol
Dendrolasin	33.61*	1576	[2.53]	0.06	1863	24.71	Sesquiterp. ether
Guaiol	35.00	1595	0.28	0.29	2003	33.72	Sesquiterp. alcohol
α -Acorenol	36.04	1615	0.19	0.22	2023	34.88	Sesquiterp. alcohol
β -Acorenol	36.44	1624	0.26	0.24	2046	35.79	Sesquiterp. alcohol
Unknown santalol analog (<i>m/z</i> = 95, 123 (77), 94 (77), 151 (61), 121 (56), 93 (51)... 220 (5))	38.07	1664	0.65	0.62	2010	34.12	Sesquiterp. alcohol
β -Bisabolol	38.52	1675	2.19	2.22	2063	36.34	Sesquiterp. alcohol
(<i>Z</i>)- α -Santalol	38.99	1686	15.68	17.29	2249	41.83	Sesquiterp. alcohol
<i>epi</i> - α -Bisabolol	39.40*	1696	7.36	5.97	2132	38.75*	Sesquiterp. alcohol
(<i>E</i>)- α -Santalol	39.40*	1696	[7.36]	12.11	2288	42.74*	Sesquiterp. alcohol
(<i>Z</i>)- α - <i>trans</i> -Bergamotol	39.47	1698	2.58	3.17	2261	42.14	Sesquiterp. alcohol
α -Bisabolol	39.73	1704	0.30	[5.97]	2132	38.75*	Sesquiterp. alcohol
(<i>Z</i>)- <i>epi</i> - β -Santalol	39.91	1710	1.37	1.26	2309	43.25	Sesquiterp. alcohol
(<i>Z</i>)- β -Santalol	40.44	1726	5.52	5.73	2325	43.63	Sesquiterp. alcohol
(<i>2E,6E</i>)-Farnesol	40.76*	1737	18.41	[12.11]	2288	42.74*	Sesquiterp. alcohol
(<i>Z</i>)-Nuciferol	40.76*	1737	[18.41]	8.04	2423	45.71	Sesquiterp. alcohol
(<i>Z</i>)- γ -Curcumen-12-ol	40.96	1743	8.28	5.73	2345	44.05	Sesquiterp. alcohol
(<i>E</i>)- β -Santalol	41.38	1756	1.78	1.86	2356	44.30	Sesquiterp. alcohol
(<i>Z</i>)- β -Curcumen-12-ol	41.85	1771	8.21	8.07	2395	45.13	Sesquiterp. alcohol
(<i>Z</i>)-Lanceol	42.03	1776	2.70	2.67	2400	45.22	Sesquiterp. alcohol
(<i>Z</i>)- α -Santalyl acetate	42.65	1797	0.77	0.59	2105	37.81	Sesquiterp. ester
Total identified			81.53%	81.19%			

*: 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

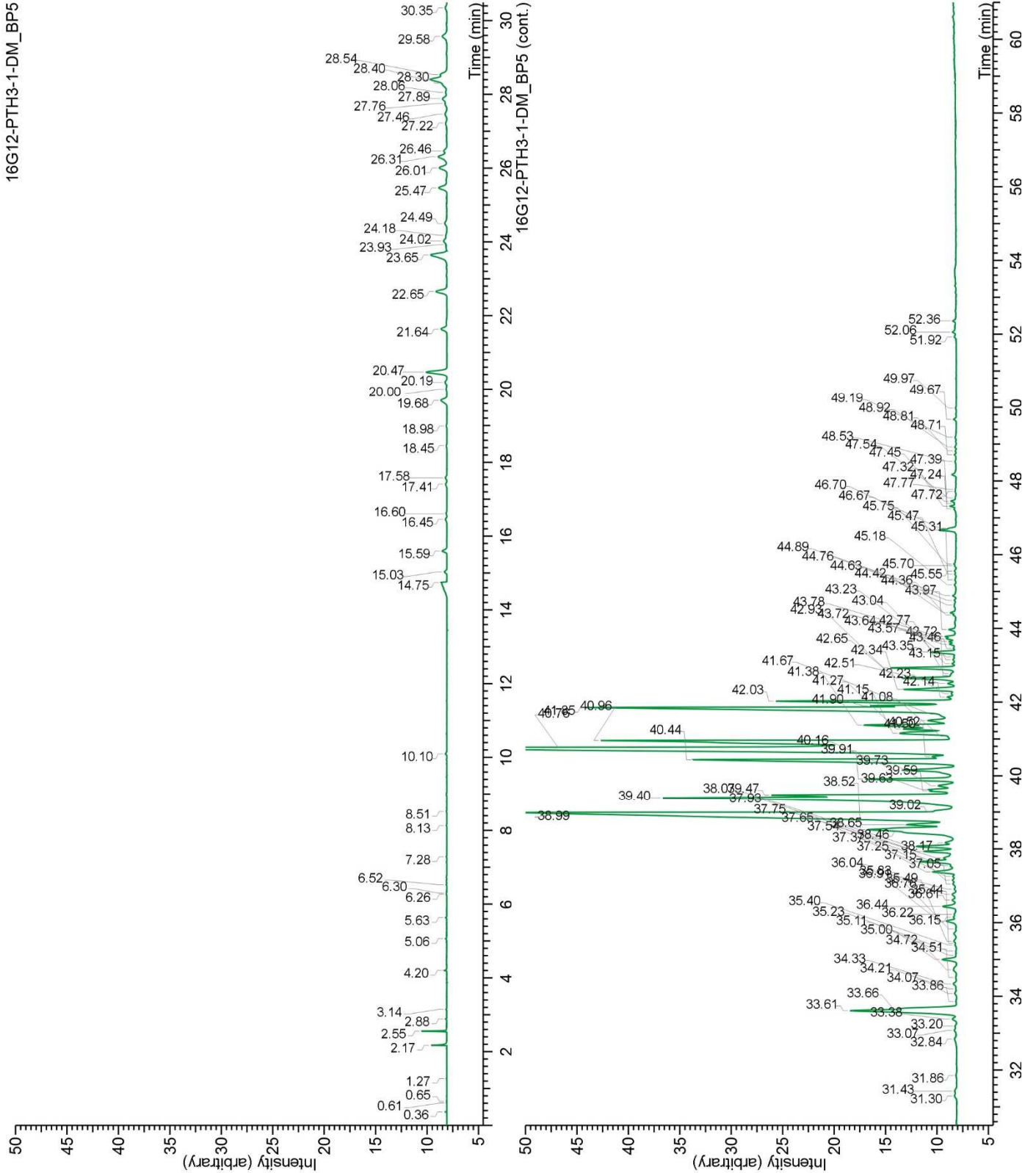
OTHER DATA

Physical aspect : Faintly yellow liquid

Refractive index : 1.5035 ± 0.0003 (20 °C)

CONCLUSION

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



16G12-PTH3-1-DM_WAX

