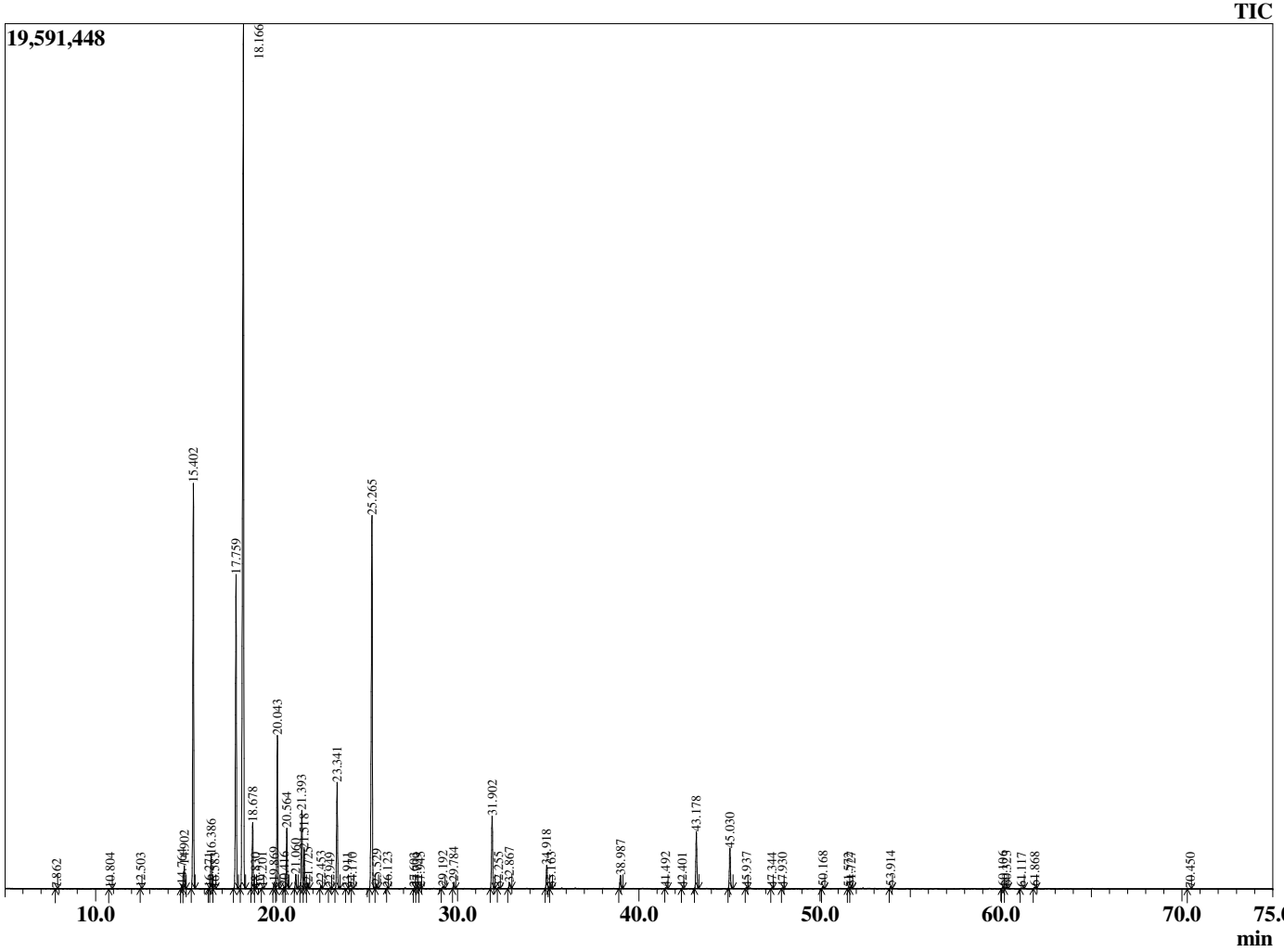
Sample Information

Analyzed by : Dr. Robert S. Pappas
Analyzed : 11/7/2018 8:00:04 PM
Sample Type : Essential Oil
Sample Name : Douglas Fir Needle, Canada
Sample ID : D0B1107A
Injection Volume : 0.10
Instrument ID: : GC-2

Chromatogram Douglas Fir Needle, Canada



Comments:

The analysis of this Douglas Fir Needle, Canada batch sample meets the expected chemical profile for authentic essential oil of *Pseudotsuga menziesii*. 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.

Peak Report TIC

R.Time	Name	Area%
7.862	Toluene	0.01
10.804	Ethyl-2-methylbutyrate	0.01
12.503	Santene	0.01
14.764	Tricyclene	0.13
14.902	alpha-Thujene	0.65
15.402	alpha-Pinene	12.22
16.271	alpha-Fenchene	0.02
16.386	Camphene	1.01
16.583	Verbenene	0.02
17.759	Sabinene	10.51
18.166	beta-Pinene	34.90
18.678	Myrcene	2.00
18.830	2,3-Dehydro-1,8-cineole	0.02
19.201	Ethyl caproate	0.03
19.869	alpha-Phellandrene	0.20
20.043	3-Carene	4.84
20.416	1,4-Cineole	0.05
20.564	alpha-Terpinene	1.90
21.060	para-Cymene	0.47
21.393	Limonene	2.58
21.518	beta-Phellandrene	1.24
21.725	Z-beta-Ocimene	0.18
22.453	E-beta-Ocimene	0.09
22.949	cis-1,6-Dioxaspiro[4.4]nonane, 2,2,9-trimethy	0.03
23.341	gamma-Terpinene	3.51
23.911	trans-1,6-Dioxaspiro[4.4]nonane, 2,2,9-trimet	0.01
24.170	trans-Sabinene hydrate	0.02
25.265	Terpinolene	14.33
25.529	Dehydro-p-cymene	0.14
26.123	Linalool	0.02
27.603	endo-Fenchol	0.02
27.739	Methyl caprylate	0.02
27.945	cis-p-Menth-2-en1-ol	0.04
29.192	trans-p-Menth-2-en-1-ol	0.09
29.784	Citronellal	0.22
31.902	Terpinen-4-ol	2.61
32.255	p-Cymen-8-ol	0.04
32.867	alpha-Terpineol	0.24
34.918	Citronellol	0.84
35.163	Methyl thymol ether	0.04
38.987	Bornyl acetate	0.51
41.492	Methyl decanoate	0.03
42.401	delta-Elemene	0.02
43.178	Citronellyl acetate	2.03
45.030	Geranyl acetate	1.49
45.937	beta-Elemene	0.03
47.344	Junipene	0.02
47.930	beta-Caryophyllene	0.03
50.168	alpha-Humulene	0.09
51.572	alpha-Amorphene	0.02
51.727	Germacrene D	0.06
53.914	delta-Cadinene	0.10
60.106	Selina-6-en-4-ol	0.07
60.323	Sesquiterpenoid	0.07
61.117	epi-alpha-Cadinol	0.05
61.868	alpha-Cadinol	0.06
70.450	Hexadecanal	0.01
		100.00