

GC/MS BATCH NUMBER: P70105

ESSENTIAL OIL: PINE SCOTS
BOTANICAL NAME: PINUS SYLVESTRIS
ORIGIN: AUSTRIA

KEY CONSTITUENTS PRESENT IN THIS BATCH OF PINE SCOTS OIL	%
α -PINENE	42.0
β -PINENE	19.5
Δ 3-CARENE	17.0
LIMONENE	9.4
MYRCENE	3.5
BORNYL ACETATE	1.5
p-CYMENE	1.4
β -CARYOPHYLLENE	1.4
α -TERPINENE	1.2
β -PHELLANDRENE	1.2

Comments from Robert Tisserand: Fresh, light, green-balsamic odor profile. Constituents are in expected amounts.

Date : September 20, 2017

SAMPLE IDENTIFICATION

Internal code : 17114-PTH2-1-DM

Customer identification : Pine Scots - Austria - P7010572R

Type : Essential oil

Source : *Pinus sylvestris*

Customer : Plant Therapy

ANALYSIS

Method : PC-PA-001-15E06, "Analysis of the composition of a liquid essential oil by GC-FID" (in French).

Identifications double-checked by GC-MS

Analyst : Sylvain Mercier, M. Sc., chimiste

Analysis date : 2017-09-20

Checked and approved by :

Alexis St-Gelais, M. Sc., chimiste 2013-174

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IDENTIFIED COMPOUNDS

Identification	Column: BP5			Column: WAX			Molecular Class
	R.T.	R.I.	%	%	R.I.	R.T.	
Tricyclene	3.23	915	0.04	0.03	915	1.09	Monoterpene
α-Thujene	3.32	920	0.02	41.95	951	1.24*	Monoterpene
α-Pinene	3.48	930	42.04	[41.95]	951	1.24*	Monoterpene
Camphene	3.71	943	0.58	0.70	991	1.49	Monoterpene
Thuja-2,4(10)-diene	3.80	949	0.06				Monoterpene
Sabinene	4.14	969	0.03				Monoterpene
β-Pinene	4.24	975	19.50	19.62	1040	1.90	Monoterpene
Myrcene	4.49	990	3.53	3.38	1113	2.65*	Monoterpene
2-Carene	4.61	997	0.15	0.06	1080	2.25	Monoterpene
Pseudolimonene	4.71	1002	0.15	[3.38]	1113	2.65*	Monoterpene
Δ3-Carene	4.80	1007	17.03	17.00	1093	2.39	Monoterpene
α-Terpinene	4.95	1015	1.23	1.63	1120	2.73	Monoterpene
Limonene	5.20*	1029	9.52	9.39	1140	2.99*	Monoterpene
para-Cymene	5.20*	1029	[9.52]	1.39	1209	3.89	Monoterpene
β-Phellandrene	5.22	1030	1.20	[9.39]	1140	2.99*	Monoterpene
1,8-Cineole	5.24	1031	0.06	[9.39]	1140	2.99*	Monoterp. ether
γ-Terpinene	5.72	1057	0.01	0.01	1184	3.60	Monoterpene
Terpinolene	6.19	1083	0.33	0.33	1224	4.11	Monoterpene
α-Pinene oxide	6.52	1100	0.01	0.01	1298	5.22	Monoterp. ether
Bornyl acetate	12.91	1279	1.47	1.56	1502	9.45	Monoterp. ester
α-Copaene	17.68	1357	0.02	0.02	1427	7.54	Sesquiterpene
Longifolene	19.65	1386	0.56	0.58	1485	8.93	Sesquiterpene
β-Caryophyllene	20.59	1400	1.35	1.39	1516	9.94	Sesquiterpene
α-Humulene	23.36	1433	0.24	0.29	1578	12.27	Sesquiterpene
α-Murolene	27.60	1484	0.03	0.03	1640	15.24	Sesquiterpene
δ-Cadinene	29.30	1505	0.14	0.15	1669	16.81	Sesquiterpene
trans-Calamenene	29.48	1508	0.03	0.03	1729	20.39	Sesquiterpene
Caryophyllene oxide	33.78	1568	0.17	0.17	1839	28.07	Sesquiterp. ether
Isopimaradiene?	46.93	1939	0.01				Diterpene
Total identified			99.51%	99.72%			

*: Two or more compounds are coeluting on this column

[xx]: Duplicate percentage due to coelutions, not taken account in the identified total

Note: no correction factor was applied

OTHER DATA

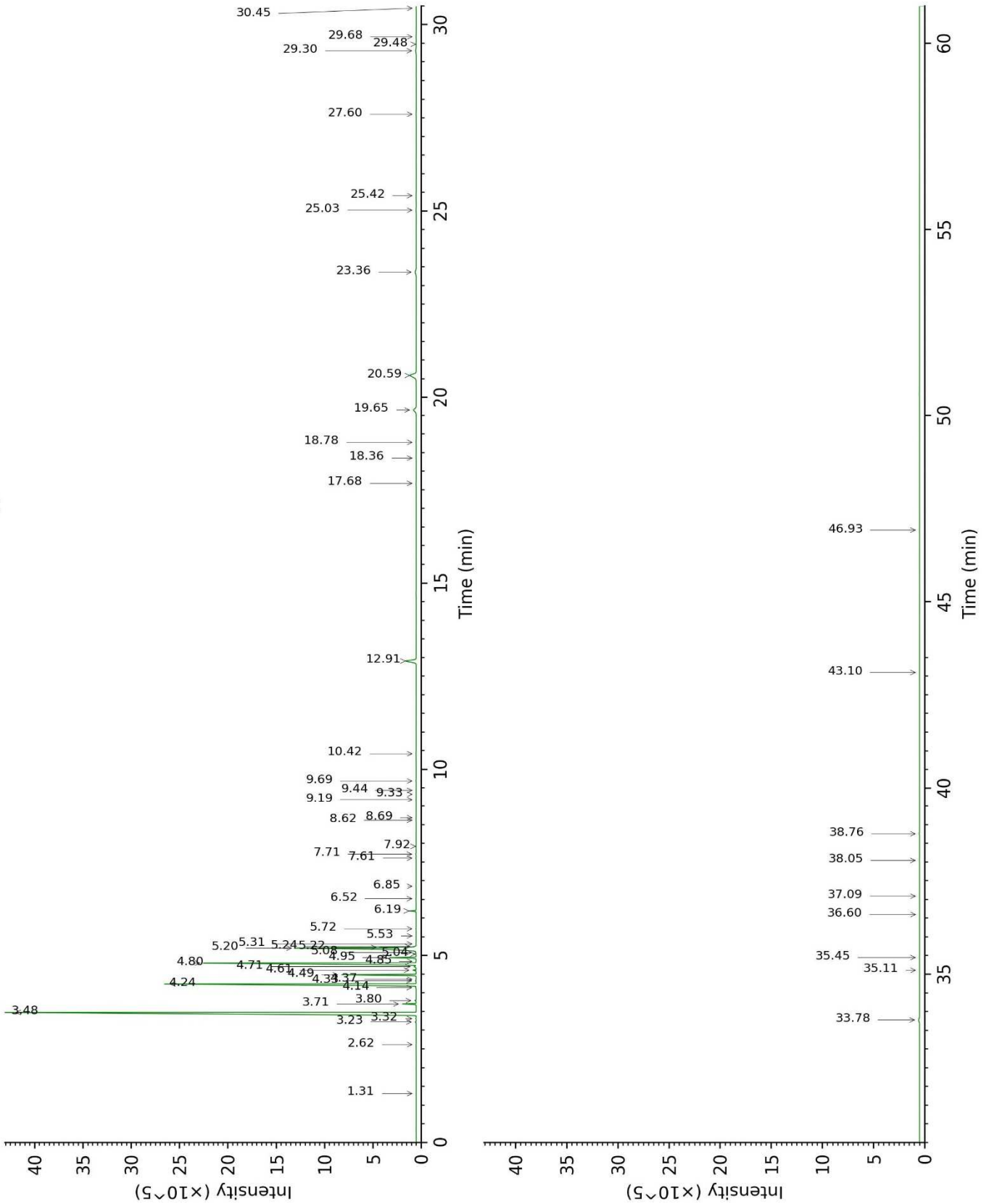
Physical aspect : Clear liquid

Refractive index : 1.4705 ± 0.0003 (20 °C)

CONCLUSION

No adulterant, contaminant or diluent were detected using this method.

17114-PTH2-1-DM_BP5



17114-PTH2-1-DM_WAX

