

Date : January 19, 2017

SAMPLE IDENTIFICATION

Internal code : 17A03-TOB22-1-DM

Customer identification : Orange Sweet - 15-4035-BB

Type : Essential Oil

Source : *Citrus sinensis*

Customer : TruIQ Global, LLC

ANALYSIS

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

Identifications double-checked by GC-MS

Analyst : Sylvain Mercier, M. Sc., chimiste

Analysis date : 2017-01-18

Checked and approved by :

Sylvain Mercier, M. Sc., chimiste 2014-005

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IDENTIFIED COMPOUNDS

Identification	Column: BP5			Column: WAX			Molecular Class
	R.T.	R.I.	%	%	R.I.	R.T.	
α-Pinene	3.34	928	0.52	0.53	942	1.26	Monoterpene
Sabinene	4.06	972	0.23	0.24	1065	2.14	Monoterpene
β-Pinene	4.12	976	0.03	0.03	1042	1.96	Monoterpene
Myrcene	4.41	994	1.77	1.78	1116	2.74	Monoterpene
α-Phellandrene	4.68*	1008	0.11	0.02	1109	2.65	Monoterpene
Δ3-Carene	4.68*	1008	[0.11]	0.09	1095	2.46	Monoterpene
Octanal	4.81	1014	0.22	0.21	1232	4.37	Aliphatic aldehyde
Limonene	5.23*	1036	92.96	94.19	1153	3.24	Monoterpene
1,8-Cineole	5.23*	1036	[92.96]	0.25	1154	3.26	Monoterp. ether
para-Cymene	5.23*	1036	[92.96]	0.01	1209	4.02	Monoterpene
trans-β-Ocimene	5.47	1049	0.01	0.01	1202	3.91	Monoterpene
cis-Sabinene hydrate	6.01	1077	tr	0.01	1405	7.25	Monoterp. alcohol
Terpinolene	6.12	1082	0.01	0.01	1223	4.24	Monoterpene
Octanol	6.19	1086	0.02	0.03	1503	9.85	Aliphatic alcohol
Linalool	6.65	1106	0.35	0.37	1495	9.57	Monoterp. alcohol
Nonanal	6.70	1108	0.04	0.03	1334	5.94	Aliphatic aldehyde
trans-para-Mentha-2,8-dien-1-ol	7.16	1125	0.03	0.03	1556	11.89	Monoterp. alcohol
cis-Limonene oxide	7.24	1128	0.07	0.07	1373	6.58	Monoterp. ether
trans-Limonene oxide	7.36	1132	0.04	0.04	1386	6.80	Monoterp. ether
cis-para-Mentha-2,8-dien-1-ol	7.57	1140	0.02	0.02	1610	14.30	Monoterp. alcohol
Citronellal	7.86	1151	0.04	0.03	1412	7.43	Monoterp. aldehyde
α-Terpineol	9.38	1203	0.05	0.05	1628	15.19	Monoterp. alcohol
Decanal	9.64	1209	0.21	0.16	1432	7.93	Aliphatic aldehyde
Neral	11.01	1239	0.06	0.06	1597	13.58	Monoterp. aldehyde
Geranial	12.50	1272	0.08	0.07	1645	16.11	Monoterp. aldehyde
Limonene hydroperoxide I	15.33	1323	0.02				Monoterp. peroxide
Limonene hydroperoxide II	16.14	1335	0.02				Monoterp. peroxide
α-Copaene	17.36	1354	0.02	0.02	1423	7.69	Sesquiterpene
β-Cubebene	18.31	1368	0.03	0.03	1469	8.82	Sesquiterpene
β-Caryophyllene	20.21	1396	0.01	0.02	1509	10.10	Sesquiterpene
Dodecanal	21.12	1407	0.02	0.02	1637	15.69	Aliphatic aldehyde
Valencene	27.35	1482	0.02	0.02	1666	17.24	Sesquiterpene
δ-Cadinene	28.90	1501	0.02	0.01	1668	17.38	Sesquiterpene
β-Sinensal	39.63	1690	0.02	0.02	2121	41.26	Sesquiterp. aldehyde
α-Sinensal	41.58	1749	0.01	0.01	2221	43.81	Sesquiterp. aldehyde
Nootkatone	42.87	1790	0.01	0.02	2358	46.90	Sesquiterp. ketone
Tangeretin	70.39	3175	0.30				Coumarin
Heptamethoxyflavone isomer?	73.06	3334	0.86				Coumarin

Nobiletin	73.36	3349	0.76		Coumarin
Total identified			98.99%	98.51%	

*: 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 : Bright yellow liquid

Refractive index : 1.4720 ± 0.0003 (20 °C)

COMPLIANCE WITH ISO 3140:2011 (CITRUS SINENSIS)

Compound	Min. Content	Max. Content	Observed Content	Complies?
α-Pinene	0.4	0.8	0.5	Yes
β-Pinene	0.02	0.15	0.03	Yes
Sabinene	0.2	0.8	0.2	Yes
Myrcene	1.5	3.5	1.8	Yes
Limonene	93.0	96.0	94.2	Yes
Octanal	0.1	0.4	0.2	Yes
Nonanal	0.01	0.06	0.04	Yes
Decanal	0.1	0.7	0.2	Yes
Linalool	0.15	0.7	0.4	Yes
Neral	0.03	0.1	0.06	Yes
Valencene	0.01	0.4	0.02	Yes
Geranial	0.05	0.2	0.08	Yes
β-Sinensal	0.01	0.06	0.02	Yes
Refractive index	1.470	1.476	1.4720	Yes

CONCLUSION

No adulterant, contaminant or diluent were detected using this method. The oil complies with the ISO norm.



