

**Date :** December 12, 2017

*SAMPLE IDENTIFICATION*

**Internal code :** 17K28-ALZ2-1-CC

**Customer identification :** Lemon Oil - L1060925

**Type :** Essential oil

**Source :** *Citrus x limon*

**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 :** Benoit Roger Ph. D.

**Analysis date :** 2017-12-12

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.	
$\alpha$ -Thujene	3.31	920	0.38	2.05	946	1.12*	Monoterpene
$\alpha$ -Pinene	3.42	926	1.74	[2.05]	946	1.12*	Monoterpene
Camphene	3.70	943	0.05	0.04	1001	1.40	Monoterpene
Sabinene	4.14	969	1.77	2.14	1055	1.93	Monoterpene
$\beta$ -Pinene	4.22	974	10.29	9.70	1041	1.77	Monoterpene
Myrcene	4.48	989	1.59	1.71	1118	2.51*	Monoterpene
Octen-3-ol	4.56	994	0.02	0.02	1402	6.66*	Aliphatic alcohol
$\alpha$ -Phellandrene	4.75	1005	0.04	[1.71]	1118	2.51*	Monoterpene
Octanal	4.87	1011	0.07	0.08	1231	4.04	Aliphatic aldehyde
$\alpha$ -Terpinene	4.95	1015	0.17	[1.71]	1118	2.51*	Monoterpene
Limonene	5.28*	1033	68.76	68.31	1152	2.97	Monoterpene
para-Cymene	5.28*	1033	[68.76]	0.26	1209	3.72	Monoterpene
cis- $\beta$ -Ocimene	5.36	1038	0.04	7.82	1191	3.48*	Monoterpene
trans- $\beta$ -Ocimene	5.54	1047	0.08	0.13	1200	3.60	Monoterpene
$\gamma$ -Terpinene	5.75	1059	7.91	[7.82]	1191	3.48*	Monoterpene
cis-Sabinene hydrate	6.06	1076	0.02	[0.02]	1402	6.66*	Monoterp. alcohol
Terpinolene	6.20	1083	0.36	0.31	1224	3.94	Monoterpene
Linalool	6.70	1106	0.15	0.14	1491	8.72	Monoterp. alcohol
Nonanal	6.78	1109	0.10	0.10	1335	5.61	Aliphatic aldehyde
cis-Limonene oxide	7.34	1130	0.02	0.02	1369	6.14	Monoterp. ether
trans-Limonene oxide	7.46	1134	0.01	0.03	1391	6.50	Monoterp. ether
Citronellal	7.96	1152	0.11	0.08	1415	6.93	Monoterp. aldehyde
Terpinen-4-ol	8.80	1183	0.05	0.45	1526	9.79*	Monoterp. alcohol
$\alpha$ -Terpineol	9.48	1204	0.16	0.23	1618	13.32	Monoterp. alcohol
Decanal	9.79	1210	0.05	0.04	1436	7.43	Aliphatic aldehyde
Nerol	10.58	1228	0.03	0.05	1724	18.96	Monoterp. alcohol
Neral	11.17	1241	0.92	0.94	1594	12.29	Monoterp. aldehyde
Geraniol	11.88	1256	0.04	0.05	1774	22.31	Monoterp. alcohol
Geranial	12.70	1274	1.57	1.62	1644	14.61	Monoterp. aldehyde
Bornyl acetate	12.88	1278	0.02	0.02	1501	8.97	Monoterp. ester
Undecanal	14.70	1312	0.02	0.03	1541	10.31	Aliphatic aldehyde
Citronellyl acetate	17.22	1350	0.03	0.04	1602	12.60	Monoterp. ester
Neryl acetate	17.85	1359	0.45	1.08	1657	15.32*	Monoterp. ester
Geranyl acetate	19.34	1382	0.32	0.33	1689	16.96	Monoterp. ester
$\beta$ -Caryophyllene	20.58	1400	0.23	0.19	1519	9.53	Sesquiterpene
trans- $\alpha$ -Bergamotene	22.14	1419	0.37	[0.45]	1526	9.79*	Sesquiterpene
trans- $\beta$ -Farnesene	24.49	1447	0.03	0.04	1614	13.10	Sesquiterpene
Bicyclogermacrene	26.59	1472	0.04	0.07	1627	13.79	Sesquiterpene
$\beta$ -Bisabolene	28.85	1499	0.57	[1.08]	1657	15.32*	Sesquiterpene

$\alpha$ -Bisabolol	39.55	1687	0.03	0.03	2127	40.51	Sesquiterp. alcohol
<b>Total identified</b>			<b>98.61%</b>	<b>98.15%</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 :** Bright yellow liquid

**Refractive index :** 1.4740  $\pm$  0.0003 (20 °C)

#### CONCLUSION

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



17K28-ALZ2-1-CC\_WAX

