

## GC/MS BATCH NUMBER: PF0100

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**ESSENTIAL OIL:** PEPPERMINT US  
**BOTANICAL NAME:** MENTHA X PIPERITA  
**ORIGIN:** WESTERN U.S.

KEY CONSTITUENTS PRESENT IN THIS BATCH OF PEPPERMINT US OIL	%
MENTHOL	45.9
MENTHONE	22.5
MENTHYL ACETATE	6.0
1,8-CINEOLE	5.1
NEOMENTHOL	4.0
ISOMENTHONE	3.4
MENTHOFURAN	1.9
β-CARYOPHYLLENE	1.8
LIMONENE	1.6
PULEGONE	1.0
Trans-THUJANOL [(E)-SABINENE HYDRATE]	0.4

Comments from Robert Tisserand: An excellent US peppermint oil which conforms to the ISO standard (apart from very slightly low trans-thujanol - this is not a concern).

Sample Information

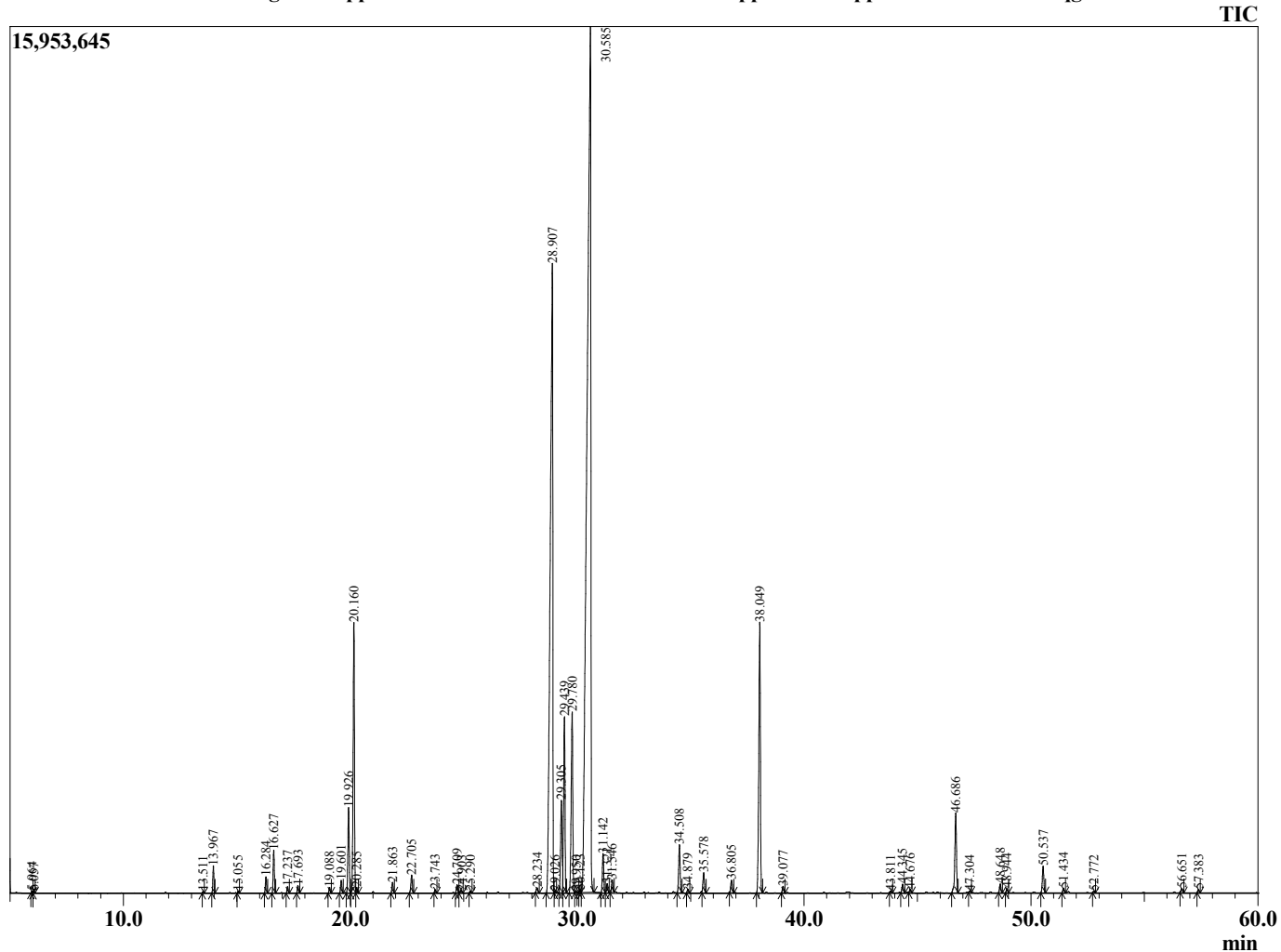
Analyzed by : Dr. Robert S. Pappas  
 Analyzed : 2/14/2015 7:07:34 AM  
 Sample Type : Essential Oil  
 Sample Name : Peppermint  
 Sample ID : 3500411140  
 Injection Volume : 0.10  
 Data File : C:\GCMSsolution\Data\EOU\Peppermint\Peppermint 3500411140.qgd



Peak Report TIC

R.Time	Name	Area%
5.964	Isopentyl alcohol	0.02
6.057	Butanol-2-methyl	0.02
13.511	Thujene <alpha>	0.02
13.967	Pinene <alpha>	0.42
15.055	Cyclohexanone <methyl>	0.02
16.284	Sabinene	0.27
16.627	Pinene <beta>	0.72
17.237	Myrcene	0.10
17.693	Octanol <3>	0.12
19.088	Terpinene <alpha>	0.09
19.601	Cymene <para>	0.22
19.926	Limonene	1.61
20.160	1,8-cineole	5.07
20.285	Ocimene <Z-beta>	0.09
21.863	Terpinene <gamma>	0.19
22.705	4-Thujanol <trans>	0.37
23.743	Terpinolene	0.06
24.709	Linalool	0.16
24.903	Butyrate <2-methyl>	0.06
25.290	Isovalerate <amyl>	0.03
28.234	Isoisopulegol	0.11
28.907	Menthone	22.52
29.026	Menthan-4-ol <Z>	0.03
29.305	menthofuran	1.93
29.439	isomenthone	3.44
29.780	neomenthol	4.00
29.950	Nonanol+Borneol	0.04
30.123	Isopulegone <trans>	0.05
30.585	Menthol	45.94
31.142	Menthol <iso>	0.75
31.321	Menthol <isoneo>	0.17
31.546	Terpineol <alpha>	0.24
34.508	Pulegone	0.99
34.879	Carvone	0.07
35.578	Piperitone	0.42
36.805	Menthyl acetate <neo>	0.27
38.049	Menthyl acetate	6.01
39.077	Menthyl acetate <iso>	0.13
43.811	Copaene <alpha>	0.03
44.345	Bourbonene <beta>	0.17
44.676	Elemene <beta>	0.06
46.686	Caryophyllene <trans>	1.84
47.304	Murrola-4(14),5-diene<trans>	0.03
48.648	Farnesene <(E)-, beta>	0.17
48.944	Humulene <alpha>	0.08
50.537	Germacrene D	0.57
51.434	Bicyclogermacrene	0.09
52.772	Cadinene <delta>	0.03
56.651	Caryophyllene oxide	0.09
57.383	Viridiflorol	0.06
		100.00

Chromatogram Peppermint C:\GCMSsolution\Data\EOU\Peppermint\Peppermint 3500411140.qgd



Comments:

Typical Ranges of Main Components: