

**Date :** September 13, 2017

*SAMPLE IDENTIFICATION*

**Internal code :** 17I07-ORA6-1-DM

**Customer identification :** Grapefruit

**Type :** Essential oil

**Source :** *Citrus x paradisi*

**Customer :** Organic Aromas

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

**Analysis date :** 2017-09-11

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.	
α-Pinene	3.41	926	0.52	0.50	940	1.20	Monoterpene
Sabinene	4.13	969	0.38	0.36	1057	2.05	Monoterpene
β-Pinene	4.20	972	0.07	0.06	1036	1.87	Monoterpene
Myrcene	4.48	989	1.79	1.81	1114	2.66	Monoterpene
α-Phellandrene	4.76*	1005	0.07	0.01	1106	2.56	Monoterpene
Δ3-Carene	4.76*	1005	[0.07]	0.04	1091	2.36	Monoterpene
Octanal	4.87	1011	0.41	0.40	1232	4.24*	Aliphatic aldehyde
Limonene	5.30	1034	91.68	92.45	1152	3.15	Monoterpene
cis-β-Ocimene	5.37	1038	0.01	0.03	1192	3.63*	Monoterpene
trans-β-Ocimene	5.54	1048	0.06	0.06	1204	3.82	Monoterpene
γ-Terpinene	5.73	1058	0.03	[0.03]	1192	3.63*	Monoterpene
Terpinolene	6.20	1083	0.04	[0.40]	1232	4.24*	Monoterpene
Linalool	6.69	1106	0.10	0.10	1494	9.17	Monoterp. alcohol
Nonanal	6.79	1109	0.08	0.07	1335	5.81	Aliphatic aldehyde
cis-para-Menth-2-en-1-ol	7.21	1125	0.02	0.03	1501	9.41	Monoterp. alcohol
cis-Limonene oxide	7.35	1130	0.04	0.04	1371	6.39	Monoterp. ether
trans-Limonene oxide	7.47	1134	0.02	0.03	1384	6.60	Monoterp. ether
trans-para-Menth-2-en-1-ol	7.61	1139	0.02	0.02	1551	11.27	Monoterp. alcohol
Citronellal	7.97	1152	0.04	0.03	1413	7.23	Monoterp. aldehyde
α-Terpineol	9.48	1204	0.03	0.03	1625	14.46	Monoterp. alcohol
Decanal	9.80	1211	0.27	0.26	1435	7.73	Aliphatic aldehyde
Neral	11.18	1241	0.02	0.03	1595	12.93	Monoterp. aldehyde
Geranial	12.69	1274	0.05	0.06	1642	15.39	Monoterp. aldehyde
Neryl acetate	17.70	1357	0.06	0.04	1671	16.93*	Monoterp. ester
β-Cubebene	18.68	1372	0.03	0.05	1475	8.68	Sesquiterpene
Geranyl acetate	19.36	1382	0.02	0.03	1689	17.87	Monoterp. ester
β-Caryophyllene	20.60	1400	0.26	0.30	1517	9.98	Sesquiterpene
α-Humulene	23.40	1434	0.03	0.04	1579	12.33	Sesquiterpene
trans-β-Farnesene	24.51	1447	0.02	0.09	1618	14.07*	Sesquiterpene
Germacrene D	25.61	1460	0.03	[0.09]	1618	14.07*	Sesquiterpene
δ-Cadinene	29.36	1506	0.05	[0.04]	1671	16.93*	Sesquiterpene
β-Sinensal	39.80	1693	0.02	0.03	2120	40.87	Sesquiterp. aldehyde
Nootkatone	43.04	1794	0.08	0.09	2337	46.08	Sesquiterp. ketone
Isomeranzin	53.05	2203	0.10				Coumarin
7-Methoxy-8-(2-formyl-methylpropyl)-coumarin	53.67	2233	0.20				Coumarin
Isoauraptene	53.85	2241	0.14				Coumarin
Auraptanol	54.64	2279	0.07				Coumarin
Auraptene	61.35	2625	0.70	0.48	3713	69.04	Coumarin
Epoxyauraptene?	63.76	2762	0.19				Coumarin
Tangeretin	69.81	3135	0.15				Flavonoid

Heptamethoxyflavone isomer?	73.16	3338	0.23		Flavonoid
Hexamethoxyflavone isomer?	73.44	3351	0.12		Flavonoid
<b>Total identified</b>			<b>98.25%</b>	<b>97.57%</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

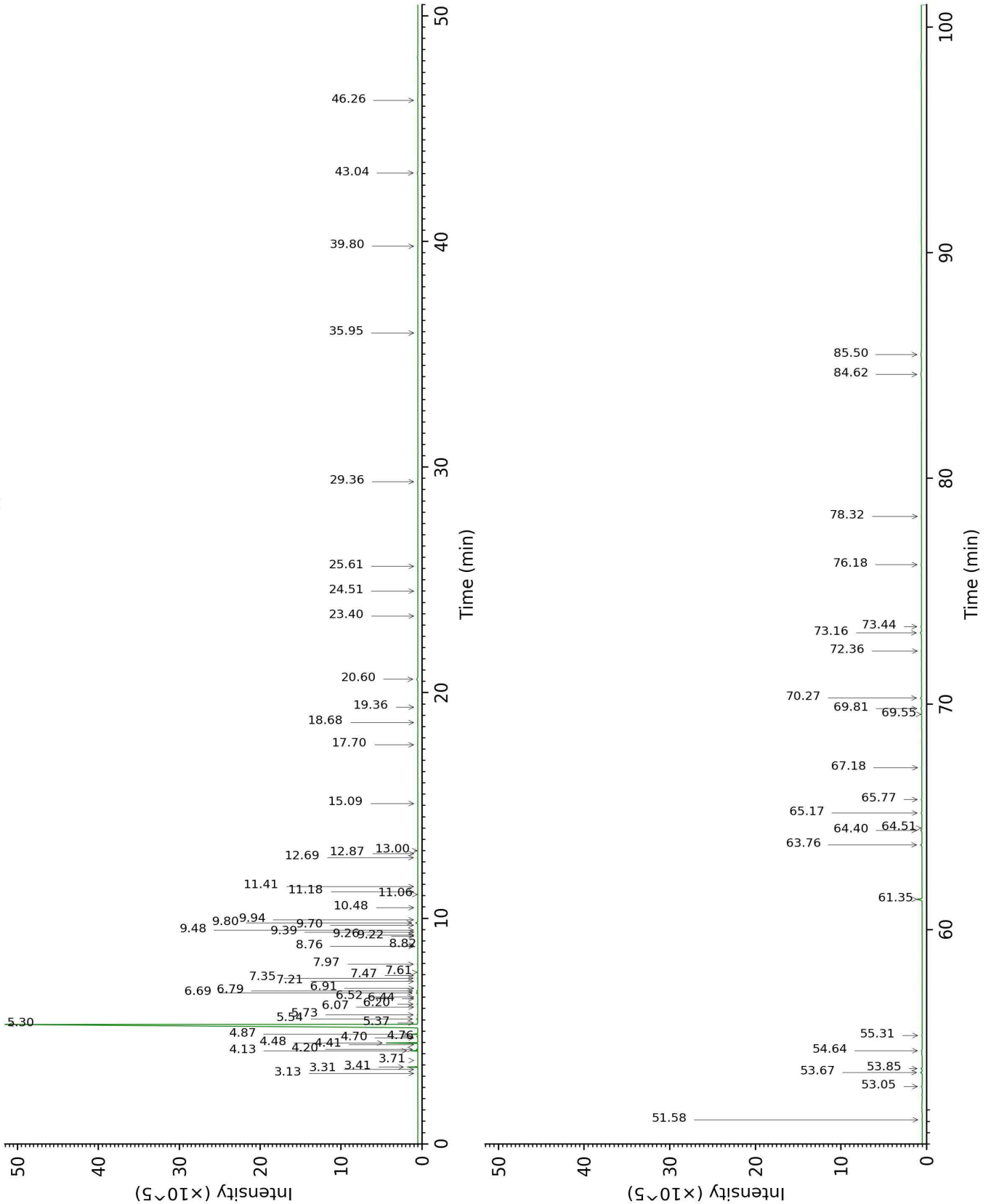
**Physical aspect :** Yellow liquid

**Refractive index :** 1.4733 ± 0.0003 (20 °C)

#### CONCLUSION

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

17107-ORA6-1-DM\_BP5



17107-ORA6-1-DM\_WAX

