



**PLANT THERAPY**  
100% PURE ESSENTIAL OILS

## GC/MS BATCH NUMBER: J50100

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**ESSENTIAL OIL:** JUNIPER BERRY ORGANIC  
**BOTANICAL NAME:** JUNIPERUS COMMUNIS  
**ORIGIN:** FRANCE

KEY CONSTITUENTS PRESENT IN THIS BATCH OF JUNIPER BERRY ORGANIC OIL	%
$\alpha$ -PINENE	42.1
MYRCENE	13.5
LIMONENE	4.9
SABINENE	4.3
$\gamma$ -TERPINENE	2.7
TERPINEN-4-ol	2.5
$\beta$ -CARYOPHYLLENE	2.4
$\beta$ -PINENE	2.3
$\delta$ -CADINENE	1.8
$\alpha$ -HUMULENE	1.7
$\alpha$ -TERPINENE	1.6
TERPINOLENE	1.5
$\alpha$ -THUJENE	1.3
GERMACRENE D	1.2
p-CYMENE	1.2

Comments from Robert Tisserand: Characteristic fresh, fruity-conifer odor quality, and all 11 key constituents conform to the ISO standard.

**Date :** November 22, 2016

*SAMPLE IDENTIFICATION*

**Internal code :** 16K14-PTH16-1-DM

**Customer identification :** Organic Juniper Berry - J5010066R

**Type :** Essential oil

**Source :** *Juniperus communis*

**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 :** 2016-11-22

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.	
ξ-Fenchene	2.89	896	0.01	0.01	888	0.67	Monoterpene
Tricyclene	3.17	913	0.11	0.10	923	0.77	Monoterpene
α-Thujene	3.26	919	1.34	0.95	958	0.91	Monoterpene
α-Pinene	3.46	930	42.13	43.20	957	0.91	Monoterpene
α-Fenchene	3.63	941	0.08	0.07	982	1.01	Monoterpene
Camphene	3.66	943	0.44	0.40	993	1.06	Monoterpene
Thuja-2,4(10)-diene	3.74	948	0.10	4.43	1054	1.48*	Monoterpene
Sabinene	4.10	970	4.26	[4.43]	1054	1.48*	Monoterpene
β-Pinene	4.16	973	2.33	2.28	1036	1.34	Monoterpene
Myrcene	4.48	993	13.45	13.85	1117	2.00*	Monoterpene
2-Carene	4.51	994	0.04	0.06	1064	1.56	Monoterpene
Δ3-Carene	4.70*	1005	0.67	0.27	1084	1.72	Monoterpene
α-Phellandrene	4.70*	1005	[0.67]	[13.85]	1117	2.00*	Monoterpene
α-Terpinene	4.89	1016	1.55	1.82	1120	2.04	Monoterpene
Limonene	5.14*	1030	6.29	4.87	1138	2.25	Monoterpene
para-Cymene	5.14*	1030	[6.29]	1.15	1201	2.98	Monoterpene
β-Phellandrene	5.16	1031	0.92	1.20	1142	2.30*	Monoterpene
1,8-Cineole	5.23	1034	0.02	[1.20]	1142	2.30*	Monoterp. ether
cis-β-Ocimene	5.29	1038	0.01	2.66	1184	2.78*	Monoterpene
trans-β-Ocimene	5.47	1048	0.07	0.08	1196	2.92	Monoterpene
γ-Terpinene	5.67	1059	2.65	[2.66]	1184	2.78*	Monoterpene
cis-Sabinene hydrate	6.01	1077	0.01	0.01	1399	5.75	Monoterp. alcohol
Terpinolene	6.14	1084	1.51	1.53	1219	3.21	Monoterpene
para-Cymenene	6.34	1095	0.24	0.22	1361	5.19	Monoterpene
α-Pinene oxide	6.46	1100	0.04	0.03	1304	4.38	Monoterp. ether
Linalool	6.65	1107	0.12	0.22	1482	7.22*	Monoterp. alcohol
endo-Fenchol	6.92	1117	0.02	0.03	1512	7.78	Monoterp. alcohol
cis-para-Menth-2-en-1-ol	7.17	1126	0.09	[0.22]	1482	7.22*	Monoterp. alcohol
trans-Pinocarveol	7.55	1141	0.09	0.09	1555	8.97	Monoterp. alcohol
Camphor	7.67	1145	0.04	0.05	1421	6.07	Monoterp. ketone
trans-Verbenol	7.77	1149	0.02	0.02	1601	10.32	Monoterp. alcohol
Borneol	8.62	1180	0.08	0.76	1608	10.55*	Monoterp. alcohol
Terpinen-4-ol	8.75	1185	2.47	2.23	1524	8.05	Monoterp. alcohol
para-Cymen-8-ol	9.06	1197	0.01	0.01	1760	17.38	Monoterp. alcohol
α-Terpineol	9.38	1204	0.50	0.91	1617	10.79*	Monoterp. alcohol
Verbenone	9.70	1211	0.07	[0.76]	1608	10.55*	Monoterp. ketone
Methyl citronellate	11.75	1257	0.11	0.15	1498	7.52	Monoterp. ester
Bornyl acetate	12.72	1278	0.29	0.23	1493	7.43	Monoterp. ester
2-Undecanone	13.63	1298	0.05	0.05	1560	9.08	Aliphatic ketone
Bicycloelemene	14.80	1315	0.03	0.04	1416	5.98	Sesquiterpene
α-Cubebene	15.72	1330	0.41	0.44	1410	5.90	Sesquiterpene

$\alpha$ -Terpinyl acetate	16.42	1340	0.09	[0.76]	1608	10.55*	Monoterp. ester
$\alpha$ -Ylangene	16.93	1348	0.05	0.06	1426	6.17	Sesquiterpene
$\alpha$ -Copaene	17.41	1355	0.44	0.42	1433	6.30	Sesquiterpene
$\beta$ -Elemene	18.66	1375	0.73	[2.23]	1524	8.05*	Sesquiterpene
Longifolene	19.23	1384	0.29	0.21	1479	7.15	Sesquiterpene
$\beta$ -Caryophyllene	20.35	1400	2.44	3.55	1524	8.02	Sesquiterpene
Thujopsen	21.17	1409	0.09	0.12	1535	8.36	Sesquiterpene
$\gamma$ -Elemene	21.56	1414	0.29	0.23	1566	9.26	Sesquiterpene
<i>cis</i> - $\beta$ -Farnesene	22.63	1427	0.08	1.81	1580	9.71*	Sesquiterpene
$\alpha$ -Humulene	23.11	1433	1.71	[1.81]	1580	9.71*	Sesquiterpene
<i>trans</i> - $\beta$ -Farnesene	24.23	1446	0.43	[0.76]	1608	10.55*	Sesquiterpene
<i>trans</i> -Cadinane-1(6),4-diene	24.71	1452	0.25	0.14	1586	9.87	Sesquiterpene
$\gamma$ -Muuroolene	25.18	1458	0.59	[0.91]	1617	10.79*	Sesquiterpene
Germacrene D	25.30	1459	1.16	1.23	1623	10.98*	Sesquiterpene
<i>cis</i> -Muurolo-4(14),5-diene	25.86	1466	0.24	0.30	1627	11.14	Sesquiterpene
$\beta$ -Selinene	26.04	1468	0.11	[1.23]	1623	10.98*	Sesquiterpene
$\alpha$ -Selinene	26.50*	1473	0.36	0.35	1633	11.42	Sesquiterpene
$\beta$ -Alaskene	26.50*	1473	[0.36]	0.11	1637	11.53	Sesquiterpene
Valencene	27.04	1479	0.04	0.06	1662	12.62	Sesquiterpene
$\alpha$ -Muuroolene	27.28	1482	0.49	0.49	1646	11.92	Sesquiterpene
$\alpha$ -Alaskene	27.40	1484	0.12				Sesquiterpene
$\gamma$ -Cadinene	28.32	1495	0.54	0.53	1667	12.85	Sesquiterpene
$\delta$ -Cadinene	29.05	1505	1.79	1.78	1673	13.15	Sesquiterpene
<i>trans</i> -Calamenene	29.35	1509	0.04	0.04	1734	15.84	Sesquiterpene
<i>trans</i> -Cadinane-1,4-diene	29.88	1516	0.15	0.18	1677	13.33	Sesquiterpene
Selina-3,7(11)-diene	30.03	1518	0.29	0.35	1679	13.41	Sesquiterpene
$\alpha$ -Cadinene	30.30	1522	0.23	0.16	1690	13.89	Sesquiterpene
Guaia-3,9-diene?	30.42	1524	0.08	0.07	1697	14.21	Sesquiterpene
Germacrene B	31.69	1541	0.71	0.68	1720	15.20	Sesquiterpene
$\alpha$ -Elemol	32.26	1549	0.02	0.02	2008	32.83	Sesquiterp. alcohol
Caryophyllene oxide	33.52	1566	0.11	0.07	1845	22.39	Sesquiterp. ether
Spathulenol	33.72	1569	0.11	0.07	2019	33.55	Sesquiterp. alcohol
$\alpha$ -Cedrol	34.65	1582	0.04	0.03	1996	32.18	Sesquiterp. alcohol
$\tau$ -Cadinol	37.35	1637	0.07	0.08	2067	35.78	Sesquiterp. alcohol
$\tau$ -Muurolol	37.47	1640	0.09	0.10	2084	36.36	Sesquiterp. alcohol
$\alpha$ -Muurolol	37.59	1643	0.03	0.03	2101	36.91	Sesquiterp. alcohol
$\alpha$ -Cadinol	37.92	1651	0.15	0.16	2124	37.70	Sesquiterp. alcohol
meta-Camphorene	46.76	1938	0.07	0.06	2143	38.36	Diterpene
para-Camphorene	47.65	1974	0.03	0.04	2175	39.24	Diterpene
<b>Total identified</b>			<b>97.22%</b>	<b>97.95%</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 :**  $1.4743 \pm 0.0003$  (20 °C)

*CONCLUSION*

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



