

Sample Information

Analyzed by : Dr. Robert S. Pappas
 Analyzed : 3/1/2019 3:23:59 AM
 Sample Type : Essential Oil
 Sample Name : Spruce Oil, Black - Barefut
 Sample ID : 0105
 Injection Volume : 0.10
 Instrument ID : GC-3

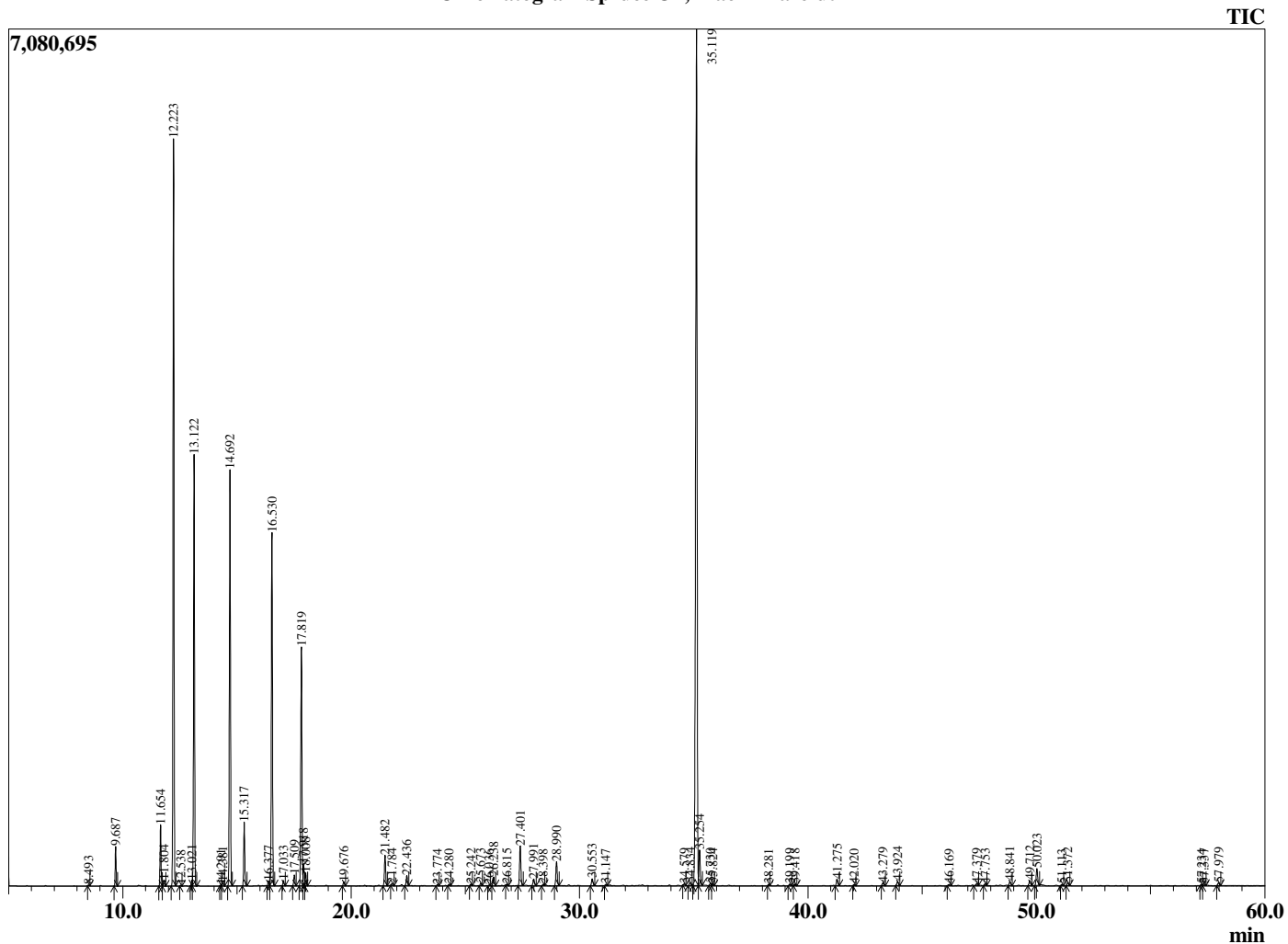


Peak Report TIC

R.Time	Name	Area%
8.493	Hex-3(Z)-enol	0.02
9.687	Santene	0.85
11.654	Tricyclene	1.43
11.804	alpha-Thujene	0.14
12.223	alpha-Pinene	17.93
12.538	beta-Fenchene	0.02
13.021	alpha-Fenchene	0.13
13.122	Camphene	10.52
14.291	Unidentified	0.03
14.381	Sabinene	0.11
14.692	beta-Pinene	10.73
15.317	Myrcene	1.64
16.377	alpha-Phellandrene	0.13
16.530	delta-3-Carene	9.62
17.033	alpha-Terpinene	0.15
17.509	para-Cymene	0.31
17.819	Limonene	6.63
17.918	beta-Phellandrene	0.57
18.008	1,8-Cineole	0.35
19.676	gamma-Terpinene	0.12
21.482	Terpinolene	0.90
21.784	para-Cymenene	0.06
22.436	Linalool	0.30
23.774	alpha-Fenchol	0.03
24.280	alpha-Campholenal	0.04
25.242	trans-Pinocarveol	0.04
25.673	Camphor	0.07
26.036	Citronellal	0.02
26.238	trans-beta-Terpineol	0.28
26.815	Isoborneol	0.04
27.401	Borneol	1.28
27.991	Terpinen-4-ol	0.22
28.398	para-Cymen-8-ol	0.04
28.990	alpha-Terpineol	0.78
30.553	alpha-Fenchyl acetate	0.24
31.147	Citronellol	0.04
34.579	Unidentified	0.04
34.834	Unidentified	0.11
35.119	Bornyl acetate	30.74
35.254	Isobornyl acetate	1.09
35.730	Unidentified	0.07
35.824	trans-Pinocarvyl acetate	0.05
38.281	Unidentified	0.04
39.199	alpha-Terpinyl acetate	0.06
39.418	Citronellyl acetate	0.05
41.275	Geranyl acetate	0.22
42.020	beta-Elemene	0.04
43.279	Junipene	0.10
43.924	beta-Caryophyllene	0.15
46.169	alpha-Humulene	0.04
47.379	trans-Cadina-1(6),4-diene	0.06
47.753	Germacrene D	0.06
48.841	alpha-Muurolene	0.14
49.712	gamma-Cadinene	0.18
50.023	delta-Cadinene	0.60
51.113	alpha-Cadinene	0.03
51.372	trans-alpha-Bisabolene	0.10
57.234	alpha-Muurolo (=Torreyol)	0.05
57.337	epi-alpha-Cadinol	0.05
57.979	alpha-Cadinol	0.11
		100.00

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

Chromatogram Spruce Oil, Black - Barefut



Comments:

The analysis of this Spruce Oil, Black batch sample meets the expected chemical profile for authentic essential oil of *Picea mariana*. No contamination or adulteration was detected.