

Sample Information

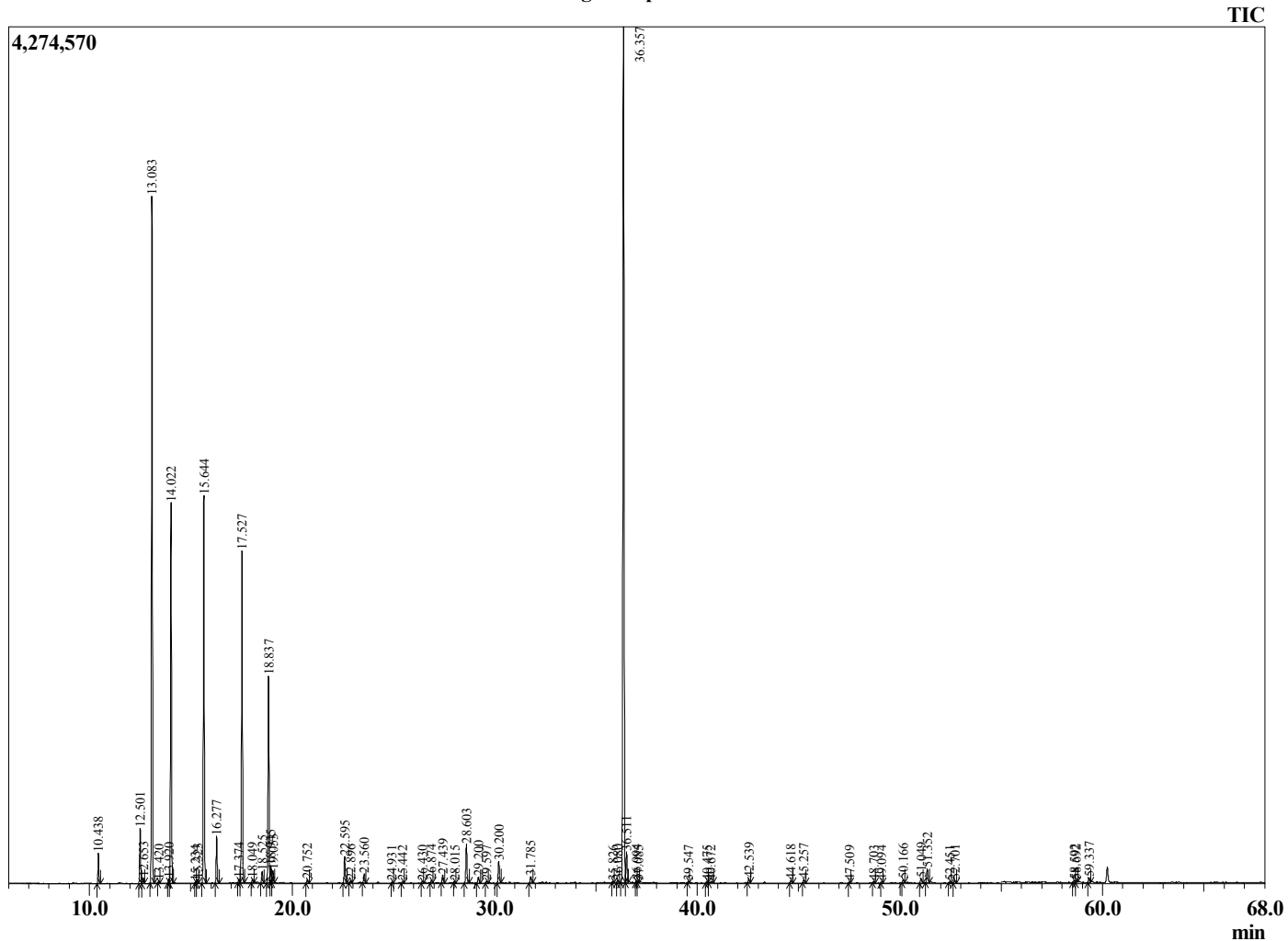
Analyzed by : Dr. Robert S. Pappas
 Analyzed : 11/21/2019 1:32:37 PM
 Sample Type : Essential Oil
 Sample Name : Spruce - Barefut
 Sample ID : 0106
 Injection Volume : 0.10
 Instrument ID : GC-3



Peak Report TIC

R.Time	Name	Area%
10.438	Santene	0.75
12.501	Tricyclene	1.43
12.653	alpha-Thujene	0.15
13.083	alpha-Pinene	18.46
13.420	beta-Fenchene	0.05
13.920	alpha-Fenchene	0.11
14.022	Camphene	10.50
15.234	meta-Cymene	0.04
15.323	Sabinene	0.11
15.644	beta-Pinene	10.81
16.277	Myrcene	1.34
17.374	alpha-Phellandrene	0.10
17.527	3-Carene	9.87
18.049	alpha-Terpinene	0.12
18.525	para-Cymene	0.35
18.837	Limonene	6.34
18.945	beta-Phellandrene	0.52
19.053	1,8-Cineole	0.36
20.752	gamma-Terpinene	0.10
22.595	Terpinolene	0.83
22.896	Dehydro-p-cymene	0.07
23.560	Linalool	0.31
24.931	endo-Fenchol	0.03
25.442	alpha-Campholenaldehyde	0.04
26.430	trans-Pinocarveol	0.06
26.874	Camphor	0.08
27.439	trans-beta-Terpineol	0.28
28.015	Isoborneol	0.04
28.603	Borneol	1.35
29.200	Terpinen-4-ol	0.20
29.597	para-Cymen-8-ol	0.06
30.200	alpha-Terpineol	0.79
31.785	endo-Fenchyl acetate	0.23
35.826	Unidentified	0.05
36.080	Unidentified	0.10
36.357	Bornyl acetate	30.81
36.511	Isobornyl acetate	1.11
36.994	Unidentified	0.06
37.085	Unidentified	0.04
39.547	Unidentified	0.04
40.475	alpha-Terpinyl acetate	0.05
40.672	Citronellyl acetate	0.07
42.539	Geranyl acetate	0.14
44.618	Junipene	0.11
45.257	beta-Caryophyllene	0.12
47.509	alpha-Humulene	0.04
48.703	trans-Cadina-1(6),4-diene	0.04
49.094	Germacrene D	0.04
50.166	alpha-Muurolene	0.12
51.049	gamma-Cadinene	0.18
51.352	delta-Cadinene	0.54
52.451	alpha-Cadinene	0.04
52.701	E-alpha-Bisabolene	0.09
58.592	alpha-Muurolol	0.06
58.692	delta-Cadinol	0.06
59.337	alpha-Cadinol	0.18
		100.00

Chromatogram Spruce - Barefut



Comments:

The analysis of this Spruce batch sample meets the expected chemical profile for authentic essential oil of *Picea mariana*. No contamination or adulteration was detected. The results provided in this GCMS quality analysis reflect the chemical composition of the oil and lot referenced above on the date of analysis.