

Sample Information

Analyzed by : Dr. Robert S. Pappas
 Analyzed : 5/7/2019 5:09:40 AM
 Sample Type : Essential Oil
 Sample Name : Pine Needle - Barefut
 Sample ID : 0104
 Injection Volume : 0.10
 Instrument ID : GC-3

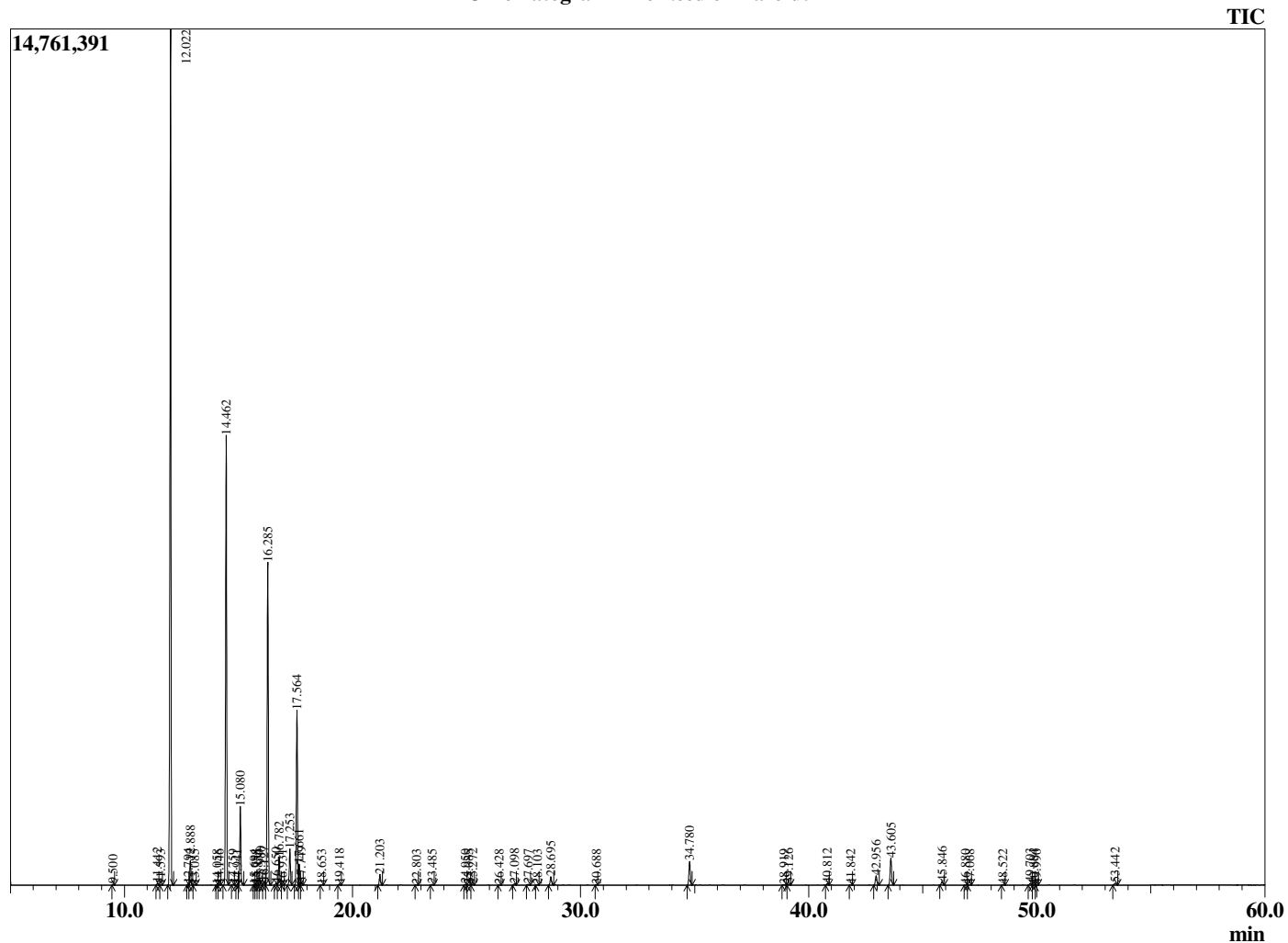


Peak Report TIC

R.Time	Name	Area%
9.500	Santene	0.04
11.442	Tricyclene	0.09
11.593	alpha-Thujene	0.02
12.022	alpha-Pinene	39.10
12.794	alpha-Fenchene	0.05
12.888	Camphene	1.06
13.085	Thuja-2,4(10)diene	0.02
14.058	para-Cymene	0.02
14.146	Sabinene	0.04
14.462	beta-Pinene	20.96
14.759	Camphene isomer	0.04
14.941	3-para-Menthene	0.02
15.080	Myrcene	3.59
15.694	alpha-Terpinene	0.02
15.758	1-para-Menthene	0.04
15.856	Unidentified	0.01
15.980	Pseudolimonene	0.17
16.127	alpha-Phellandrene	0.17
16.285	delta-3-Carene	15.56
16.650	1,4-Cineole	0.11
16.782	alpha-Terpinene	1.34
16.931	ortho-Cymene	0.02
17.253	para-Cymene	1.78
17.564	Limonene	8.60
17.661	beta-Phellandrene	0.95
17.749	1,8-Cineole	0.13
18.653	trans-beta-Ocimene	0.02
19.418	gamma-Terpinene	0.06
21.203	Terpinolene	0.56
22.803	Thujol isomer	0.02
23.485	alpha-Fenchol	0.05
24.950	trans-Pinocarveol	0.05
25.085	Unidentified	0.02
25.272	trans-Verbenol	0.07
26.428	Unidentified	0.02
27.098	Borneol	0.08
27.697	Terpinen-4-ol	0.05
28.103	para-Cymen-8-ol	0.03
28.695	alpha-Terpineol	0.51
30.688	Unidentified	0.02
34.780	Bornyl acetate	1.42
38.919	Unidentified	0.05
39.126	alpha-Longipinene	0.06
40.812	alpha-Copaene	0.08
41.842	Sativene	0.02
42.956	Junipene	0.61
43.605	beta-Caryophyllene	1.69
45.846	alpha-Humulene	0.21
46.880	10-beta-H-Cadina-1(6),4-diene	0.02
47.068	trans-Cadina-1(6),4-diene	0.02
48.522	alpha-Humulene	0.03
49.703	delta-Cadinene	0.10
49.884	cis-Calamenene	0.02
49.990	Zonarene	0.02
53.442	Caryophyllene oxide	0.15
		100.00

This report is valid for 1 year from the analyzed date.

Chromatogram Pine Needle - Barefut



Comments:

The analysis of this Pine Needle batch sample meets the expected chemical profile for authentic essential oil of *Pinus sylvestris*. No contamination or adulteration was detected.