



**PLANT THERAPY**  
100% PURE ESSENTIAL OILS

## GC/MS BATCH NUMBER: R40104

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**ESSENTIAL OIL:** ROSEMARY  
**BOTANICAL NAME:** ROSMARINUS OFFIICINALIS  
**ORIGIN:** TUNISIA

KEY CONSTITUENTS PRESENT IN THIS BATCH OF ROSEMARY OIL	%
β-PHELLANDRENE	47.8
α-PINENE	12.1
CAMPHOR	10.4
β-PINENE	5.0
β-CARYOPHYLLENE	4.6
CAMPHENE	3.8
BORNEOL	3.0
α-TERPINEOL	2.4
MYRCENE	1.4
p-CYMENE	1.4

Comments from Robert Tisserand: Excellent fresh, metallic, green odor profile. Twelves of thirteen key ISO constituents are within range, with limonene slightly low - not a concern.

**Date :** March 10, 2017

*SAMPLE IDENTIFICATION*

**Internal code :** 17B23-PTH1-1-DM

**Customer identification :** Rosemary - Tunisia - R40104510R

**Type :** Essential oil

**Source :** *Rosmarinus officinalis*

**Customer :** Plant Therapy

*ANALYSIS*

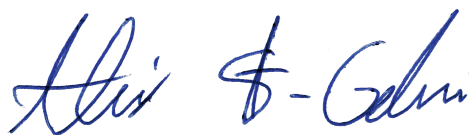
**Method :** PC-PA-001-15E06, "Analysis of the composition of a liquid essential oil by GC-FID" (in French).

Identifications double-checked by GC-MS

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

**Analysis date :** 2017-02-23

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.	
<i>cis</i> -Hex-3-en-1-ol	2.46	864	0.02	0.01	1331	5.62	Aliphatic alcohol
Tricyclene	3.21	916	0.15	0.13	927	1.09	Monoterpene
$\alpha$ -Thujene	3.30	922	0.18	0.26	965	1.25	Monoterpene
$\alpha$ -Pinene	3.42	929	12.06	11.76	958	1.22	Monoterpene
Camphene	3.69*	945	4.00	3.82	1003	1.50	Monoterpene
$\alpha$ -Fenchene	3.69*	945	[4.00]	0.09	995	1.44	Monoterpene
Thuja-2,4(10)-diene	3.77	950	0.02	0.07	1062	2.03*	Monoterpene
Sabinene	4.11	970	0.05	[0.07]	1062	2.03*	Monoterpene
$\beta$ -Pinene	4.18	974	4.97	4.84	1045	1.88	Monoterpene
Myrcene	4.45	990	1.41	1.36	1120	2.62	Monoterpene
Octan-3-one	4.48	992	0.10	0.05	1204	3.73	Aliphatic ketone
Octen-3-ol	4.50	993	0.09	0.15	1406	6.82	Aliphatic alcohol
$\alpha$ -Phellandrene	4.72*	1006	0.34	0.19	1113	2.53	Monoterpene
$\Delta^3$ -Carene	4.72*	1006	[0.34]	0.15	1098	2.34	Monoterpene
$\alpha$ -Terpinene	4.91	1016	0.51	0.49	1127	2.71	Monoterpene
para-Cymene	5.10†	1027	48.87	1.35	1214	3.87	Monoterpene
Limonene	5.13†	1028	[48.87]	0.94	1148	2.98	Monoterpene
$\beta$ -Phellandrene	5.17†	1030	[48.87]	47.49	1159	3.14*	Monoterpene
1,8-Cineole	5.28	1036	[48.87]	[47.49]	1159	3.14*	Monoterp. ether
<i>cis</i> - $\beta$ -Ocimene	5.32	1039	0.09	0.03	1192	3.56	Monoterpene
<i>trans</i> - $\beta$ -Ocimene	5.49	1048	0.03	0.03	1206	3.76	Monoterpene
$\gamma$ -Terpinene	5.68	1058	0.78	0.77	1194	3.59	Monoterpene
<i>cis</i> -Sabinene hydrate	5.98	1075	0.06	0.05	1412	6.98	Monoterp. alcohol
Terpinolene	6.15	1084	0.36	0.34	1228	4.07	Monoterpene
para-Cymenene	6.33	1094	0.05	0.04	1372	6.27	Monoterpene
Linalool	6.59*	1105	0.78	0.76	1502	9.13	Monoterp. alcohol
<i>trans</i> -Sabinene hydrate	6.59*	1105	[0.78]	0.03	1487	8.77	Monoterp. alcohol
endo-Fenchol	7.01	1121	0.06	4.74	1524	9.88*	Monoterp. alcohol
<i>trans</i> -Pinocarveol	7.51	1139	0.04	0.03	1575	11.75	Monoterp. alcohol
Camphor	7.73	1147	10.35	10.74	1431	7.44*	Monoterp. ketone
Camphene hydrate	7.88	1153	0.03	0.03	1531	10.14	Monoterp. alcohol
Borneol	8.46*	1174	3.47	3.01	1625	13.88	Monoterp. alcohol
$\delta$ -Terpineol	8.46*	1174	[3.47]	0.46	1606	12.92*	Monoterp. alcohol
Terpinen-4-ol	8.65	1181	0.71	0.69	1533	10.21	Monoterp. alcohol
para-Cymen-8-ol	9.09	1197	0.05	0.03	1774	22.53	Monoterp. alcohol
$\alpha$ -Terpineol	9.27	1202	2.35	2.31	1631	14.14	Monoterp. alcohol
Verbenone	9.70	1212	0.01	[0.46]	1606	12.92*	Monoterp. ketone
Bornyl acetate	12.78	1280	0.50	0.50	1510	9.38	Monoterp. ester
$\alpha$ -Copaene	17.48	1358	0.27	[10.74]	1431	7.44*	Sesquiterpene
$\beta$ -Caryophyllene	20.41	1402	4.63	[4.74]	1524	9.88*	Sesquiterpene
$\alpha$ -Humulene	23.06	1434	0.55	0.57	1584	12.11	Sesquiterpene

<i>trans</i> - $\beta$ -Farnesene	24.26	1448	0.03	0.03	1619	13.54	Sesquiterpene
$\gamma$ -Muuroolene	25.08	1458	0.23	0.24	1614	13.27	Sesquiterpene
$\alpha$ -Selinene	26.47	1474	0.05	0.08	1635	14.37	Sesquiterpene
$\alpha$ -Muuroolene	27.22	1484	0.06	0.07	1647	15.01	Sesquiterpene
$\gamma$ -Cadinene	28.23	1496	0.13	0.14	1671	16.21	Sesquiterpene
$\beta$ -Bisabolene	28.48	1499	0.08	0.08	1659	15.66	Sesquiterpene
$\delta$ -Cadinene	28.91	1505	0.33	0.31	1677	16.54	Sesquiterpene
<i>trans</i> -Calamenene	29.21	1509	0.03	0.03	1737	20.09	Sesquiterpene
<i>trans</i> -Cadina-1,4-diene	30.00	1520	0.03	0.02	1693	17.44	Sesquiterpene
Caryophyllene oxide	33.44	1568	0.13	0.12	1854	27.97	Sesquiterp. ether
<b>Total identified</b>			<b>99.04%</b>	<b>99.43%</b>			

\*: Two or more compounds are coeluting on this column

[xx]: Duplicate percentage due to coelutions, not taken account in the identified total

†: Peaks apexes were resolved, but peaks overlapped and were summed for analysis

Note: no correction factor was applied

#### OTHER DATA

**Physical aspect :** Clear liquid

**Refractive index :** 1.4655  $\pm$  0.0003 (20 °C)

#### CONCLUSION

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

