



PLANT THERAPY
100% PURE ESSENTIAL OILS

GC/MS BATCH NUMBER: P50105

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

KEY CONSTITUENTS PRESENT IN THIS BATCH OF PEPPERMINT OIL	%
MENTHOL	47.5
MENTHONE	19.7
MENTHYL ACETATE	5.1
1,8-CINEOLE	4.5
ISOMENTHONE	3.6
NEO-MENTHOL	3.1
β-CARYOPHYLLENE	2.6
MENTHOFURAN	2.0
LIMONENE	2.0
β-PINENE	1.0

Comments from Robert Tisserand: Clean, "mint candy" odor quality. Very good (48%) menthol content. All twelve key ISO constituents are within range.

Date : April 26, 2017

SAMPLE IDENTIFICATION

Internal code : 17D24-PTH1-1-DM

Customer identification : Peppermint - India - P5010568R

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 : 2017-04-26

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	2.49	866	0.01	0.01	1328	5.57	Aliphatic alcohol
2,5-Diethyltetrahydrofuran	2.90	898	0.02	0.02	966	1.25	Furan
α -Thujene	3.30	922	0.03	0.04	943	1.16	Monoterpene
α -Pinene	3.41	928	0.67	0.65	932	1.12	Monoterpene
α -Fenchene	3.70*	945	0.02	0.01	984	1.34	Monoterpene
Camphene	3.70*	945	[0.02]	0.02	990	1.39	Monoterpene
Thuja-2,4(10)-diene	3.78	951	0.01	0.32	1048	1.90*	Monoterpene
3-Methylcyclohexanone	4.00	963	0.03	0.03	1238	4.23	Aliphatic ketone
Sabinene	4.12	971	0.33	[0.32]	1048	1.90*	Monoterpene
β -Pinene	4.18	974	1.00	0.95	1031	1.74	Monoterpene
Myrcene	4.46*	991	0.20	0.16	1108	2.46	Monoterpene
Octen-3-ol	4.46*	991	[0.20]	0.05	1390	6.57	Aliphatic alcohol
Octan-3-one	4.51	994	0.01	0.01	1190	3.54	Aliphatic ketone
Pseudolimonene	4.68	1004	0.01	0.01	1104	2.41	Monoterpene
α -Phellandrene	4.74*	1007	0.17	0.01	1102	2.38	Monoterpene
Octan-3-ol	4.74*	1007	[0.17]	0.14	1336	5.71	Aliphatic alcohol
Δ 3-Carene	4.74*	1007	[0.17]	0.01	1079	2.20	Monoterpene
α -Terpinene	4.92	1017	0.11	0.10	1115	2.55	Monoterpene
para-Cymene	5.11	1027	0.11	0.12	1200	3.67	Monoterpene
Limonene	5.15*	1030	2.16	2.00	1133	2.80	Monoterpene
β -Phellandrene	5.15*	1030	[2.16]	4.68	1140	2.87*	Monoterpene
1,8-Cineole	5.22	1033	4.52	[4.68]	1140	2.87*	Monoterp. ether
<i>cis</i> - β -Ocimene	5.33	1039	0.08	0.05	1178	3.37	Monoterpene
<i>trans</i> - β -Ocimene	5.51	1049	0.03	0.03	1193	3.58	Monoterpene
γ -Terpinene	5.69	1059	0.19	0.20	1180	3.40	Monoterpene
<i>cis</i> -Linalool oxide (fur.)	5.96	1074	0.02	19.65	1384	6.47*	Monoterp. alcohol
<i>cis</i> -Sabinene hydrate	5.99	1075	0.13	2.06	1400	6.73*	Monoterp. alcohol
Octanol	6.13	1083	0.06	0.28	1493	8.92*	Aliphatic alcohol
Terpinolene	6.17	1085	0.08	0.06	1215	3.88	Monoterpene
para-Cymenene	6.36	1095	0.01	0.01	1367	6.19	Monoterpene
Linalool	6.62	1106	0.18	0.30	1484	8.69*	Monoterp. alcohol
Isopulegol	7.75	1148	0.18	[0.30]	1484	8.69*	Monoterp. alcohol
Menthone	8.05	1159	19.72	[19.65]	1384	6.47*	Monoterp. ketone
Menthofuran	8.14	1162	2.02	[2.06]	1400	6.73*	Monoterp. ether
Isomenthone	8.24	1166	3.56	3.36	1407	6.84	Monoterp. ketone
neo-Menthol	8.43	1173	3.13	3.13	1523	9.82*	Monoterp. alcohol
Borneol	8.50	1175	0.06	0.49	1612	13.18*	Monoterp. alcohol
<i>trans</i> -Isopulegone	8.56	1177	0.12	2.64	1512	9.44*	Monoterp. ketone
Menthol	8.98*	1193	47.74	47.54	1570	11.58	Monoterp. alcohol
Terpinen-4-ol	8.98*	1193	[47.74]	0.34	1519	9.68	Monoterp. alcohol
Isomenthol	9.07	1196	0.54	0.52	1545	10.67	Monoterp. alcohol

neoiso-Menthol	9.23	1201	0.29	0.95	1615	13.32*	Monoterp. alcohol
α-Terpeneol	9.37	1204	0.28	[0.95]	1615	13.32*	Monoterp. alcohol
Pulegone	10.87	1238	0.81	0.82	1540	10.45	Monoterp. ketone
Carvone	11.25	1246	0.11	0.11	1623	13.74	Monoterp. ketone
Piperitone	11.64	1255	0.69	[0.95]	1615	13.32*	Monoterp. ketone
neo-Menthyl acetate	12.30	1269	0.26	0.26	1453	7.94	Monoterp. ester
Bornyl acetate	12.82	1281	0.18	0.17	1499	9.05	Monoterp. ester
Menthyl acetate	13.30	1292	5.09	5.20	1490	8.83	Monoterp. ester
Isomenthyl acetate	13.91	1303	0.15	[0.28]	1493	8.92*	Monoterp. ester
Bicycloelemene	14.93	1319	0.06	0.05	1421	7.20	Sesquiterpene
Menthofuro lactone	16.74	1346	0.03				Monoterp. lactone
Eugenol	17.22	1354	0.03	0.02	2048	38.12	Phenylpropanoid
α-Copaene	17.56	1359	0.10	0.08	1423	7.24	Sesquiterpene
β-Bourbonene	17.98	1365	0.16	0.10	1467	8.30	Sesquiterpene
β-Elemene	18.76	1377	0.07	[3.13]	1523	9.82*	Sesquiterpene
β-Caryophyllene	20.46	1402	2.58	[2.64]	1512	9.44*	Sesquiterpene
α-Humulene	23.15	1435	0.14	0.17	1571	11.62	Sesquiterpene
trans-β-Farnesene	24.32	1449	0.12	0.12	1606	12.91	Sesquiterpene
Germacrene D	25.36	1461	0.43	[0.49]	1612	13.18*	Sesquiterpene
Bicyclogermacrene	26.57*	1476	0.11	0.07	1631	14.12	Sesquiterpene
α-Selinene	26.57*	1476	[0.11]	0.03	1625	13.85	Sesquiterpene
δ-Cadinene	29.03	1506	0.03	0.03	1661	15.73	Sesquiterpene
Caryophyllene oxide	33.51	1569	0.05	0.03	1836	26.70	Sesquiterp. ether
Viridiflorol	34.46	1582	0.04	0.03	1967	34.86	Sesquiterp. alcohol
Total identified			99.07%	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 : Clear liquid

Refractive index : 1.4600 ± 0.0003 (20 °C)

CONCLUSION

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



