

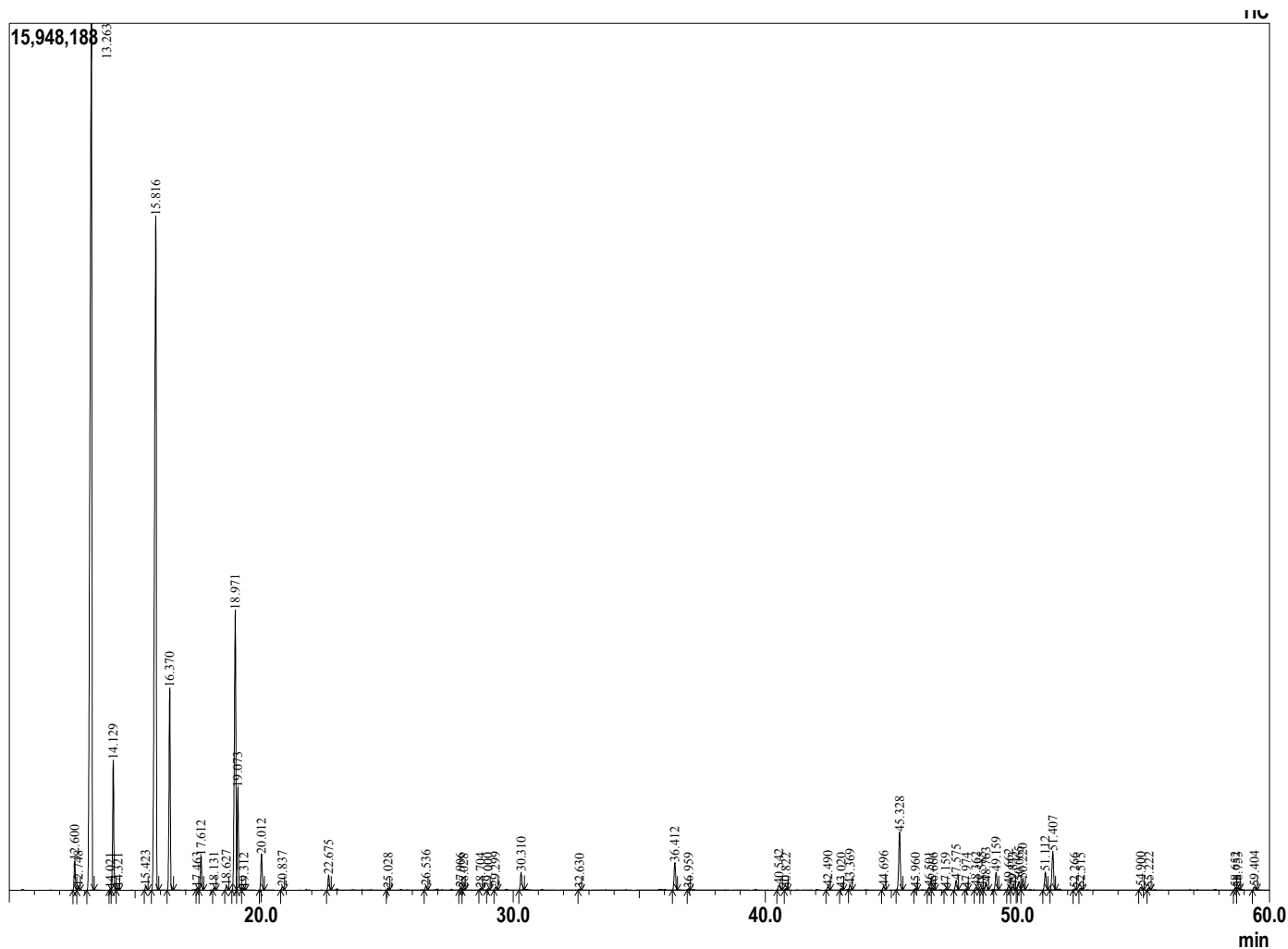
Sample Information

Analyzed by : Dr. Prabodh Satyal
 Analyzed : 10/12/2018 11:36:00 AM
 Sample Type : Essential Oil
 Sample Name : Pine
 Lot# : ACH181010A . Client lot 24106R
 Injection Volume : 0.10



Peak Report TIC

R.Time	Name	Area%
12.600	Tricyclene	0.73
12.748	Thujene<alpha->	0.08
13.263	Pinene <alpha>	37.28
14.021	Fenchene <alpha->	0.04
14.129	Camphene	3.33
14.321	Thuja-2,4(10)-diene	0.05
15.423	Sabinene	0.12
15.816	Pinene<beta->	27.37
16.370	Myrcene	5.71
17.463	Phellandrene <alpha->	0.05
17.612	Carene<delta-3->	0.97
18.131	Terpinene <alpha->	0.07
18.627	Cymene<para->	0.12
18.971	Limonene	9.54
19.073	Phellandrene <beta>	2.74
19.312	Ocimene<(Z)-beta->	0.04
20.012	Ocimene<(E)-beta->	1.07
20.837	Terpinene<gamma->	0.10
22.675	Terpinolene	0.45
25.028	Fenchol<endo->	0.05
26.536	Pinocarveol<trans->	0.12
27.906	Pinocamphone<trans->	0.05
28.028	Pinocarvone	0.03
28.704	Borneol	0.04
29.000	Pinocamphone<cis->	0.03
29.299	Terpinen-4-ol	0.09
30.310	Terpineol<alpha->	0.62
32.630	Thymol, methyl ether	0.03
36.412	Bornyl acetate	0.94
36.959	Undecanone<2->	0.03
40.542	Terpinyl acetate<alpha->	0.21
40.822	Longipinene<alpha>	0.05
42.490	Copaene <alpha>	0.12
43.020	Bourbonene <alpha>	0.06
43.369	Elemene <beta>	0.16
44.696	Longifolene	0.12
45.328	Caryophyllene <trans>	2.12
45.960	Copaene <beta>	0.05
46.501	Aromadendrene	0.09
46.666	Guaiadiene<6,9->	0.05
47.159	Muurolo-3,5-diene<trans->	0.04
47.575	Humulene <alpha>	0.34
47.974	Muurolo-4(14),5-diene <cis>	0.03
48.362	Sesquisabinene	0.09
48.585	Cadina-1(6),4-diene <cis->	0.07
48.763	Cadina-1(6),4-diene <trans->	0.28
49.159	Germacrene D	0.61
49.662	Selinene <beta>	0.17
49.833	Muurolo-4(14),5-diene <trans>	0.13
50.065	Bicyclogermacrene	0.37
50.220	Muuroloene <alpha>	0.38
51.112	Amorphene <delta>	0.63
51.407	Cadinene <delta>	1.39
52.266	Cadine-1,4-diene <trans->	0.04
52.515	Cadinene <alpha>	0.07
54.900	Spathulenol	0.11
55.222	Caryophyllene oxide	0.08
58.652	Muurolool <alpha>	0.07
58.753	Muurolool <epi-alpha>	0.07
59.404	Cadinol <alpha>	0.11
		100.00



Comments:
 The analysis of this Pine essential oil batch sample meets the expected chemical profile of authentic essential oil of Pine.

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AROMATIC PLANT RESEARCH CENTER PHYSICAL CONSTANTS REPORT

Oil Name: Scots pine

Botanical Name: *Pinus sylvestris L.*

Lot #: 24106R

Organoleptic Information	
Appearance	Liquid
Color	Colorless
Odour	Woody, green pine, earthy

Physical Constants Information – at 20 °C	
Tests	Observed
Specific Gravity	ND*
Refractive Index	1.47489
Optical Rotation	-20.60

*ND: Not Detected/insufficient volume

Comments:

Reviewed by: Sophia Wax

Date: 10/23/2018