



PLANT THERAPY
100% PURE ESSENTIAL OILS

GC/MS BATCH NUMBER: P40104

ESSENTIAL OIL: PEPPERMINT ORGANIC
BOTANICAL NAME: MENTHA X PIPERITA
ORIGIN: INDIA

KEY CONSTITUENTS PRESENT IN THIS BATCH OF PEPPERMINT ORGANIC OIL	%
MENTHOL	35.0
MENTHONE	24.7
MENTHYL ACETATE	5.7
ISOMENTHONE	4.4
1,8-CINEOLE	4.4
MENTHOFURAN	3.9
neo-MENTHOL	3.8
β-CARYOPHYLLENE	3.0
LIMONENE	2.2
PULEGONE	1.6

Comments from Robert Tisserand: Excellent "mint candy" odor profile. Conforms to 11 of 12 ISO standards, which is actually normal for peppermint oils.

Date : March 10, 2017

SAMPLE IDENTIFICATION

Internal code : 17B16-PTH1-1-DM

Customer identification : Peppermint Organic - India - P40104611R

Type : Essential oil

Source : *Mentha x piperita*

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 : 2017-03-08

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	2.48	866	0.01	0.01	1328	5.58	Aliphatic alcohol
Hexanol	2.71	883	0.01	0.01	1304	5.20	Aliphatic alcohol
2,5-Diethyltetrahydrofuran	2.91	898	0.01	0.02	981	1.33	Furan
α -Thujene	3.30	922	0.19	0.19	959	1.23	Monoterpene
α -Pinene	3.40	928	0.60	0.58	949	1.18	Monoterpene
Camphene	3.69*	945	0.03	0.03	1000	1.48	Monoterpene
α -Fenchene	3.69*	945	[0.03]	0.01	992	1.41	Monoterpene
3-Methylcyclohexanone	3.99	963	0.05	0.07	1250	4.42	Aliphatic ketone
Sabinene	4.11	970	0.32	0.32	1060	2.01	Monoterpene
β -Pinene	4.18	974	0.92	0.88	1042	1.84	Monoterpene
Myrcene	4.45*	990	0.21	0.16	1118	2.59	Monoterpene
Octan-3-one	4.45*	990	[0.21]	0.03	1204	3.73	Aliphatic ketone
Octen-3-ol	4.51	994	0.02	4.00	1413	6.99*	Aliphatic alcohol
Pseudolimonene	4.67	1003	0.01	0.01	1114	2.54	Monoterpene
α -Phellandrene	4.72*	1006	0.21	0.02	1111	2.50	Monoterpene
Octan-3-ol	4.72*	1006	[0.21]	0.16	1348	5.89	Aliphatic alcohol
Δ 3-Carene	4.72*	1006	[0.21]	0.02	1097	2.32	Monoterpene
α -Terpinene	4.91	1016	0.12	0.11	1124	2.68	Monoterpene
para-Cymene	5.09	1026	0.22	0.22	1210	3.83	Monoterpene
Limonene	5.14	1029	2.20	2.11	1144	2.93	Monoterpene
β -Phellandrene	5.16	1030	0.04	4.47	1150	3.02*	Monoterpene
1,8-Cineole	5.21	1033	4.39	[4.47]	1150	3.02*	Monoterp. ether
<i>cis</i> - β -Ocimene	5.32	1038	0.10	0.07	1189	3.52	Monoterpene
<i>trans</i> - β -Ocimene	5.50	1048	0.03	0.01	1201	3.69	Monoterpene
γ -Terpinene	5.68	1058	0.30	0.30	1191	3.55	Monoterpene
<i>cis</i> -Linalool oxide (fur.)	5.93	1072	tr	tr	1373	6.28	Monoterp. alcohol
<i>cis</i> -Sabinene hydrate	5.98	1075	0.27	[4.00]	1413	6.99*	Monoterp. alcohol
Octanol	6.12	1082	0.06	6.26	1505	9.20*	Aliphatic alcohol
Terpinolene	6.15	1084	0.12	0.10	1226	4.04	Monoterpene
para-Cymenene	6.34	1094	0.01	0.01	1370	6.24	Monoterpene
Linalool	6.60	1106	0.27	[6.26]	1505	9.20*	Monoterp. alcohol
<i>cis</i> -para-Menth-2-en-1-ol	7.14	1125	0.04	[6.26]	1505	9.20*	Monoterp. alcohol
Camphor	7.68	1145	0.02	0.01	1427	7.34	Monoterp. ketone
Isopulegol	7.75	1148	0.16	[6.26]	1505	9.20*	Monoterp. alcohol
Menthone	8.05	1159	24.65	24.78	1398	6.70	Monoterp. ketone
Menthofuran	8.14	1162	3.86	[4.00]	1413	6.99*	Monoterp. ether
Isomenthone	8.24	1166	4.42	4.33	1418	7.10	Monoterp. ketone
neo-Menthol	8.40	1172	3.80	3.87	1535	10.28	Monoterp. alcohol
Borneol	8.46	1174	0.10	0.12	1612	13.15	Monoterp. alcohol
Terpinen-4-ol	8.55	1177	0.12	0.62	1531	10.14	Monoterp. alcohol
Menthol	8.89	1189	34.95	34.53	1583	12.05*	Monoterp. alcohol

Isomenthol	9.01	1194	0.71	0.71	1560	11.19	Monoterp. alcohol
neoiso-Menthol	9.17	1200	0.26	0.25	1618	13.47	Monoterp. alcohol
α -Terpineol	9.31*	1203	0.39	0.95	1628	13.96*	Monoterp. alcohol
β -Phellandren-8-ol	9.31*	1203	[0.39]	0.17	1714	18.48	Monoterp. alcohol
Pulegone	10.86	1237	1.63	1.67	1554	10.96	Monoterp. ketone
Carvone	11.22	1245	0.31	[0.95]	1628	13.96*	Monoterp. ketone
Piperitone	11.61	1254	0.62	0.93	1623	13.77*	Monoterp. ketone
neo-Menthyl acetate	12.28	1269	0.34	0.33	1465	8.25	Monoterp. ester
Dihydroedulan I	12.79	1280	0.15	0.11	1445	7.76	Edulan
Menthyl acetate	13.29	1291	5.71	[6.26]	1505	9.20*	Monoterp. ester
Isomenthyl acetate	13.89	1303	0.19	0.21	1512	9.44	Monoterp. ester
Bicycloelemene	14.90	1319	0.04	0.04	1434	7.51	Sesquiterpene
Menthofurolactone	16.70	1346	0.06				Monoterp. lactone
α -Copaene	17.52	1358	0.07	0.06	1431	7.42	Sesquiterpene
β -Bourbonene	17.93	1365	0.18	0.24	1452	7.92	Sesquiterpene
β -Elemene	18.70	1376	0.09	0.14	1525	9.89	Sesquiterpene
β -Caryophyllene	20.41	1402	3.04	2.98	1523	9.81	Sesquiterpene
<i>cis</i> - β -Farnesene	22.77	1430	0.12	[34.53]	1583	12.05*	Sesquiterpene
α -Humulene	23.09	1434	0.15	0.16	1586	12.20	Sesquiterpene
<i>trans</i> - β -Farnesene	24.28	1448	0.19	[0.93]	1623	13.77*	Sesquiterpene
γ -Muurolene	24.90	1456	0.06	0.06	1608	12.99	Sesquiterpene
Germacrene D	25.29	1460	0.67	[0.93]	1623	13.77*	Sesquiterpene
Bicyclogermacrene	26.52	1475	0.19	0.10	1642	14.74	Sesquiterpene
α -Selinene	26.83	1479	0.23	0.34	1636	14.40*	Sesquiterpene
α -Muurolene	27.27	1484	0.05	[0.34]	1636	14.40*	Sesquiterpene
γ -Cadinene	28.12	1494	0.04	0.05	1669	16.13	Sesquiterpene
Mint lactone	28.25	1496	0.04	0.03	2131	40.64	Monoterp. lactone
δ -Cadinene	28.96	1505	0.09	0.10	1675	16.42	Sesquiterpene
Caryophyllene oxide	33.47*	1568	0.14	0.06	1850	27.79	Sesquiterp. ether
Spathulenol	33.47*	1568	[0.14]	0.03	2022	37.32	Sesquiterp. alcohol
(<i>E</i>)-Nerolidol	33.47*	1568	[0.14]	0.03	1991	35.96	Sesquiterp. alcohol
Viridiflorol	34.38	1581	0.08	0.05	1983	35.59	Sesquiterp. alcohol
Total identified			98.68%	98.24%			

*: 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 : Faintly yellow liquid

Refractive index : 1.4613 \pm 0.0003 (20 °C)

CONCLUSION

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



