

Date : August 29, 2017

SAMPLE IDENTIFICATION

Internal code : 17H22-GUR17-1-DM

Customer identification : Orange

Type : Essential oil

Source : *Citrus sinensis*

Customer : GuruNanda 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 : 2017-08-24

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.	
α -Thujene	3.31	920	tr	0.49	945	1.22*	Monoterpene
α -Pinene	3.42	926	0.49	[0.49]	945	1.22*	Monoterpene
Sabinene	4.14	969	0.32	0.30	1060	2.08	Monoterpene
β -Pinene	4.20	973	0.02	0.02	1042	1.92	Monoterpene
Myrcene	4.48	989	1.85	1.86	1116	2.69	Monoterpene
Δ^3 -Carene	4.76*	1005	0.15	0.11	1093	2.40	Monoterpene
α -Phellandrene	4.76*	1005	[0.15]	0.02	1109	2.60	Monoterpene
Octanal	4.87	1011	0.27	0.27	1234	4.27	Aliphatic aldehyde
Limonene	5.30*	1035	94.36	94.29	1154	3.18	Monoterpene
1,8-Cineole	5.30*	1035	[94.36]	0.56	1155	3.19	Monoterp. ether
<i>trans</i> - β -Ocimene	5.54	1048	0.02	0.01	1206	3.85	Monoterpene
Terpinolene	6.19*	1083	0.06	0.02	1227	4.16	Monoterpene
Octanol	6.19*	1083	[0.06]	0.04	1503	9.48	Aliphatic alcohol
Linalool	6.68	1106	0.43	0.43	1496	9.24	Monoterp. alcohol
Nonanal	6.78	1109	0.05	0.04	1337	5.84	Aliphatic aldehyde
<i>cis</i> -Limonene oxide	7.34	1130	0.01				Monoterp. ether
<i>trans</i> -Limonene oxide	7.45	1134	0.01	0.01	1387	6.64	Monoterp. ether
Citronellal	7.96	1152	0.05	0.05	1415	7.27	Monoterp. aldehyde
α -Terpineol	9.44	1203	0.05	0.05	1627	14.59	Monoterp. alcohol
Decanal	9.77	1210	0.26	0.26	1437	7.77	Aliphatic aldehyde
Neral	11.13	1240	0.05	0.05	1597	13.04	Monoterp. aldehyde
Geranial	12.64	1273	0.09	0.13	1644	15.49*	Monoterp. aldehyde
α -Copaene	17.67	1357	0.02	0.02	1430	7.61	Sesquiterpene
β -Cubebene	18.64	1371	0.02	0.02	1476	8.73	Sesquiterpene
β -Caryophyllene	20.55	1400	0.02	0.04	1517	9.99	Sesquiterpene
Dodecanal	21.69	1413	0.05	[0.13]	1644	15.49*	Aliphatic aldehyde
Valencene	27.75	1485	0.03	0.02	1659	16.30	Sesquiterpene
δ -Cadinene	29.30	1505	0.03	0.02	1673	17.03	Sesquiterpene
β -Sinensal	39.76	1692	0.04	0.04	2121	40.91	Sesquiterp. aldehyde
α -Sinensal	41.70	1752	0.02	0.02	2221	43.47	Sesquiterp. aldehyde
Nootkatone	42.91	1790	0.06	0.06	2359	46.56	Sesquiterp. ketone
Tangeretin	70.17	3159	0.05				Flavonoid
Heptamethoxyflavone isomer?	73.03	3331	0.11				Flavonoid
Hexamethoxyflavone isomer?	73.30	3345	0.14				Flavonoid
Total identified			99.13%	99.25%			

*: 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 : 1.4718 ± 0.0003 (20 °C)

COMPLIANCE WITH ISO 3140:2011 (CITRUS SINENSIS)

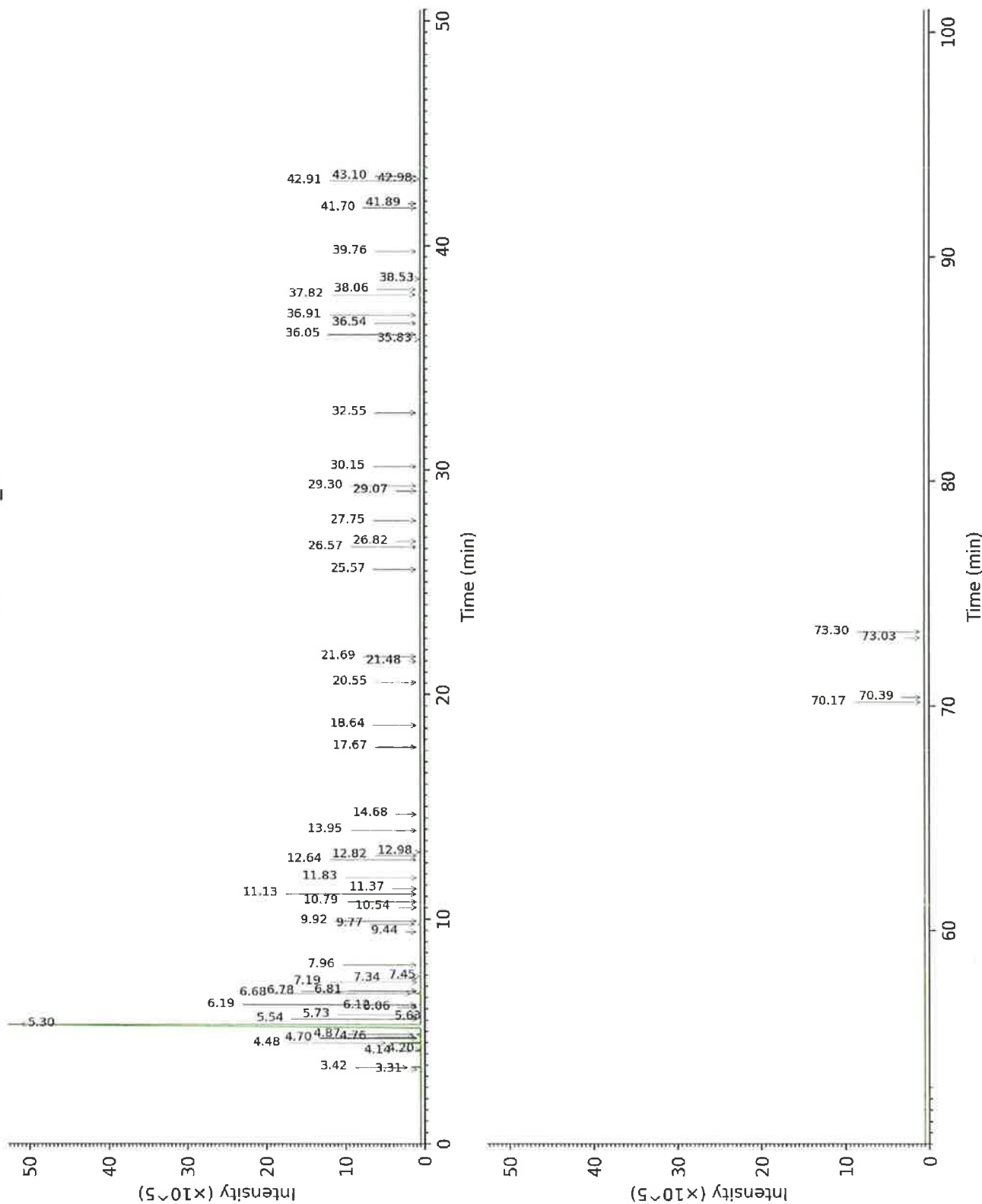
Compound	Min. Content	Max. Content	Observed Content	Complies?
α-Pinene	0.4	0.8	0.5	Yes
β-Pinene	0.02	0.15	0.02	Yes
Sabinene	0.2	0.8	0.3	Yes
Myrcene	1.5	3.5	1.9	Yes
Limonene	93.0	96.0	94.3	Yes
Octanal	0.1	0.4	0.3	Yes
Nonanal	0.01	0.06	0.05	Yes
Decanal	0.1	0.7	0.3	Yes
Linalool	0.15	0.7	0.4	Yes
Neral	0.03	0.1	0.05	Yes
Valencene	0.01	0.4	0.03	Yes
Geranial	0.05	0.2	0.09	Yes
β-Sinensal	0.01	0.06	0.04	Yes
Refractive index	1.470	1.476	1.4718	Yes

CONCLUSION

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



17H22-GUR17-1-DM_BP5



17H22-GUR17-1-DM_WAX

