

**Neroli Essential Oil**

# **ESSENTIAL OIL ANALYSIS**

Laboratoire  
**PhytoChemia**





Date : February 24, 2017

SAMPLE IDENTIFICATION

Internal code : 17B16-FSE11-1-DM

Customer identification : Neroli - Lot #0615/1

Type : Essential oil

Source : *Citrus aurantium ssp. amara*

Customer : Flowers Shining Everywhere Inc.



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 : 2017-02-22



Checked and approved by :

Alexis St-Gelais, M. Sc., chimiste 2013-174



Note: This report may not be published, including online, without the written consent from Laboratoire PhytoChemia.

This report is digitally signed, it is only considered valid if the digital signature is intact.



# IDENTIFIED COMPOUNDS

Identification	Column: BP5			Column: WAX			Molecular Class
	R.T.	R.I.	%	%	R.I.	R.T.	
Hexanol	2.79	881	0.01	0.02	1302	5.38	Aliphatic alcohol
$\alpha$ -Thujene	3.40	919	0.02	0.03	965	1.31	Monoterpene
$\alpha$ -Pinene	3.50	926	0.56	0.54	954	1.26	Monoterpene
Camphene	3.79	943	0.05	0.04	998	1.57	Monoterpene
Sabinene	4.22	969	0.48	0.46	1059	2.13	Monoterpene
$\beta$ -Pinene	4.30	973	7.97	7.77	1044	1.98	Monoterpene
Myrcene	4.56	989	1.95	1.88	1118	2.73	Monoterpene
6-Methyl-5-hepten-2-one	4.63	993	0.03	0.04	1279	5.03	Aliphatic ketone
$\alpha$ -Phellandrene	4.83*	1004	0.03	0.01	1111	2.64	Monoterpene
$\Delta^3$ -Carene	4.83*	1004	[0.03]	0.01	1097	2.44	Monoterpene
$\alpha$ -Terpinene	5.02	1014	0.11	0.11	1125	2.82	Monoterpene
para-Cymene	5.20	1024	0.06	0.08	1211	4.00	Monoterpene
Limonene	5.28	1028	15.97	15.65	1147	3.12	Monoterpene
$\beta$ -Phellandrene	5.30	1029	0.08	0.18	1150	3.16*	Monoterpene
1,8-Cineole	5.33	1031	0.01	[0.18]	1150	3.16*	Monoterp. ether
cis- $\beta$ -Ocimene	5.42	1036	0.81	0.80	1189	3.68	Monoterpene
trans- $\beta$ -Ocimene	5.62	1047	6.41	6.32	1205	3.92	Monoterpene
$\gamma$ -Terpinene	5.79	1056	0.20	0.21	1191	3.70	Monoterpene
cis-Linalool oxide (fur.)	6.06	1071	0.12	0.11	1378	6.62	Monoterp. alcohol
Terpinolene	6.27	1082	0.53	0.51	1225	4.21	Monoterpene
trans-Linalool oxide (fur.)	6.39	1089	0.05	0.06	1405	7.15	Monoterp. alcohol
6,7-Epoxyterpinene	6.49	1094	0.01	0.02	1349	6.14	Monoterp. ether
Linalool	6.86	1107	40.56	41.02	1501	9.65	Monoterp. alcohol
trans-para-Mentha-2,8-dien-1-ol	7.30	1123	0.03	0.02	1555	11.68	Monoterp. alcohol
Camphor	7.77	1141	0.01	0.01	1421	7.54	Monoterp. ketone
Phenylacetonitrile	7.91	1146	0.09	0.08	1807	26.20	Simple phenolic
Terpinen-4-ol	8.84	1180	0.43	0.43	1526	10.60	Monoterp. alcohol
$\alpha$ -Terpineol	9.52	1200	5.71	5.67	1622	14.70	Monoterp. alcohol
Nerol	10.61	1224	1.35	1.31	1728	20.78	Monoterp. alcohol
Neral	11.29	1239	0.02	0.02	1598	13.40	Monoterp. aldehyde
Linalyl acetate	11.60	1246	1.45	1.54	1503	9.69	Monoterp. ester
Geraniol	11.94	1253	3.69	3.64	1782	24.38	Monoterp. alcohol
Geranial	12.81	1273	0.04	0.03	1645	15.92	Monoterp. aldehyde
Bornyl acetate	13.13	1280	0.02	0.02	1507	9.84	Monoterp. ester
Indole	15.55*	1320	0.08	0.08	2289	45.24	Indole
$\delta$ -Elemene	15.55*	1320	[0.08]	0.08	1412	7.34	Sesquiterpene
Methyl anthranilate	16.75	1339	0.25	0.32	2105	40.69	Phenolic ester
$\alpha$ -Terpinyl acetate	16.84	1340	0.09	0.09	1613	14.17	Monoterp. ester
Neryl acetate	18.12	1359	1.48	1.49	1656	16.52	Monoterp. ester
$\beta$ -Elemene	19.14	1375	0.03	0.03	1519	10.31	Sesquiterpene



Geranyl acetate	19.67	1383	3.04	3.11	1691	18.34*	Monoterp. ester
$\beta$ -Caryophyllene	20.84	1399	0.71	0.72	1517	10.23	Sesquiterpene
$\alpha$ -Humulene	23.61	1432	0.07	0.07	1577*	12.54	Sesquiterpene
<i>trans</i> - $\beta$ -Farnesene	24.81	1447	0.16	0.14	1610	14.02	Sesquiterpene
Germacrene D	25.81	1459	0.13	0.12	1614	14.25	Sesquiterpene
Bicyclogermacrene	27.05	1474	0.16	0.16	1635	15.37	Sesquiterpene
( <i>E,E</i> )- $\alpha$ -Farnesene	29.33	1502	0.01	[3.11]	1691	18.34*	Sesquiterpene
$\delta$ -Cadinene	29.52	1505	0.03	0.04	1668	17.12	Sesquiterpene
Germacrene B	32.19	1542	0.04	0.04	1718	20.15	Sesquiterpene
( <i>E</i> )-Nerolidol	33.92*	1566	1.75	1.77	1979	36.56	Sesquiterp. alcohol
Spathulenol	33.92*	1566	[1.75]	0.02	2015	37.87	Sesquiterp. alcohol
( <i>2E,6E</i> )-Farnesol	40.70	1719	2.06	2.30	2281	45.05	Sesquiterp. alcohol
( <i>2E,6E</i> )-Farnesyl acetate	44.24	1836	0.07	0.07	2185	42.78	Sesquiterp. ester
<b>Total identified</b>			<b>99.02%</b>	<b>99.29%</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** :  $1.4695 \pm 0.0003$  (20 °C)

#### CONCLUSION

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



