

## GC/MS BATCH NUMBER: P60102

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**ESSENTIAL OIL:** PETITGRAIN

**BOTANICAL NAME:** CITRUS AURANTIUM VAR. AMARA

**ORIGIN:** ITALY

KEY CONSTITUENTS PRESENT IN THIS BATCH OF PETITGRAIN OIL	%
LINALYL ACETATE	49.2
LINALOOL	24.2
$\alpha$ -TERPINEOL	5.6
GERANYL ACETATE	3.8
GERANIOL	2.9
NERYL ACETATE	2.2
trans- $\beta$ -OCIMENE	2.2
MYRCENE	2.0
NEROL	1.2
$\beta$ -PINENE	0.9
$\beta$ -CARYOPHYLLE	0.7
SABINENE	0.1

Comments from Robert Tisserand: Excellent green, floral odor profile, and conforms to 9 of 10 key ISO constituents, with one marginal – not a concern.

**Date :** July 28, 2016

*SAMPLE IDENTIFICATION*

**Internal code :** 16G12-PTH2-1-DM

**Customer identification :** Petitgrain - Italy - P6010255R

**Type :** Essential oil

**Source :** *Citrus aurantium var. amara*

**Customer :** Plant Therapy

*ANALYSIS*

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

**Analyst :** Sylvain Mercier, M. Sc., chimiste

**Analysis date :** 2016-07-25

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.	
Ethanol	0.33	498	0.61	0.59	800	0.53	Aliphatic alcohol
cis-Hex-3-en-1-ol	2.50	870	0.02	0.02	1321	4.70	Aliphatic alcohol
Hexanol	2.72	887	0.01	0.01	1298	4.36	Aliphatic alcohol
$\alpha$ -Thujene	3.24	922	0.01	0.02	952	0.91	Monoterpene
$\alpha$ -Pinene	3.34	929	0.11	0.10	944	0.88	Monoterpene
Camphene	3.63	946	tr	0.01	998	1.10	Monoterpene
Sabinene	4.06	972	0.17	0.16	1054	1.53	Monoterpene
$\beta$ -Pinene	4.12	976	0.92	0.88	1037	1.39	Monoterpene
Myrcene	4.41	993	2.04	1.89	1113	2.02	Monoterpene
6-Methyl-5-hepten-2-one	4.48	998	0.04	0.02	1274	4.03	Aliphatic ketone
$\Delta^3$ -Carene	4.67*	1008	0.61	0.55	1088	1.79	Monoterpene
$\alpha$ -Phellandrene	4.67*	1008	[0.61]	0.03	1106	1.95	Monoterpene
para-Cymene	5.05	1029	0.02				Monoterpene
Limonene	5.08	1031	0.95	0.83	1138	2.31	Monoterpene
$\beta$ -Phellandrene	5.11	1033	0.05	0.15	1142	2.36*	Monoterpene
1,8-Cineole	5.14	1035	0.07	[0.15]	1142	2.36*	Monoterp. ether
cis- $\beta$ -Ocimene	5.27	1042	0.75	0.76	1184	2.85*	Monoterpene
trans- $\beta$ -Ocimene	5.45	1052	2.18	2.15	1201	3.04	Monoterpene
$\gamma$ -Terpinene	5.63	1062	0.05	[0.76]	1184	2.85*	Monoterpene
cis-Linalool oxide (fur.)	5.93	1078	0.05	0.04	1394	5.75	Monoterp. alcohol
Terpinolene	6.10	1088	0.44	0.40	1222	3.32	Monoterpene
trans-Linalool oxide (fur.)	6.24	1096	0.03	0.03	1406	5.93	Monoterp. alcohol
Linalool	6.74	1116	24.19	23.13	1497	7.64	Monoterp. alcohol
Terpinen-4-ol	8.65	1188	0.10	0.16	1528	8.39	Monoterp. alcohol
$\alpha$ -Terpineol	9.39	1210	5.61	5.65	1624	11.42*	Monoterp. alcohol
Nerol	10.69	1239	1.18	1.17	1726	16.11	Monoterp. alcohol
Neral	11.03	1247	0.08	0.07	1617	11.07	Monoterp. aldehyde
Linalyl acetate	11.49	1257	49.22	51.09	1510	7.88	Monoterp. ester
Geraniol	11.90	1267	2.87	2.84	1777	19.12	Monoterp. alcohol
Geranial	12.47	1280	0.12	0.12	1646	12.39	Monoterp. aldehyde
$\alpha$ -Terpinyl acetate	16.36	1347	0.10	[5.65]	1624	11.42*	Monoterp. ester
Neryl acetate	17.64	1367	2.19	2.18	1657	12.88	Monoterp. ester
Geranyl acetate	19.15	1390	3.79	3.76	1689	14.32	Monoterp. ester
$\beta$ -Caryophyllene	20.18	1405	0.69	0.60	1524	8.24	Sesquiterpene
$\alpha$ -Humulene	22.91	1438	0.07	0.06	1596	10.47	Sesquiterpene
Bicyclogermacrene	26.33	1480	0.12	0.10	1642	12.21	Sesquiterpene
<b>Total identified</b>			<b>99.46%</b>	<b>99.57%</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 :** Clear liquid

**Refractive index :**  $1.4570 \pm 0.0003$  (20 °C)

*CONCLUSION*

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



