

GC/MS BATCH NUMBER: F20100

ESSENTIAL OIL: FIR NEEDLE
BOTANICAL NAME: ABIES SIBIRICA
ORIGIN: SIBERIA

KEY CONSTITUENTS PRESENT IN THIS BATCH OF FIR NEEDLE OIL	%
BORNYL ACETATE	31.1
CAMPHENE	19.7
α -PINENE	12.8
Δ 3-CARENE	11.6
LIMONENE	5.0
β -PHELLANDRENE	3.0
β -PINENE	2.7
BORNEOL	2.3
TRICYCLENE	2.0
SANTENE	1.8
α -PHELLANDRENE	1.4
β -CARYOPHYLLENE	1.1
TERPINOLENE	1.1
MYRCENE	1.0
α -HUMULENE	0.5
ISOBORNYL ACETATE	0.1

Comments from Robert Tisserand: An excellent fir needle oil, which conforms to the ISO standard, for 13 key constituents, for Siberian Fir Needle Oil.

Sample Information

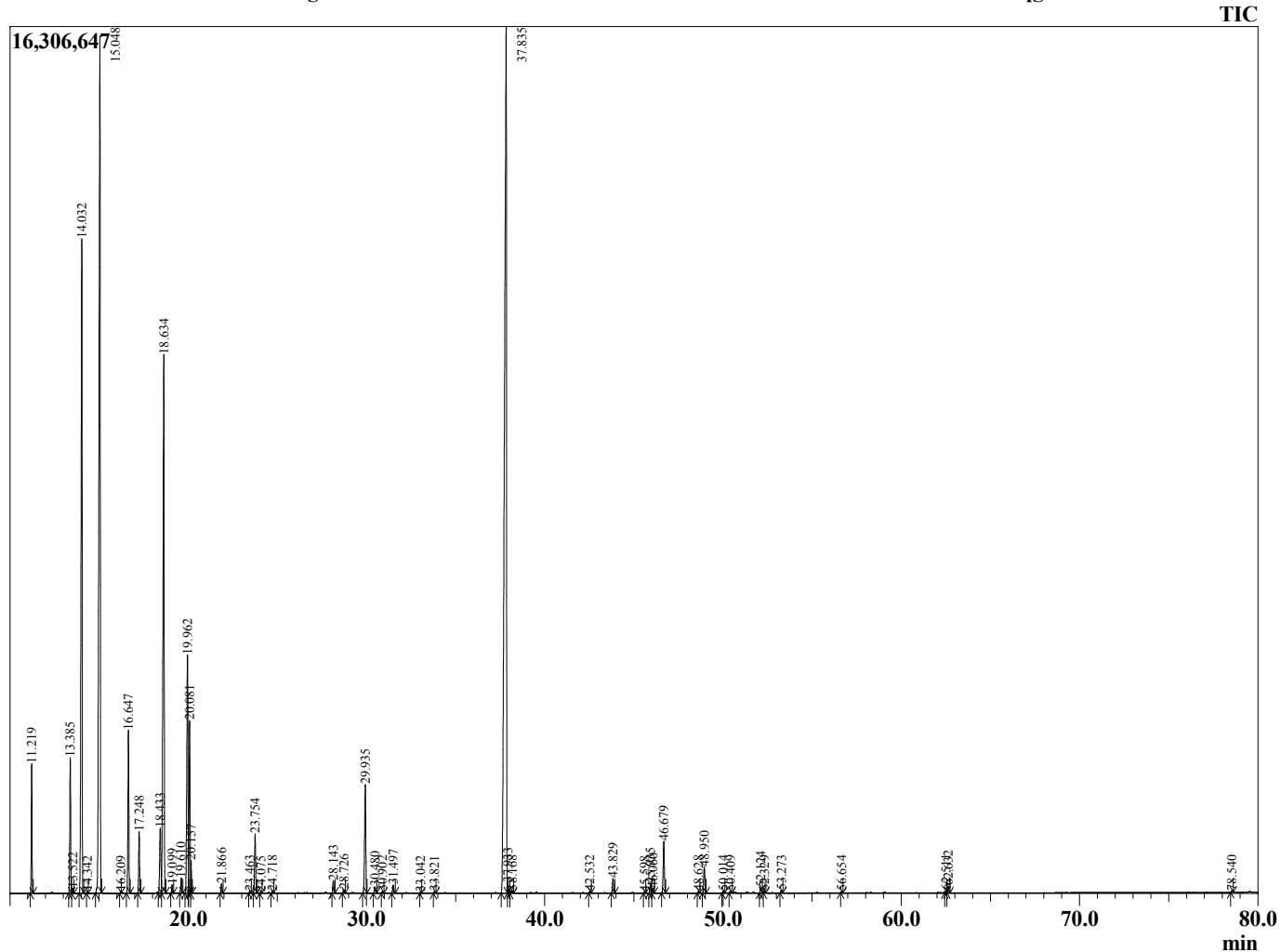
Analyzed by : Dr. Robert S. Pappas
 Analyzed : 2/14/2015 9:03:28 AM
 Sample Type : Essential Oil
 Sample Name : Fir Needle
 Sample ID : 98597-5
 Injection Volume : 0.10
 Data File : C:\GCMSsolution\Data\EOU\Fir needle\Fir Needle 98597-5.qgd



Peak Report TIC

R.Time	Name	Area%
11.219	Santene	1.76
13.385	Tricyclene	2.03
13.522	Thujene <alpha->	0.08
14.032	Pinene <alpha->	12.80
14.342	Fenchene<beta->	0.02
15.048	Camphene	19.74
16.209	Cyclopentene <isomer>	0.02
16.647	Pinene <beta->	2.67
17.248	Myrcene	0.98
18.433	Phellandrene <alpha->	1.38
18.634	3-Carene	11.55
19.099	Terpinene <alpha->	0.13
19.610	Cymene <para->	0.26
19.962	Limonene	5.00
20.081	Phellandrene <beta->	2.96
20.157	1,8-cineole	0.42
21.866	Terpinene <gamma->	0.16
23.463	Terpinolene iso	0.04
23.754	Terpinolene	1.05
24.075	Nonanone-2+Cymenene<p>	0.02
24.718	?	0.04
28.143	Camphor	0.23
28.726	Terpineol <E-beta>	0.06
29.935	Borneol	2.26
30.480	Terpinen-4-ol	0.12
30.902	Cymen-8-ol <para->	0.03
31.497	Terpineol <alpha->	0.16
33.042	Fenchyl acetate <endo->	0.02
33.821	Thymol methyl ether	0.03
37.835	Bornyl acetate	31.06
37.933	Isobornyl acetate	0.15
38.168	Undecanone-2	0.04
42.532	Neryl acetate	0.03
43.829	Geranyl acetate	0.28
45.598	Sibirene.	0.02
45.935	Dodecanal	0.19
46.060	Longifolene	0.09
46.679	Caryophyllene <trans>	1.07
48.628	Himachalene <alpha->	0.03
48.950	Humulene <alpha->	0.53
50.014	Dodecanol	0.04
50.409	Sesquiterpene <oxide>	0.04
52.124	Bisabolene <beta->	0.10
52.329	Bisabolene <Z-gamma>	0.03
53.273	Bisabolene <E-gamma>	0.05
56.654	Caryophyllene oxide	0.02
62.511	Bisabolol <alpha->	0.04
62.632	Bisabolol <beta->	0.13
78.540	Manoyl oxide	0.03
		100.00

Chromatogram Fir Needle C:\GCMSsolution\Data\EOU\Fir needle\Fir Needle 98597-5.qgd



Comments:

Typical Ranges of Main Components: